김 진 일 교수지도

박사학위 청구논문

A Taxonomic Review of the Korean Orthoptera (Insecta)

한국산 메뚜기목의 분류학적 재검토

2007

성신여자대학교 대학원

생물학과

김 태 우

A Taxonomic Review of the Korean Orthoptera (Insecta)

한국산 메뚜기목의 분류학적 재검토

김 진 일 교수지도

이 논문을 박사학위논문으로 제출함.

2007년 4월

성신여자대학교 대학원

생물학과

김 태 우

인 준 서

김태우의 박사학위 논문으로 인준함.

심사위원_____인

심사위원_____인

심사위원_____인

심사위원_____인

심사위원_____인

성신여자대학교 대학원

Acknowledgments

I specially thank to below all persons who gave me the great helps in preparing this thesis throughout all aspects. Without those assistances, this thesis could not be accomplished. Titles of the honor are conveniently omitted.

Supervisor: Kim Jinill (Sungshin Women's University)

Referees: An Kijeong (Chungnam University), Bae Yeonjae (Seoul Women's University), Han Hoyeon (Yeonse University), and Park Haechul (National Institute of Agricultural Science and Technology).

Executives of entomological collections: An Seunglak (National Science Museum), Lee Jongwuk (Yeongnam University), Lee Jongeun (Andong University), Lee Gwanseok (National Institute of Agricultural Science and Technology), Lee Seunghwan (Seoul National University), Park Jungseok (Gyeongsan University), Park Sangok (Daegu Catholic University), Yoon Seokjun (Natural History Museum of Ewha Women's University); Judith Marshall (The Natural History Museum), György Sziráki (Hungarian Natural History Museum), Michael Ohl (Museum für Naturkunde der Humbolt Universitat), Carolina Martín (Museo Nacional de Ciencias Naturales).

Literatures or specimens providing and personal communications: Andrey Gorochov (Russia), Sergey Storozhenko (Russia), Dariusz Kostia (Poland), Ichikawa Akihiko (Japan), Ishikawa Hitoshi (Japan), Kanô Yasutsugu (Japan), Inoue Naotake (Japan), Ôshiro Yasuhiro (Japan), Sigfrid Ingrisch (Germany), Herr Heller (Germany), David Rentz (Australia), Hsiung Chiachi (Canada), István Rácz (Hungary), Xia Kailing (China), Ren Bingzhong (China), Yang Jengtze (Taiwan), Theodore Cohn (USA), Song Hojun (USA), Namkung Jun (Korea), Lee Seongmo (Korea), Paik Jongcheol (Korea), Rhee Howon (Korea).

All members of the laboratory: Sungshin Women's University, Korea University, Seoul National University, Yeongnam University, Gyeongsang University, Ewha Women's University and National Institute of Agricultural Science and Technology.

Also even not enumerated here, many friends and colleagues were willingly present their valuable comments and helps to me, I really appreciate that all.

Disclaimer: Any nomenclatural changes or new taxa proposed in this thesis should be regarded as unpublished personal data.

목 차

Contents

논문개요

Abstract

1. Introduction ····· 1

2. Materials and methods ····· 6

3. Taxonomic accounts ····· 8

Order Orthoptera ····· 8

Suborder Ensifera ····· 8

Superfamily Stenopelmatoidea ····· 9

Family Gryllacrididae ····· 9

Subfamily Gryllacridinae ····· 9

1. *Nippancistroger testaceus* (Matsumura and Shiraki) ····· 10

2. *Prosopogryllacris japonica* (Matsumura and Shiraki) ····· 12

Family Rhaphidophoridae ····· 13

Subfamily Troglophilinae ····· 13

3. *Anoplophilus coreanus* **sp. nov.** ····· 14

Subfamily Aemodogryllinae ····· 15

4. *Diestrammena unicolor* Brunner von Wattenwyl ····· 17

5. *Diestrammena asynamora* (Adelung) ····· 19

6. *Diestrammena coreana* (Yamasaki) ····· 21

7. *Paratachycines ussuriensis* Storozhenko ····· 25

8. *Paratachycines boldyrevi* (Uvarov) ····· 27

Superfamily Tettigonioidea ····· 29

Family Tettigoniidae ····· 29
Subfamily Phaneropterinae ····· 30
9. *Elimaea fallax* Bey-Bienko ····· 31
10. *Phaneroptera falcata* (Poda) ····· 34
11. *Phaneroptera nigroantennata* Brunner von Wattenwyl ····· 36
12. *Ducetia japonica* (Thunberg) ····· 39
13. *Kuwayamaea sapporensis* Matsumura and Shiraki ····· 42
14. *Psyrana japonica* (Shiraki) ····· 44
15. *Holochlora japonica* Brunner von Wattenwyl ····· 46
16. *Sinochlora longifissa* (Matsumura and Shiraki) ····· 48
Subfamily Meconematinae ····· 50
17. *Cosmetura fenestrata* Yamasaki ····· 51
18. *Kuzicus suzukii* (Matsumura and Shiraki) ····· 52
19. *Xizicus coreanus* (Bey-Bienko) ····· 54
Subfamily Mecopodinae ····· 56
20. *Mecopoda niponensis* (de Haan) ····· 57
Subfamily Tettigoniinae ····· 58
Tribe Platycleidini ····· 58
21. *Sphagniana monticola* (Kim and Kim) ····· 59
22. *Sphagniana ussuriana* (Uvarov) ····· 61
23. *Chizuella bonneti* (Bolívar) ····· 62
24. *Metrioptera brachyptera* (Linnaeus) ····· 65
25. *Bicolorana bicolor* (Philippi) ····· 67
26. *Eobiana engelhardti* (Uvarov) ····· 68
Tribe Tettigoniini ····· 69
27. *Paratlanticus ussuriensis* (Uvarov) ····· 70
28. *Anatlanticus koreanus* Bey-Bienko ····· 74
29. *Atlanticus brunneri* (Pylnov) ····· 76
30. *Gampsocleis ussuriensis* Adelung ····· 79

31. *Gampsocleis sedakovii obscura* (Walker) ····· 82
32. *Tettigonia ussuriana* Uvarov ····· 86
33a. *Tettigonia dolichoptera dolichoptera* Mori ····· 88
33b. *Tettigonia dolichoptera maritima* Storozhenko ····· 91
Subfamily Conocephalinae ····· 91
Tribe Conocephalini ····· 92
34. *Conocephalus bambusanus* Ingrisch ····· 93
35. *Conocephalus japonicus* (Redtenbacher) ····· 94
36. *Conocephalus maculatus* (le Guillou) ····· 95
37. *Conocephalus chinensis* (Redtenbacher) ····· 98
38. *Conocephalus exemptus* (Walker) ····· 100
Tribe Copiphorini ····· 103
39. *Euconocephalus varius* (Walker) ····· 105
40. *Ruspolia lineosa* (Walker) ····· 107
41. *Ruspolia dubia* (Redtenbacher) ····· 110
42. *Ruspolia* sp. ····· 112
43. *Pseudorhynchus japonicus* Shiraki ····· 114
44. *Xestophrys javanicus* Redtenbacher ····· 115
Subfamily Listroscelidinae ····· 116
45. *Hexacentrus japonicus* Karny ····· 117
Superfamily Grylloidea ····· 121
Family Gryllotalpidae ····· 121
Sufamily Gryllotalpinae ····· 121
46. *Gryllotalpa orientalis* Burmeister ····· 122
Family Gryllidae ····· 125
Sufamily Oecanthinae ····· 126
47. *Oecanthus euryelytra* Ichikawa ····· 127
48. *Oecanthus longicauda* Matsumura ····· 128
Subfamily Sclerogryllinae ····· 130

49. *Sclerogryllus punctatus* (Brunner von Wattenwyl) ····· 131
Subfamily Landrevinae ····· 132
50. *Duolandrevus ivani* (Gorochov) ····· 132
Subfamily Gryllinae ····· 133
51. *Gryllodes supplicans* (Walker) ····· 136
52. *Gryllus bimaculatus* de Geer ····· 138
53. *Gryllus sibiricus* (Chopard) ····· 139
54. *Teleogryllus emma* (Ohmachi and Matsuura) ····· 141
55. *Teleogryllus infernalis* (Saussure) ····· 144
56. *Comidogryllus nipponensis* (Shiraki) ····· 146
57. *Mitius minor* (Shiraki) ····· 147
58. *Modicogryllus siamensis* Chopard ····· 149
59. *Loxoblemmus doenitzi* Stein ····· 151
60. *Loxoblemmus magnatus* Matsuura ····· 153
61. *Loxoblemmus campestris* Matsuura ····· 154
62. *Loxoblemmus equestris* Saussure ····· 157
63. *Velarifictorus aspersus* (Walker) ····· 159
64. *Velarifictorus micado* (Saussure) ····· 161
65. *Velarifictorus ornatus* (Shiraki) ····· 163
Subfamily Nemobiinae ····· 164
66. *Caconemobius sazanami* (Furukawa) ····· 166
67. *Caconemobius takarai* (Ôshiro) ····· 167
68. *Pteronemobius yezoensis* (Shiraki) ····· 168
69. *Pteronemobius gorochovi* Storozhenko ····· 170
70. *Pteronemobius nitidus* (Bolívar) ····· 171
71. *Dianemobius csikii* (Bolívar) ····· 173
72. *Dianemobius furumagiensis* (Ohmachi and Furukawa) ····· 174
73. *Dianemobius nigrofasciatus* (Matsumura) ····· 175
74. *Polionemobius flavoantennalis* (Shiraki) ····· 178

75. *Polionemobius mikado* (Shiraki) ····· 179
Subfamily Trigonidiinae ····· 182
76. *Trigonidium japonicum* Ichikawa ····· 183
77. *Homoeoxipha obliterata* (Caudell) ····· 185
78. *Svistella bifasciata* (Shiraki) ····· 186
Subfamily Cachoplistinae ····· 188
79. *Meloimorpha japonicus* (de Haan) ····· 188
Subfamily Euscyrtinae ····· 190
80. *Euscyrtus japonicus* Shiraki ····· 190
Sufamily Eneopterinae ····· 192
81. *Xenogryllus marmoratus* (de Haan) ····· 193
Subfamily Podoscirtinae ····· 194
82. *Truljalia hibinonis* (Matsumura) ····· 194
Family Mogoplistidae ····· 195
Subfamily Mogoplistinae ····· 196
83. *Ectatoderus annulipedus* (Shiraki) ····· 196
84. *Ornebius kanetataki* (Matsumura) ····· 197
Family Myrmecophilidae ····· 198
Subfamily Myrmecophilinae ····· 199
85. *Myrmecophilus* sp. ····· 199
Suborder Caelifera ····· 199
Superfamily Tridactyloidea ····· 200
Family Tridactylidae ····· 200
Subfamily Tridactylinae ····· 201
86. *Xya japonica* (de Haan) ····· 201
Superfamily Tetrigoidea ····· 203
Family Tetrigidae ····· 203
Subfamily Scelimeninae ····· 204
87. *Criotettix japonicus* (de Haan) ····· 204

Subfamily Tetriginae ····· 206
88. *Euparatettix insularis* Bey-Bienko ····· 207
89. *Formosatettix robustus* Storozhenko ····· 209
90. *Clinotettix ussuriensis* Bey-Bienko ····· 212
91. *Tetrix simulans* (Bey-Bienko) ····· 214
92. *Tetrix silvicultrix* Ichikawa ····· 214
93. *Tetrix japonica* (Bolívar) ····· 216
94. *Tetrix minor* Ichikawa ····· 218
Superfamily Acridoidea ····· 220
Family Pyrgomorphidae ····· 220
Subfamily Pyrgomorphinae ····· 220
95. *Atractomorpha lata* (Motschulsky) ····· 221
96. *Atractomorpha sinensis* Bolívar ····· 225
Family Pamphagidae ····· 226
Subfamily Akicerinae ····· 226
97. *Haplotropis brunneriana* Saussure ····· 226
Family Acrididae ····· 228
Subfamily Oxyinae ····· 229
98. *Oxya hyla intricata* (Stål) ····· 230
99. *Oxya chinensis sinuosa* Mishchenko ····· 232
Subfamily Melanoplinae ····· 236
100. *Zubovskya koreana* Mishchenko ····· 237
101. *Zubovskya koeppeni parvula* (Ikonnikov) ····· 240
102. *Ognevia longipennis* (Shiraki) ····· 242
103. *Ognevia sergii* Ikonnikov ····· 245
104. *Parapodisma setouchiensis* Inoue ····· 249
105. *Podisma aberrans* Ikonnikov ····· 251
106. *Prumna halrasana* (Lee and Lee) ····· 252
107. *Prumna mandshurica* Ramme ····· 254

108. *Miramella solitaria* (Ikonnikov) ····· 256
109. *Anapodisma beybienkoi* Rentz and Miller ····· 258
110. *Anapodisma miramae* Dovnar-Zapolskii ····· 260
Subfamily Cyrtacanthacridinae ····· 263
111. *Nomadacris japonica* (Bolívar) ····· 264
Subfamily Calliptaminae ····· 266
112. *Calliptamus abbreviatus* Ikonnikov ····· 267
Subfamily Eyprepocneminae ····· 270
113. *Shirakiacris shirakii* (Bolívar) ····· 271
Subfamily Gomphocerinae ····· 274
Tribe Chrysochraontini ····· 274
114. *Podismopsis genicularibus* (Shiraki) ····· 276
115. *Podismopsis ussuriensis* Ikonnikov ····· 278
116. *Chrysochraon dispar major* (Uvarov) ····· 279
117a. *Mongolotettix japonicus japonicus* (Bolívar) ····· 280
117b. *Mongolotettix japonicus vittatus* (Uvarov) ····· 284
Tribe Gomphocerini ····· 284
118. *Arcyptera coreana* Shiraki ····· 286
119. *Omocestus haemorrhoidalis* (Charpentier) ····· 289
120. *Omocestus viridulus* (Linnaeus) ····· 291
121. *Gomphocerus kudia* Caudell ····· 292
122. *Megaulacobothrus aethalinus* (Zubovsky) ····· 294
123. *Megaulacobothrus jejuensis* **sp. nov.** ····· 297
124. *Glyptobothrus maritimus* (Mishchenko) ····· 298
125. *Glyptobothrus tamna* **sp. nov.** ····· 302
126. *Euchorthippus unicolor* (Ikonnikov) ····· 303
127. *Schmidtiacris schmidti* (Ikonnikov) ····· 306
128. *Chorthippus hammarstroemi* (Miram) ····· 309
129. *Chorthippus fallax* (Zubovsky) ····· 311

130. *Chorthippus montanus* (Charpentier) ····· 311
Subfamily Acridinae ····· 312
131. *Acrida cinerea* (Thunberg) ····· 313
132. *Gonista bicolor* (de Haan) ····· 316
133. *Ceracris nigricornis laeta* (Bolívar) ····· 319
134. *Mecostethus parapleurus* (Hagenbach) ····· 320
135. *Stethophyma magister* (Rehn) ····· 323
Subfamily Oedipodinae ····· 324
136. *Aiolopus thalassinus tamulus* (Fabricius) ····· 326
137. *Epacromius japonicus* (Shiraki) ····· 328
138. *Epacromius pulverulentus* (Fischer von Waldheim) ····· 329
139. *Celes skalozubovi akitanus* (Shiraki) ····· 332
140. *Locusta migratoria* (Linnaeus) ····· 333
141. *Gastrimargus marmoratus* (Thunberg) ····· 337
142. *Oedaleus infernalis* Saussure ····· 340
143. *Trilophidia annulata* (Thunberg) ····· 342
144. *Bryodemella tuberculata diluta* (Stroll) ····· 346
145. *Sphingonotus mongolicus* Saussure ····· 348
4. Conclusion and perspectives ····· 351
4-1. Taxonomic accomplishments ····· 351
4-2. Geographical distribution ····· 352
4-3. Geographical subspecies vs. species ····· 354
Appendix 1. Specimens unconfirmed ····· 356
References
Explanation of figures

논문개요

한국산 메뚜기목의 분류학적 재검토를 통해 모두 12과 102속 145종(2아종 포함)을 확인하였으며, 다음 3종은 새로 기재하는 신종이다.

Anoplophilus coreanus **sp. nov.**

Glyptobothrus tamna **sp. nov.**

Megaulacobothrus jejuensis **sp. nov.**

또한, 다음 10속 10종은 한국에서 처음 기록된다.

Atractomorpha sinensis Bolívar 1905

Bicolorna bicolor (Philippi 1830)

Caconemobius takarai (Ôshiro 1990)

Chorthippus fallax (Zubovsky 1900)

Duolandrevus ivani (Gorochov 1988)

Ectatoderus annulipedus (Shiraki 1911)

Homoeoxipha obliterata (Caudell 1927)

Myrmecophilus sp.

Ruspolia sp.

Velarifictorus ornatus (Shiraki 1911)

한편 *Tettigonia dolichoptera dolichoptera*의 신기준 표본을 지정하였으며, 다음의 4종명은 앞서 기재된 종의 새로운 동종이명으로 정리하였다.

Calliptamus abbreviatus Ikonnikov 1913

= *Calliptamus doii* Lee and Lee 1985 **syn. nov.**

Conocephalus exemptus (Walker 1869)

= *Conocephalus gladiatus* (Redtenbacher 1891) **syn. nov.**

Loxoblemmus magnatus Matsuura 1985

= *Loxoblemmus coreanus* Gorochov and Kostia 1993 **syn. nov.**

Nippancistroger testaceus (Matsumura and Shiraki 1908)

= *Nippancistroger koreanus* Storozhenko and Paik 2003 **syn. nov.**

Abstract

As a result of the taxonomic review of the Korean Orthopera, I have recognized a total of 145 species (including two subspecies) belonging to 102 genera under 12 families, three of which are newly described: *Anoplophilus coreanus* **sp. nov.** *Glyptobothrus tamna* **sp. nov.** *Megaulacobothrus jejuensis* **sp. nov.**

The following species and genera are newly discovered in Korea: *Atractomorpha sinensis* Bolívar 1905, *Bicolorna bicolor* (Philippi 1830), *Caconemobius takarai* (Ôshiro 1990), *Chorthippus fallax* (Zubovsky 1900), *Duolandrevus ivani* (Gorochov 1988), *Ectatoderus annulipedus* (Shiraki 1911), *Homoeoxipha obliterata* (Caudell 1927), *Myrmecophilus* sp., *Ruspolia* sp., *Velarifictorus ornatus* (Shiraki 1911).

Besides, the neotype of *Tettigonia dolichoptera dolichoptera* is designated and the following four names are newly synonymized: *Calliptamus abbreviatus* Ikonnikov 1913 = *Calliptamus doii* Lee and Lee 1985 **syn. nov.** *Conocephalus exemptus* (Walker 1869) = *Conocephalus gladiatus* (Redtenbacher 1891) **syn. nov.** *Loxoblemmus magnatus* Matsuura 1985 = *Loxoblemmus coreanus* Gorochov and Kostia 1993 **syn. nov.** *Nippancistroger testaceus* (Matsumura and Shiraki 1908) = *Nippancistroger koreanus* Storozhenko and Paik 2003 **syn. nov.**

1. Introduction

As an order of polyneopterous insects, the Orthoptera constitutes major phyletic branch of insects. Its members are so called to grasshoppers, locusts, crickets, and katydids, we can commonly find them in outdoor or even sometimes indoor. Some are well known as pestiferous species, eg. *Locusta migratoria*, but a few have been used for food and medicine, or caged for enjoying the song, or played for pets of the children in many cultures. The earliest recognizable insect record is the *Troglophilus* sp. (Rhaphidophoridae) on bison bone found in the cave from South France, ca. 20,000 BC (Kevan 1974).

Korean peninsula is located in the main center of Far Eastern Asia, whose biome typically falls into the temperate-forest region, however, the climate conditions differ clearly from north to south on longitudinal topology. Including high mountains covering about 70 percent of the ground, the plains, rivers, coasts, caves, and a lot of attached islands, the various configurations of the peninsula allowing good habitats preservable the diversity of Orthoptera. Presently where is shaped as the eastern tip of the Palaearctic Region represented by enormous Eurasian Continent. Its projected ground has the land connection northward only, the seas surrounding remained three faces. But in the past geological time this area was the largely lumped land without the Yellow Sea, but also linked southwardly each of the mainland China, Islands Taiwan and Japan just before ca. 11,000 years ago, the late Pleistocene (Jeong 1997).

The earliest records of the Orthoptera in Korea appeared in the history books such as 'Samguksagi (三國史記, 1145)', or 'Joseonwangjosilrok (朝鮮王朝實錄, 1400-1828) by the naming of 'Hwang (蝗)' (l.c. Paik 1977; Moon and Yoon 2000). But we do not know which species were involved in these books owing to the lack of zoological nomenclature.

As the first scientific record for Korean Orthoptera, Walker (1869) studied six species labelled as "Corea", and described five of which as new species: *Gryllacris maculipes*, *Decticus obscurus*, *Decticus tenebrosus*, *Tedla sellata* and *Xiphidium exemptum*. In the series of his catalogue, Walker (1870) studied seven species from "Corea", including five new species: *Perena concolor*, *Acridium coreanum*, *Acridium fumosum*, *Xiphocera fumosa* and *Caloptenus obliterans*. All specimens were presented by Capt. E. Belcher, but some locality data have been questioned (see Appendix 1).

Bolívar (1898) newly described *Stenobothrus latipennis* based on the specimens labelled as

"Corea" and "Japan". Burr (1898) noted six species from "Port Lazareff" (= Wonsan) and "Port Hamilton" (= Is. Geomundo) based on the specimens collected by Mr. T.S. Fletcher. Rehn (1902) reported four species from "Chemulpo" (= Incheon) based on the specimens collected by Dr. W.H. Jones. Ichikawa (1906) listed four species from Is. Jejudo, a part of his collections was deposited in The Natural History Museum (London) at that time.

After the results of early European expeditions, the Government of Korea (Choseon dynasty: 朝鮮) controled by Japan during the period 1910–1945. In this time a lot of species of the Orthoptera found and listed. Ikonnikov (1913) reported 30 Korean Acridids based on the collections of Dr. P. Schmidt, a Russian ichthyologist, among them following six were newly described: *Stauroderus schmidti*, *Chorthippus unicolor*, *Calliptamus abbreviatus*, *Acrida turrita koreana*, *Celes scalozubovi orientalis* and *Bryodema tuberculatum sibirica*. Uvarov (1923) studied *Tettigonia viridissima* from Seoul and referred Walker's types of *Gampsocleis obscura* (= *Decticus obscurus*). Okamoto (1924) reported 11 Orthopterans from Is. Jejudo. Uvarov (1926) studied a male of *Kuwayamaea sapporensis* from Is. Jejudo (Ichikawa's collection). Mori (1929) reported *Callimenus onos* from northeast Korea. Furukawa (1930) noted six Korean Orthopterans. Shiraki (1930) noted seven Grylloids distribute in Korea. Shiraki (1930) newly described *Arcyptera coreana*. Bey–Bienko (1931) reported 15 species from Mt. Baekdusan based on the specimens collected by Mr. Mori, among which *Podisma morii* was newly described. Doi (1932) listed 84 Korean Orthoptera and Doi (1933) successively added 22 species to the list of Korean Orthoptera. Mori (1933) revised 29 Tettigoniids, among which three were newly described: *Tettigonia dolichoptera*, *Metrioptera koreana* and *Gampsocleis obscura hokusenensis*. Doi (1934) reported a female of *Pseudorhynchus japonicus* collected in Busan. Doi (1935) added four species to the Orthopteran list of Korea. Mori (1935) noted four species distribute in Korea. Wu (1935) noted 22 species distribute in Korea. Doi (1936) added four species to the orthopteran list of Korea. Haku (1937) listed 19 species from Gyeongsangbuk-do. Furukawa (1939) noted 13 species distribute in Korea. Mori and Cho (1939) listed 13 species collected from Mt. Chailbong, North Korea, among which three were newly recorded: *Metrioptera grisea*, *Gomphocerus rufus* and *Gomphocerus sibirica kudia*. Mori and Cho (1940) listed 11 species from Mt. Geumgangsan. Furukawa (1942) noted three *Conocephalus* spp. distribute in Korea.

Shortly after independence from Japan (1945), the Korean War was happened (1950–1953), Korean peoples had undergone a great suffering between North and South politic barriers. Only a few results published in this period, besides independent studies were

started by Cho Poksung. Furukawa and Shiraki (1950) noted 12 species distribute in Korea. Bey-Bienko (1951) newly described *Anatlanticus koreanus* from North Korea. Bey-Bienko and Mishchenko (1951) noted 38 species distribute in Korea, among which *Oxya sinuosa* and *Chorthippus aethalinus koreanus* were newly described. Mishchenko (1952) reported 16 species distribute in Korea, among which *Zubovskya koreana* was newly described from Seoul. Bey-Bienko (1954) newly described *Euthystira pavlovskii* from North Korea. Bey-Bienko (1954) noted seven Phaneropterines distribute in Korea. Lee (1957) reported 17 Acridids from Gwangneung, among which *Oxya yezoensis* and *Chorthippus dubius* were newly recognized. Cho (1959) firstly revised 108 Korean Orthopterans. Ragge (1961) studied *Ducetia japonica* and *chinensis* from Korea. Yang and Yoon (1962) recognized *Gryllulus* [!] *minor* in Is. Geomundo. Sohn (1963) revised three of *Diestrammena*, among which *goliath* was newly recognized. The Zoological Society of Korea (1968) listed 108 Korean Orthoptera. Cho (1969) revised 111 Korean Orthopterans. Ju (1969) listed 98 North Korean Orthopterans. Yamasaki (1969) reported three of Rhaphidophoridae from five caves of South Korea, among which *Tachycines coreanus* and *uenoi* were newly described.

Since 1970, Korea has been gone to way of economic growth, by the way it is suspected that to start abrupt environmental changes in most provinces of Korea from that time. Tsyplenkov (1970) reported 21 North Korean Acridids, among which eight newly recognized. Bey-Bienko (1971) newly described *Xiphidiopsis coreana* from Mt. Palgongsan. Rentz and Miller (1971) reported 17 species in South Korea, among which *Anapodisma beybienkoi* and *Paratlanticus palgongensis* were newly described. Mishchenko (1974) newly described *Primnoa plana* from North Korea. Kim (1981) recognized *Pteronemobius csikii* in the west coastal province of Korea. Choo and Choi (1983) reported 11 Gryllids from five localities of Korea. Lee and Lee (1983) revised five species of Catantopinae, among which *Hieroglyphus seungmoi* was newly described and *Oxya agavisa* and *nakaii* were newly recognized. Lee and Lee (1984) revised 11 species of Catantopinae, among which *Primnoa halrasana* was newly described and *Zubovskya parvula* was newly recognized. Lee and Lee (1985) revised three species of Catantopinae, among which *Calliptamus doii* was newly described. An and Lee (1986) newly described *Parapodisma bandii* from Is. Jejudo. Lee (1990) revised 26 Tettigoniids, among which three were proposed to new junior synonyms: *Metrioptera koreana*, *Paratlanticus palgongensis* and *Tettigonia dolichoptera*. Alexander (1991) newly described *Gryllus nigrohirsutus* from the Central National Forest of Korea. Storozhenko (1991) newly described *Primnoa koreana* from "Monastery Olchons". Lee and Park (1992) newly described

Microgastrimargus taeguensis from Daegu. Gorochov and Kostia (1993) revised five North Korean *Loxoblemmus*, among which *coreanus* and *spectabilis* were newly described. Gorochov et al. (1993) newly described *Decma improvisum* from Mt. Geumgangsan. Kostia (1993) newly described *Formosatettix slivae* from North Korea. Moon and Yoon (1993) noted 24 species of Korean Tettigonioidea deposited in KEI. Kwon and Huh (1994) listed 129 Korean Orthopterans. Moon and Yoon (1994) noted 14 species of Korean Grylloids deposited in KEI. Storozhenko et al. (1994) examined *Tetrix japonica* and *macilenta* from Korea. Huh and Kwon (1995) listed 25 Caeliferans from Is. Jejudo, among which *Formosatettix larvatus* was newly recognized. Kostia (1995) revised six species of North Korean Tetrigids including male description of *Formosatettix slivae*. Kostia (1996) revised five species of Aemodogryllinae, among which three were newly recognized: *Tachycines asynamorus, Paratachycines ussuriensis* and *boldyrevi*. Moon and Yoon (1996) noted 37 species of Korean Caelifera deposited in KEI. Bae (1998) published the color book containing 46 Orthoptera species.

Since 2000, I was focused on identification of the Korean Orthoptera and have been prepared this review. Paik and Storozhenko (2000) proposed the synonym of *Formosatettix slivae* with *Tetrix subulata*. Ichikawa (2001) noted *Oecanthus euryelytra* and *Trigonidium japonicum* distribute in Korea. Kim and Kim (2001) revised 13 species of Tettigoniinae, among which *Metrioptera monticola* was newly described and *Tettigonia ussuriana* was newly recognized. Kim and Kim (2001) revised eight Phaneropterines, among which *Psyrana japonica* was newly recognized from Is. Jejudo. Kim and Kim (2001) revised eight species of four subfamilies in Tettigoniidae, among which *Mecopoda niponensis* and *Cosmetura fenestrata* were newly recognized. Kim and Kim (2002) revised five *Conocephalus* spp., among which *bambusanus* was newly recognized. Kim and Kim (2002) revised eight Stenopelmatoids, among which *Nippancistroger testaceus* and *Anoplophilus acuticercus* were newly recognized. Kim and Kim (2002) revised five species of Copiphorini, among which *Xestophrys javanicus* was newly recognized. Kim and Kim (2003) recognized *Podisma aberrans* and *Miramella solitaria* new to Korea. Storozhenko and Paik (2003) newly described *Nippancistroger koreanus* from Is. Jejudo. Kim and Kim (2004) revised 12 Tetrigids, among which *Tetrix silvicultrix* and *minor* were newly recognized. Storozhenko (2004) noted 43 Ensiferans distribute in Korea, among which *Pteronemobius gorochovi* was newly described based on the Russian and Korean specimens. Kim and Kim (2005) revised five species of Acridinae. Kim and Kim (2005) revised 11 species of Oedipodinae, then *Microgastrimargus taeguensis* synonymized with *Oedaleus infernails*. Kim and Kim (2005) revised five species of Chrysochraontini, among

which *Chrysochraon dispar major* was newly recognized from North Korea and *Euthystira pavlovskii* was synonymized with *Mongolotettix japonicus*.

In this historical review, ca. 293 nominal species or subspecies are referred or described in Korean fauna, four main periods are divided (Table 1). This periodical distinctions of entomological research had been early presented in Korea (Park 1976, Kim et al. 1988), which were generally corresponded with social and political events in Korea.

Table 1. Orthopterists and number of nominal species in four historical periods.

Periods	Important authors published the literatures	Species added
1869−1909 (Open a port)	Walker F., Burr M., Bolívar I., Rehn J.A.G.	26
1910−1945 (Colonialization)	Ikonnikov N., Doi H., Mori T., Okamoto H., Furukawa H., Shiraki T., Uvarov B.P.	130
1946−1969 (Liberation & Korean war)	Bey−Bienko G., Mishchenko L.L., Tsyplenkov Ye.P., Yamasaki T., Cho Poksung (趙福成), Lee Byungjun (李秉準), Sohn Youngtai (孫英兌)	41
1970−recent (Economic growth)	Rentz D.C.F., Storozhenko S.Yu., Gorochov A.V., Kostia D., Ichikawa A., Lee Hyeongsik (李衡殖), Lee Seungmo (李承模)	96
Sum	more than 25 Orthopterists	ca. 293

The reason for why the Orthoptera not so well attracted by Korean peoples in the past history which seemed due to that Orthopterans are not so problematic insects in Korea and the people's peaceful viewing with them. Conversely, the Korean Orthoptera fauna has been poorly studied by the people, only a few Korean entomologists including Cho (1959, 1969) had provided relatively considerable works. The main purpose of this study is to provide a comprehensive taxonomic review of the Orthopterans occurring in Korea. I here provide the keys, diagnoses and descriptions, specimens and literature data, photos and drawings. It would be give a contribution to the biological knowledge around this peninsula, as well as a consideration to one of discernable insect orders consists of National Biodiversity of Korea.

2. Materials and methods

Studied specimens were mostly kept in the collection of Dept. Biology of Sungshin Women's University curated by Prof. Kim Jinill since early 1980. In the course of this study newly collected many specimens by myself are also deposited in there. Other depositories are also visited and listed in abbreviation.

To observe specimens, the Leica zoom 2000 or Leica L2 stereoscope are used, but the others were also used depending on the circumstances. External morphology and anatomical characters are studied including the male genitalic structure which was removed from the abdomen and dipped in 10 percent KOH solution. Measurements are given by digital slide caliper made by Mitutoyo Corporation (Model CD-15CP). Body length (BL) is measured from the apex of head to abdominal end except for the long ovipositor of female. Head to tegminal length (HTL) is convenient to recognize macropterous species, besides in parapterous species, ie. they have hind wings longer than tegmina, head to wings length (HWL) was measured. Pronotal length (PL), tegminal length (TL), hind femoral length (HFL) and ovipositor length (OL) are indicated too. In the species with large sexual difference, each data given to as ♂ ♀, but in the case of small difference which is not separately indicated. In the genera with more than two species, the measurements of which are compared in the tables.

On the higher system of Orthoptera, there are a lot of efforts have been made up to date, which is in sometimes either progressive or conservative trends (Dirsh 1975; Kevan 1977; Kevan 1982; Gorochov 1995; Otte 1994-2000). But because of the rapid improvements of the knowledge on the Orthoptera, practically there is no one satisfactory higher system accompanies with the prompt advances. Here I accord with the Orthoptera Species File Online: http://orthoptera.speciesfile.org/HomePage.aspx, that is worldwide data base system mostly useful.

According to the systematic categories, a total of confirmed 145 Korean species are arranged in the taxonomic accounts. The keys are provided as in part of lower categories for the convenience of easy recognition for each small units. The categories higher than genera, ie. to the families, subfamilies or tribes the authors and original designations are omitted, which are widely accepted and there are some cases of its priorities unclear. To the genera original source and type species are given. To the species including original source and type data, only mentioned synonyms were listed in Korean fauna for the conciseness although there

are a lot of world synonymies. Specimen data are basically all inputted to the Excel program (Micro Soft Inc.), a part of one already published, the latter one added here. The descriptions are provided for each species. Also additional taxonomic and biological remarks are presented.

Although this study is only focused on the external recognition, here I adopt the opinions that presence of beings the subspecies, sibling species, species complex, cryptic species or allopatric species referred on the all evidence as far as, even there is a difficulty to morphologically not easily distinguished species.

Following the abbreviations are used in the text.

Material depositories: <SSU> Sungshin Women's University, Seoul; <ADU> Andong University, Andong; <DCU> Daegu Catholic University, Gyeongsan; <GSU> Gyeongsang University, Jinju; <KU> Korea University, Seoul; <NIAST> National Institute of Agricultural Science and Technology, Suwon; <NSM> National Science Museum, Daejeon; <EU> Natural History Museum of Ewha Women's University, Seoul; <SNU> Seoul National University, Seoul; <SWU> Seoul Women's University, Seoul; <KIB> Korean Institute of Biospeleology, Seoul; <YNU> Yeongnam University; Gyeongsan; <NHM> The Natural History Museum, London, UK; <HNHM> Hungarian Natural History Museum, Budapest, HUNGARY; <MNHU> Museum für Naturkunde der Humbolt Universitat, Berlin, GERMANY.

Korean Provinces: <HB> Hamgyeongbuk-do; <HN> Hamgyeongnam-do; <RG> Ryanggang-do; <JG> Jagang-do; <PB> Pyeonganbuk-do; <PN> Pyeongannam-do; <HH> Hwanghae-do; <GW> Gangwon-do; <GG> Gyeonggi-do; <CB> Chungcheongbuk-do; <CN> Chungcheongnam-do; <GB> Gyeongsangbuk-do; <GN> Gyeongsangnam-do; <JB> Jeollabuk-do; <JN> Jeollanam-do; <JJ> Jeju-do.

3. Taxonomic accounts

Order Orthoptera 메뚜기목

Synonymous with Saltatoria, the jumping insects. Generally moderate to large sized insects with mandibulate mouth parts. Prothorax large, pronotum typically produced backwards. Hind legs nearly enlarged and modified for leaping. Leathery tegmina when present, in the form of parchment-like; costal vein almost always submarginal and not reach the apex of tegmen. Hind wings when developed, fan-like. Male genitalic parts virtually symmetrical and concealed when not in use by the enlarged subgenital plate. Female with a well developed valvular ovipositor derived from eighth and ninth abdominal sterna. More than 20,000 species present worldwide.

Key to Suborders of Orthoptera

1. Antennae hair-like, longer than body (more than 30 segments); hind femur without dorsal carina; ovipositor sword-, needle-, or sickle-shaped ····· **Ensifera** (p. 8)
- Antennae thick, shorter than body (less than 30 segments); hind femur with clear dorsal carina; ovipositor shortly hook-shaped ····· **Caelifera** (p. 199)

Suborder Ensifera 여치아목

Synonymous with Grylloptera. Antennae fine, thread-like and simply longer, always composed of very numerous (more than 30), short, feebly distinguishable segments which at least as long as, or usually longer than body. Fore tibiae generally with tympana for hearing. Basal veins of tegmen usually modified for stridulation in male. Phallic structures of male lack a true intromittent organ. Ovipositor typically sickle-, dagger-, sword- or needle-shaped, rarely absent. More than 8,500 species present worldwide.

Key to Superfamilies of Ensifera

1. Tarsal formula 3-3-3 ····· **Grylloidea** (p. 121)

– Tarsal formula 4–4–4 ····· 2

2. Fore tibia without tympana; male tegmina without stridulatory apparatus; tarsi compressed, third tarsomere simple; male cerci long and flexible; ovipositor composed of two pairs of valves ····· **Stenopelmatoidea** (p. 9)

– Fore tibia with tympana; male tegmina with stridulatory apparatus; tarsi depressed, third tarsomere heart–shaped; male cerci short and concrete; ovipositor composed of three pairs of valves ····· **Tettigonioidea** (p. 29)

Superfamily Stenopelmatoidea 어리여치상과

Synonymous with Gryllacridoidea, most primitive group among Orthoptera (Kevan, 1982). Eyes small and widely separated. Tarsi four–segmented. Front tibiae lack auditory organs. Tegmina when present, lack stridulatory ridges. Cerci rather long and flexible. Ovipositor fairly long and saber–like, composed of all six valves well developed. About 1,000 species belonging 170 genera present throughout the world.

Key to Families of Stenopelmatoidea

1. Body cylindrical with plain dorsum; fastigium of vertex wider than scape; tarsi depressed with well developed pulvilli ····· **Gryllacrididae** (p. 9)

– Body compressed with humped dorsum; fastigium of vertex narrower than scape; tarsi compressed without pulvilli ····· **Rhaphidophoridae** (p. 13)

Family Gryllacrididae 어리여치과

As known as leaf–rolling crickets. Anterior coxae spined. Tarsal segments depressed. Tympana absent. Tegmina variable, but always stridulatory apparatus absent. Tegmina with anal veins parallel to corresponding wing margin. Cerci not annulated. Ovipositor usually long and narrow, with lateral superior valves concealing the others, in nymphs that very strongly upcurve like a tail. More than 550 species known in the tropical world.

Subfamily Gryllacridinae 어리여치아과

Characters are samely given in the family.

Key to Species of Gryllacrididae

1. Body dark brown; tegmina apterous (Fig. 1); hind tibia with a strong dorsal inner spine at mid (Fig. 9) ····· ***Nippancistroger testaceus*** (p. 9)
− Body yellowish green; tegmina macropterous (Fig. 2); hind tibia without a strong dorsal inner spine ····· ***Prosopogryllacris japonica*** (p. 12)

Genus *Nippancistroger* Griffini 민어리여치속

1913. Atti della Società italiana di scienze naturali, 51: 241 (pro subgenus *Neanias*). Type species: *Eremus testaceus* Matsumura and Shiraki 1908.

Diagnosis. Apterous. Only characterized by the single extremely long spur on the inner upper margin of the hind tibia (Tinkham 1936). Four species are known in the East Asia.

1. *Nippancistroger testaceus* (Matsumura and Shiraki 1908) 민어리여치 (Figs. 1, 9)

Eremus testaceus Matsumura and Shiraki 1908. Jour. Coll. Agric. Tohoku Imp. Univ. 3(1): 74, pl. 2, Fig. 21a−b. "Japan: Kagoshima". Syntype in Hokkaido University, Sapporo.

= *Nippancistroger koreanus* Storozhenko and Paik 2003. Far Eastern Entomologist, 123: 7, Figs. 1−3. "Korea: Is. Jejudo". Holotype ♀ in Institute of Biology and Pedology of the Far East Branch of the Russian Academy of Sciences, Vladivostok. **syn. nov.**

Korean records. ***Nippancistroger testaceus***: Kim and Kim 2002: 142, Figs. 1, 9, 10, 11 (taxonomy).

Specimens examined. **<GW>** 5♂5♀, Malaise trap, Mt. Gyebangsan Jinbu−myeon Pyeongchang, 16 viii−27 ix 2000, Ku DS (SSU); **<GG>** 5♂1♀, Malaise trap, Mt. Chukryeongsan Sudong−myeon Namyangju, 16 viii−14 x 1999, Ku DS (SSU); 1♂, Anyang arboretum Anyang, 27 ix 1997, Yoon GS (SNU); 1♂, Batjireum beach Jinri Isl. Deokjeokdo Ongjin Incheon, 14 ix 2001, Lee HW (SSU); 1♂1♀, Is. Ganghwado, 25 ix 2006, Seong KS (SSU); **<CN>** 1♀, Malaise trap, Mt. Chilgapsan Daechi−myeon Cheongyang, 16 viii−27 ix 2000, Ku DS (SSU); 1♀, Malaise trap, Mt. Wolmyeongsan Biin−myeon Seocheon, 16 viii−27 ix 2000, Ku DS (SSU); 2♀, Malaise trap, Mt. Oseosan Cheongso−myeon Boryeong, 29 vi−9 ix 1999, Ku DS (SSU); 1♀, Baekripo beach Taean, 30 ix 2006, Kim TW (SSU); **<GB>** 1♂1♀, Huibangsa Mt. Sobaeksan Sucheol−ri Punggi−eup Yeongju, 5 ix 2000, Kim

TW (SSU); 1♀, Sangchon-myeon Yeongdong, 25 vii 2001, Lee HA (SSU); **<GN>** 1♀, Mt. Yeohangsan Osilgol Yeoyang-ri Jinjeon-myeon Happo-gu Masan, 12-13 viii 1999, Kang GH (GSU); **<JB>** 4♂3♀, Malaise trap, Mt. Naejangsan Jeongeup, 24 viii-28 ix 2000, Ku DS (SSU); **<JN>** 1♂, Hohyeong-ri Goheung, 26 vii 2000, Lee YB (NIAST); 1♂, Mt. Baegunsan Okryong-myeon Gwangyang, 24 viii 1999, Kim TW (SSU); 1♂2♀, Malaise trap, Mt. Mudeungsan Gwangju, 9 viii-28 ix 2000, Ku DS (SSU); 1♀, Piagol Mt. Jirisan Naedong-ri Toji-myeon Gurye, 28 vii 1997, Lee SH (SNU); **<JJ>** 1♀, in fallen leaves, Halim-eup Bukjeju, 12 viii 2000, Kang TH (SSU); 1♂, Andeokgyegok Gamsan-ri Andeok-myeon Namjeju, 20 vii 2001, Lee YB (NIAST); 1♂, Seoguipo, 10 vii 1994, An SL (NSM).

Description. **<♂>** Body coloration shining variable to bright brown or darkish brown, posteriorly more darker. Head wider than pronotal width. Antennae much longer than body length, more than five times. Vertex rounded, without projecting tubercle. Distance of antennal sockets wider than the horizontal diameter of an eye. Mouth parts conical. Pronotum as long as wide in dorsal view, anterior and posterior margins truncated; longitudinal carinae absent, two transverse sulci present. Paranotum with anteriorly inclined posterior angle, the length longer than the deep. Fore coxae with basal spines. Fore femora without spines. Fore tibia with five pairs of ventral movable spines. Tegmina and wings absent, reduced as a shape of very small nipple. Middle femora without spine. Middle tibia with five pairs of ventral movable spines and a dorsal inner apical spine. Hind femur with ventral apical spines, 5-6 on inner carina, 6-7 outer carina. Hind tibia with a large dorsal inner spine (sometimes near basally another small spine) on mid and six (or rarely seven) small dorsal outer spines (Fig. 9). Second and thirds abdominal tergites each with a pair of stridulatory rows denticulated laterally. Last abdominal tergite with small median tubercle, lateral lobes forming a pair of hook outwardly. Cercus elongated conical, weakly incurved, five times longer than middle width. Subgenital plate shorter than width, with smoothly emarginated hind margin, very small nipple-shaped styli present. Inner genitalia membranous. **<♀>** Slightly larger and robuster than male. Seventh abdominal sternite with a minute pair of hole inwardly. Ovipositor slightly recurved, as long as hind femur, without serration; apices of dorsal valves straight, ventral valves weakly truncated. Subgenital plate truncated, not covering base of ovipositor. **<Measurements>** BL 13.5-18.0; PL 3.2-4.0; HFL 7.8-9.5; OL 7.5-9.0.

Distribution. Korea, Japan.

Remarks. Distinguished character of the *N. koreanus,* ie. hind tibia with a large dorsal inner spine is already assigned to the *N. testaceus* ssp. *drouarti* (see Griffini 1914; Karny 1935). But the *drouarti* was synonymized with *testaceus* by Ichikawa (2001), accordingly this new synonymy is proposed automatically.

Genus *Prosopogryllacris* Karny 어리여치속

1937. Genera Insectorum, 206: 154. Type species: *Gryllacris personata* Audinet-Serville 1831.

Diagnosis. Tegmina macropterous, hyaline. Female ovipositor as long as body length. 18 species are known in Africa, tropical Asia and Pacific.

2. *Prosopogryllacris japonica* (Matsumura and Shiraki 1908) 어리여치 (Fig. 2)

Gryllacris japonica Matsumura and Shiraki 1908. Jour. Coll. Agric. Tohoku Imp. Univ. 3(1): 70, pl. 2, Fig. 18a-c. "Japan: Gifu and Okayama". Syntype in Hokkaido University, Sapporo.

Korean records. ***Gryllacris japonica***: Doi 1932: 38 (Mt. Hanamsan); Cho 1958: 32 (sexual dimorphism); Cho 1959: 167, Fig. 43 (manual); Cho 1969: 763, pl. 51 (illustrated encyclopedia); Ju 1969: 21 (North Korean check list: 귀뚜라미여치); ***Prosopogryllacris japonica***: Kwon and Huh 1994: 48 (Korean check list); Kwon et al. 1996: 103 (Korean species list); Bae 1998: 118; Kim and Kim 2002: 143, Fig. 2 (taxonomy).

Specimens examined. **<CN>** 1♀, last instar nymph, 4 vii 2000, Geumji-sa Mt. Wolmyeongsan Biin-myeon Seocheon, Kang TH (SSU); 1♂, larva, Mt. Chilgapsan Daechi-myeon Cheongyang, 26 xi 2000, Kang TH (SSU); **<GN>** 1♂, Mt. Muisan Munsiam Museon-ri Sanri-myeon Goseong, 10-11 viii 1999, Sohn JH (GSU); 1♀, light trap, Mt. Mangunsan Namsang-ri Seo-myeon Namhae, 18-19 ix 1998, Park JS (GSU); **<JN>** 1♂, Piagol Mt. Jirisan Naedong-ri Toji-myeon Gurye, 10 viii 1978, BE3 (SNU); 1♂, Hwaeomsa Hwangjeon-ri Masan-myeon Gurye, 26 viii 1970, B3 (SNU).

Description. **<♂>** Body coloration yellowish green. Fore coxae with basal spine. Fore and mid tibiae with five pairs of raptorial ventral spines. Tegmina macropterous, longer than abdominal end, with pale green color, its median part rather pale brown. Hind wings transparent, slightly longer than tegmina. Hind femur with ventral spines, 2-3 on inner carina, 5-6 outer carina. Hind tibia with 6-8 pairs of dorsal spines, without more larger spine. Hind basitarsus shorter than remaining three segments combined length. All tarsal claws symmetrical, not bifurcated. Second and thirds abdominal tergites each with a pair of

stridulatory rows denticulated laterally. Last abdominal tergite largely rounded and divided with two lobes by median groove, concealed small inner projections. Cercus slender, slightly incurved, tapering apically, as long as ten times of basal width. Subgenital plate shorter than the width, hind margin weakly emarginated. Small styli present, four times longer than basal width. <♀> Ovipositor slightly recurved, longer than hind femora; apices of dorsal valves clearly truncated, ventral valves straight. Seventh abdominal sternite with a median tubercle posteriorly projected. Subgenital plate shorter than the width, its hind margin triangular with a median emargination at apex. **<Measurements>** BL 24.0−30.0; PL 5.7−7.0; TL 22.0−25.5; HFL 15.5−17.0; OL 24.5−25.0.

Distribution. Korea, Japan.

Family Rhaphidophoridae 꼽등이과

As known as camel− or cave crickets. All members completely apterous, lack detectable stridulatory or auditory apparatus, and usually have greatly elongated, or sometimes very stout hind legs. Antennae arise close together on the head. All tarsi strongly compressed laterally and completely or virtually without pulvilli. More than 300 species known in the world.

Key to Subfamilies of Rhaphidophoridae

1. Body cylindrical with short and robuster appendages; head globular; ♂ subgenital plate with styli (Fig. 14); ovipositor with ventral serration (Fig. 12) ····· **Troglophilinae** (p. 13)
− Body compressed with long and slender appendages; head oval; ♂ subgenital plate without styli; ovipositor without distinct serration ····· **Aemodogryllinae** (p. 15)

Subfamily Troglophilinae 산꼽등이아과

Remarks. Since Karny (1937) put the genus *Anoplophilus* in the Troglophilinae, its position quite ambiguous. Furukawa (1938) did it in the Anoplophilinae without definition, Gorochov (2001) pointed out the positional problem and suggested that the association with extinct fossilized Protoglophilinae which has been accepted by Ishikawa (2002); Sugimoto and Ichikawa (2003).

Genus *Anoplophilus* Karny 산꼽등이속

1931. Lingnan Sci. J. Canton, 10: 462. Type species: *Anoplophilus acuticercus* Karny 1931.

Diagnosis. General appearance relatively concise, hind knees not or hardly over reaching the tip of abdomen. Body with a lac-like gleam. Head rather small. Fastigium of vertex narrow, with a deep longitudinal sulcus. Scape enlarged, nearly touching the opposite one. Frons about twice as wide as high. Pronotum semicylindrical, with low lateral lobes. Wings absent. Legs strong and comparatively short, all without any movable genicular spines. Hind tibiae almost without spines below, above on either side with about equally large spines which are distinctly separated from one another and not crowded, with the exception of here and there a very minute secondary spinelet intercalated between two large ones. No movable spines except the apical spurs. Basitarsus of hind legs above with a single, median longitudinal row of minute spineletes and with a strong, sharply-pointed apical tooth. Cerci and styles well developed in the male. 18 species were described only in Japan.

3. *Anoplophilus coreanus* sp. nov. 산꼽등이 (Figs. 3, 10-14)

Specimens examined. **<Holotype>** **<GW>** 1♀, Guryongsa Mt. Chiaksan Wonseong, 29 vii 1975, Kim JI (SSU); **<Paratypes>** **<GW>** 1♂, ibid., 29 vii 1975, Kim JI (SSU); 1♂, Mt. Hambaeksan Taebaek, 11 viii 1999, Kim TW (SSU); 1♂, Geomun-ri Jinbu-myeon Pyeongchang, 30 vi 1985, Kim YS (SSU); **<GN>** 1♂, Ssanggyesa Mt. Jirisan Hwagye-myeon Hadong, 31 vi 2001, Kim TW (SSU); 1♂, Sacheon, 5 viii 1996, Park ES (YNU); **<JB>** 1♂, Simwon-ri Sannae-myeon Namwon, 25 vi 1993, Park HD (SNU); **<JN>** 1♂, Piagol Mt. Jirisan Naedong-ri Toji-myeon Gurye, 24-27 vi 1996, Anonym (SU); 1♀, ibid. 29 ix 2001, Kim TW (SSU); 2♂2♀, Mt. Baegunsan Okryong-myeon Gwangyang, Im NG et al. (SNU); 1♂, Yeonhacheon Mt. Jirisan Toji-myeon Gurye, 28-29 vii 1992, Anonym (GSU); 1♂, Seonbisaem Mt. Jirisan Toji-myeon Gurye, 29-30 vii 1992, Anonym (GSU).

Description. **<♀>** Body coloration mottled dark brown with luster; dorsal median body particularly bright yellowish in longitudinal band; a lot of small bright creamy spots scattered; ventral body more bright yellow; appendages also marmorated. Head globulous, slightly higher than wide. Antennae longer than body length, with annulation; antennal sockets touched eyes, as wide as the vertical diameter of an eye. Fastigium of vertex clearly protruding, widely separated by median furrow, its apices whitish, obtuse. Pronotum slightly wider than long, with indistinct lateral impressions; anterior margin truncated,

posterior margin weakly convex; pronotum shorter than meso−, metanotum combined length. Fore coxa with a basal spine. Fore femur without spine, or denticle. Fore knee without spine. Fore tibia with four pairs of ventral spines. Middle knee with a small fixed inner spine. Middle tibia with a small dorsal inner spine a thirds from the base, and four pairs of ventral spines. Hind femur shorter than body length, with a small spine on outer ventral carina near apex and 2−3 small spines on inner ventral carina near apex. Hind tibia with 12−16 pairs of dorsal spines equally spaced (Fig. 10) and two pairs of ventral spines apically (sometime inner basal one absent). Hind basitarsus (Fig. 11) thick and compressed, longer than inner largest dorsal spur, shorter than remaining three segments combined length, with a stout dorsal spine and near basally another small spine (sometimes two). Last abdominal tergite with median notch ∧−shaped. Epiproct short triangular. Cercus elongated, conical, five times longer than the basal width. Subgenital plate obtuse triangular, shorter than basal width (Fig. 13). Ovipositor longer than middle femur, shorter than hind femur, moderately recurved, sickle−shaped; ventral valves with distinct seven serration from the apex (or rarely eight vestigial); dorsal valves slightly longer than ventral ones, with delicate dentation from the apex to mid (Fig. 13). **<♂>** Slightly smaller than female. Cercus simple conical with a large number of granules and short hairs, five times longer than basal width. Subgenital plate roundly convex, shorter than basal width, with transverse groove near middle, the hind margin smoothly emarginated in median part; styli very small, conical, two times longer than basal width (Fig. 14). Inner genitalia membranous. **<Measurements>** BL ♀ 16.6−22.2, ♂ 14.5−18.5; PL ♀ 4.3−5.0, ♂ 3.5−4.2; HFL ♀ 12.2−14.1, ♂ 11.6−12.3; OL 8.5−9.3.

Distribution. Korean endemic regarded.

Remarks. First record of *Anoplophilus* sp. near *acuticercus* in Korea is corresponded to this (Kim and Kim 2002). By the redescription of *A. acuticercus* by Ishikawa (2002) and the voucher specimens presented by him, this could be differentiated from that by the more numbers of serration on ventral apex of ovipositor and the color pattern of median dorsal body. In his key, the *A. coreanus* seems closely to the *A. tsurugisanus* described from Shikoku comparing with ovipositor, however, this new species has more number of dorsal spines on hind tibia (Fig. 10), than all known Japanese *Anoplophilus* spp.

Subfamily Aemodogryllinae 꼽등이아과

Fore knee with a large articulate spine, proximally without or with a small immovable spine. Mid knee with a pair of large articulate spines on both sides. Hind basitarsus not wider than following segments, dorsally with 1−4 small spines. Genital plate of male without rods. Genitalia of male membranous; ventral side with two lateral processes, dorsal side with three lateral processes, middle process often with pair of sclerotized lateral plates.

Key to Species of Aemodogryllinae

1. Tubercles of vertex larger, rather pointed; fore knee with a small fixed inner spine; hind tibia with relatively sparse dorsal spines ····· 2
− Tubercles of vertex shorter, rounded; fore knee without inner spine; hind tibia with numerous dense dorsal spines ····· 4
2. Around eyes with distinct longitudinal stripes; hind tibia with equally arranged 22−32 dorsal spines ····· ***Diestrammena unicolor*** (p. 17)
− Around eyes without longitudinal stripes; hind tibia with 40−70 dorsal spines, clearly gathered into each groups of 2−10 spines ····· 3
3. Body and legs speckled; mid tibia with one outer and one inner ventral spines; ♀ subgenital plate with median notch ····· ***Diestrammena asynamora*** (p. 19)
− Body and legs shining brown; mid tibia with two outer and 1−2 inner ventral spines; ♀ subgenital plate triangular ····· ***Diestrammena coreana*** (p. 21)
4. Body smaller with short appendages; thoraxes shining black; hind femur without ventral spines; ♂ phallus with mid process covered by short sparse hairs (Fig. 18) ····· ····· ***Paratachycines ussuriensis*** (p. 25)
− Body larger with long appendages; thoraxes dirty pubescent; hind femur with 1−6 ventral spines; ♂ phallus with mid process covered by clear dense bristles (Fig. 19) ····· ····· ***Paratachycines boldyrevi*** (p. 27)

Genus *Diestrammena* Brunner von Wattenwyl 꼽등이속

1888. Verhandlungen der Kaiserlich−Königlichen Zoologisch−Botanischen Gesellschaft in Wien, 38: 298. Type species: *Locusta* (*Rhaphidophorus*) *marmorata* de Haan 1842.

Diagnosis. Fastigium of vertex large, separated, Fore knees with small fixed inner spine. Fore tibia and mid tibia with two ventral spurs and a spine between them. Hind femora with 6−12 spines on inner lower carina basally. Hind tibia on both sides with 14−32 equal,

evenly arranged dorsal spines. Hind basitarsus with dorsal spine. Hind margin of tergite VII of abdomen rounded. Middle process of phallus of male divided into two plates, arcuate laterally, dorsal plate well sclerotized. 41 species are known in the world, the measurements of three Korean *Diestrammena* compared in Table 2.

Subgenus *Aemodogryllus* Adelung 장수꼽등이아속

1902. Annuaire du Musée Zoologique de l'Académie Impériale des Sciences de St. Pétersbourg, 7: 66. Type species: *Aemodogryllus brunneri* Adelung 1902.

Diagnosis. Marmoreal pattern usually unclear. Hind basitarsus smooth beneath. Male pseudosternite usually quadrangular, lateral projections of dorsal phallic lobe not evident (Sugimoto and Ichikawa 2003).

4. *Diestrammena* (*Aemodogryllus*) *unicolor unicolor* Brunner von Wattenwyl 1888 장수꼽등이 (Figs. 4, 15)

Diestrammena unicolor Brunner von Wattenwyl 1888. Verhandlungen der Kaiserlich-Königlichen Zoologisch-Botanischen Gesellschaft in Wien, 38: 299. "Russia: Vladivostok". Syntype in Naturhistorisches Museum Wien.

Diestrammena goliath nec Bey-Bienko 1929. Annals and Magazine of Natural History, London, 10(4): 545, Fig. 2. "Japan: Shikoku". Holotype ♂ in Zoological Museum, Tomsk State University.

Korean records. ***Diestrammena goliath***: Sohn 1957: 15; Sohn 1963: 2, Figs. 1C, 2C (taxonomy); Cho 1969: 765, pl. 52, text-Fig. 14(3), 15(1), 16(1) (illustrated encyclopedia); ***Diestrammena unicolor***: Kostia 1996: 106, Figs. 1-8, 9-15, 27; Kwon et al. 1996: 103 (Korean species list: 민꼽등이); Kim and Kim 2002: 144, Fig. 4 (taxonomy); Storozhenko 2004: 183, Figs. 466-474.

Specimens examined. <GW> 2♂9♀, Mt. Taebaeksan Taebaek 13 viii 1999, Kim TW (SSU); 1♀, Mt. Hambaeksan Taebaek, 14 viii 1999, Kim TW (SSU); 3♂, Buyeongyegok Samsan-ri Yeongok-myeon Gangneung, 18-20 viii 2001, Kim JI et al. (SSU); 1♂, Yumogjeonggul cave Panun-ri Jucheon-myeon Yeongwol, 13 ix 2001, Choi YG (KIB); 1♀, Solgaengegul cave Changwon-ri Nam-myeon Yeongwol, 14 ix 2001, Choi YG (KIB); 1♂, Baramgul cave Chang-ri Mitan-myeon Pyeongchang, 21 ix 1998, Choi YG (KIB); 1♂, Gwaneumsa Mt. Baegdeoksan Suju-myeon Yeongwol, 26 viii 2001, Kim SY et al. (SSU); 1♂, pitfall trap, Sambongyaksu Mt. Odaesan Gwangwon-ri Nae-myeon Hongcheon, 10 viii

1997, Kim JI (SSU); 1♂1♀, Baegdamsa Mt. Seoraksan Yongdae-ri Buk-myeon Inje, 29 viii 1984, Nam SH et al. (KU); 1♀, Gachilbong Yanggu, 24 vii 1981, Han HY (KU); **<GG>** 1♀, Gonjiam Silchon-myeon Gwangju, 13 viii 1996, Im SY (SSU); 1♂, Mt. Chukryeongsan Sudong-myeon Namyangju, 16 vi 1999, Ku DS (SSU); 1♀, Mt. Cheonggyesan Wonji-dong Seoul, 14 ix 1985, Min GM (SSU); 1♂, ibid. 18 vii 1993, Kwag EH (SSU); 1♂, ibid. 8 x 1995, Lee SA (SSU); 1♀, ibid. 13 viii 1998, Kim TW (SSU); 1♂, Mt. Seodogsan Gwangmyeong, 15 viii 2001, Kim TW (SSU); 1♀, Samga-ri Yongin, 28 ix 1995, Kim MS (SSU); 1♀, Mugapsa Paju, 15 ix 1991, Kim JI (SSU); 1♀, Mt. Gwanaksan Seoul, 20 viii 1992, Kim GY (SSU); 1♀, Gugi-dong Seoul, 9 x 1981, Park GY (SSU); 1♀, Mt. Dobongsan Seoul, 1 ix 1993, Kim SY (SSU); **<CB>** 2♂1♀, alt. 800m, Hwajangam Mt. Taehwasan Osa-ri Yeongchun-myeon Danyang, 27 viii 2001, Kim SY et al. (SSU); 1♂, Mt. Hwangaksan Gungchon-ri Sachon-myeon Yeongdong, 4 viii 2001, Kim TW (SSU); **<GB>** 1♂, Malaise trap, Mt. Baegamsan Onjeong-myeon Uljin, 11 viii-16 ix 1999, Ku SD (SSU); 1♂, Huibangsa Mt. Sobaeksan Sucheol-ri Punggi-eup Yeongju, 6 ix 2000, Kim TW (SSU); **<JB>** 1♀, Mt. Naejangsan Jeongeup, 3 viii 1974, Kim JI (SSU); 1♀, ibid. 2 x 1997, Baek MI (SNU); 1♀, Yongdong-myeon Jeongeup, 6 x 1998, Jeong YW (SSU); **<JN>** 1♂2♀, Baegyangsa Mt. Baegamsan Yaksu-ri Bukha-myeon Jangseong, 23 viii 1999, Kim TW (SSU); 8♀, Piagol Mt. Jirisan Naedong-ri Toji-myeon Gurye, 29 ix 2001, Kim TW (SSU); 2♂3♀, Mt. Baegunsan Okryong-myeon Gwangyang, 24 viii 1999, Kim TW (SSU).

Description. <♂> Body coloration dark shining brown, anteriorly more darker. Head vertical, oval-shaped. Antennae much longer than body length. Fastigium of vertex with median longitudinal furrow, divided with two tubercles, its apex pointed. Fastigium of frons weakly present. Antennal socket slightly wider than the horizontal diameter of an eye, the distance between them very narrow each sides of median ocellus. Around eyes with longitudinal stripes. Pronotum dark shining black, its anterior margin truncated, posterior margin roundly convex, without distinct carinae or sulci. Fore coxae with basal spines. Fore femur without spine, fore knee with small fixed inner spine and large movable outer spine. Fore tibia with two pairs of ventral spines. Meso-, metanotum shorter than pronotum. Middle knee with a pair of large inner and outer spines. Middle tibia with two pair of ventral spines. Hind femur slightly longer than body length, with 8-10 ventral spines on inner carina apically; knee with a small fixed inner spine. Hind tibia with 23-26 ungrouped dorsal spines. Hind basitarsus with a dorsal spine apically, as long as inner dorsal longest spur. Cerci slender,

tapering apically, shorter than middle femur. Subgenital plate short trapezoidal, hind margin truncated. Phallic lobes composed of two pairs of lateral conical ones and median rectangular one; lateral lobes with short hairs; median lobe with median small notch. Pseudepiphallus hat-shaped with denticulation, its posterior margin roundly concave (Fig. 15). **<♀>** Slightly larger than male. Ovipositor slightly recurved, ventral apex with undistinguishable serration. Cercus shorter than ovipositor. Subgenital plate triangular, as long as the basal width, its apex rather pointed.

Distribution. Korea, Northeast China, Russian Far East (ssp. *brunneri*: Hokkaido).

Subgenus *Tachycines* Adelung 꼽등이아속

1902. Annuaire du Musée Zoologique de l'Académie Impériale des Sciences de St. Pétersbourg, 7: 56. Type species: *Tachycines asynamorus* Adelung 1902.

Diagnosis. Fastigium of vertex grooved dorsally, apex projecting as two tubercles. Fore femur with a long movable spine on outer side. Hid tibia with numerous dorsal spines which grouped 2-10 each. Basitarsus of hind legs as long as other segments together.

5. *Diestrammena* (*Tachycines*) *asynamora* (Adelung 1902) 알락꼽등이 (Figs. 5, 16)

Tachycines asynamorus Adelung 1902. Annuaire du Musée Zoologique de l'Académie Impériale des Sciences de St. Pétersbourg, 7: 59, pl. 58, Figs. a-b. "Russia: St. Petersburg". Lectotype ♂ in Zoological Institute of the Russian Academy of Sciences, St. Petersburg.

Diestrammena japanica nec Blatchely 1920. Orthoptera of northeastern America: 611, Fig. 205. Substitute name for *Locusta* (*Rhaphidophorus*) *marmorata* de Haan 1842. In Temminck. Verhandelingen over de natuurlijke geschiedenis der Nederlandsche overzeesche bezittingen. Zoologie: 177. "Japan". Type lost.

Korean records. ***Diestrammena marmorata***: Doi 1933: 89; Haku 1937: 73 (Mt. Palgongsan); Sohn 1957: 14; Sohn 1963: 1, Figs. 1A, 2A; ***Diestrammena japonica*** [!]: Cho 1959: 168, Fig. 44 (manual); Cho 1965: 10 ("Dagelet"); Cho 1969: 764, pl. 52, text-Fig. 14(1), 15(3), 16(3) (illustrated encyclopedia); Ju 1969: 21 (North Korean check list); Kwon and Huh 1994: 48 (Korean check list); Bae 1998: 117; ***Diestrammena japanica***: Yamasaki 1969: 616; Kwon et al. 1996: 103 (Korean species list); ***Tachycines asynamorus***: Kostia 1996: 108, Figs. 25-26, 31; ***Diestrammena (Tachycines) asynamora***: Kim and Kim 2002: 145, Fig. 5 (taxonomy).

Specimens examined. <GW> 1♀, Samhwasa Bukpyeong-myeon Jeongseon, 27 vi 1984, Seo

YM (SSU); 1♂, Mt. Seoraksan Sokcho, 20 vii 1998, Nam MA (SSU); **<GG>** 1♀, Bulgwang-dong Seoul, 19 v 1998, Kang JH (SSU); 1♂3♀, ibid. 6-9 x 1999, Kim TW (SSU); 1♂1♀, ibid. 7 viii-1 ix 2001, Kim TW (SSU); 1♀, Mt. Gaehwasan Seoul, 25 vii 1998, Kim TW (SSU); 2♂1♀, Mapo Seoul, 17 xi 1980, Park OH (SSU); 1♂, Mt. Kkachisan Seoul, 17 xi 1995, An JH (SSU); 1♂, Nonhyeon-dong Seoul, 13 iv 1991, Kim EM (SSU); 1♂, Silim-dong Seoul, 23 vi 1983, Kim MJ (SSU); 1♂, Dapsipri Seoul, 10 xi 1981, Lee DR (SSU); 1♂, Mog-dong Seoul, 11 ix 1981, Lee HS (SSU); 1♂, Banghwa-dong Seoul, 20 xi 1980, Kim GS (SSU); 1♂, Sansu-dong Seoul, 30 ix 1980, Woo KS (SSU); 1♂, Myeonmok-dong Seoul, 13 iv 1982, Yoo YS (SSU); 1♂, Mt. Gaeunsan Seoul, 31 v 1992, Yoon HK (SSU); 1♂, Yangjae-dong Seoul, 3 viii 1996, Kim ES (SSU); 1♂, Yeoksam-dong Seoul, 18 x 1980, Kim YM (SSU); 1♂, Bogwang-dong Seoul, 28 vii 1989, Choi MY (SSU); 1♂, Jeongneung Seoul, 3 xii 1980, Eom MY (SSU); 1♂, Nuha-dong Seoul, 30 vi 1993, Kim YS (SSU); 1♂1♀, Mt. Dobongsan Seoul, 16 ix 1982, Kim Y (SSU); 1♂1♀, Sungshin Univ. Campus Dongseon-dong Seoul, 13-21 v 1986, Jegal S (SSU); 1♂2♀, Junggok-dong Seoul, 14 v-7 vi 1992, Kim JK (SSU); 1♀, Dunchon-dong Seoul, 5 v 1985, Min KM (SSU); 1♀, Mt. Gwanaksan Seoul, 5 viii 1993, Lee JS (SSU); 1♀, Sadang-dong Seoul, 8 x 1981, Kim SH (SSU); 1♀, Mt. Cheonggyesan Gwacheon, 3 v 1990, Park SH (SSU); 1♀, Sinsa-dong Seoul, 14 vii 1990, No SA (SSU); 1♀, Eungam-dong Seoul, 25 viii 1996, Kim HS (SSU); 2♂, Banpo Seoul, 12 x 1980, Lee KS (SSU); 1♀, Maseok, 17 ix 1988, Kim MY (SSU); 1♀, ibid. 1 x 1981, Kim YA (SSU); 1♀, Isl. Daebu-do Ansan, 5 x 2001, Kim TW (SSU); 1♂2♀, Godeok-myeon Pyeongtaek, 25 ix 1988, Kim SB (SSU); 1♂1♀, Hyangnam-myeon Gwaseong, 1 x 1988, Lee MO (SSU); 1♂, Gunnam-myeon Yeoncheon, 4 ix 1994, Yang MJ (SSU); 2♂, Bupyeong-dong Incheon, 1-5 x 1994, Yoon JY (SSU); 1♀, Yeokgok Bucheon, 30 v 1984, Kang MJ (SSU); 1♂, Sang-dong Bucheon, 26 ix 1994, Yoon JY (SSU); 1♀, Saeteo Guam-ri Hwado-eup Namyangju, 6 xi 1982, Lee GG (SSU); 1♂, Eungogae Eommi-ri Jungbu-myeon Gwangju, 23 x 1982, Kim SS (SSU); 2♂2♀, ibid. 15 ix 1984, Kim SM (SSU); 1♀, Icheon, 1 x 1982, Ko MH (SSU); 1♂, Bisan-dong Anyang, 30 x 1981, Shin GH (SSU); 1♂, Pyeongnae Namyangju, 18 ix 1982, Lee EG (SSU); 1♂, Namhansanseong, 3 x 1980, Kim KS (SSU); 1♂, Neunggok Goyang, 28 v 1993, Kim EH (SSU); **<CB>** 1♂1♀, Namil-myeon Cheongwon, 25 ix 1994, Park HJ (SSU); **<CN>** 3♂, Seokgul cave Taeguksa Geunheung-myeon Taean, 4 xi 2001, Choi YG (KIB); 2♀, Hyudae-ri Asan, 20 ix 1992, Kim HJ (SSU); 1♀, Hakampo beach Taean, 1 x 2006, Kim TW (SSU); **<GB>** 1♂,

Seongnyugul cave Gusan-ri Geunnam-myeon Uljin, 30 x 1999, Choi YG (KIB); **<JB>** 1♀, Yongdong-myeon Jeongeup, 5 x 1998, Jeong YW (SSU); **<JN>** 1♂, Ssanggyesa Mt. Jirisan Hwagye-myeon Hadong, 31 vi 2001, Kim TW (SSU); 1♀, Cheonggye-myeon Muan, 23 vii 1995, Moon HS (SSU).

Description. **<♂>** Body coloration brownish yellow, mottled with black spots, without luster. Head with fastigium of vertex separated with two pointed tubercles, its apex sharply pointed; fastigium of frons absent. Around eyes with weak subocular strips. Fore coxa with a basal spine. Fore femur with 6-8 inner ventral denticles; fore knee with a small fixed inner spine and large movable outer spine. Fore tibia with one inner, two outer ventral spines. Middle femur without denticulation; knee with a pair of large movable spines. Middle tibia with a pair of ventral spines. Hind femur with 6-8 ventral spines on inner carina apically; knee with a small fixed inner spine. Hind tibia with 46-53 spines as 2-4 grouped. Hind basitarsus with a dorsal spine apically, as long as inner dorsal longest spur. Cerci slender, tapering apically, as long as middle femur. Subgenital plate scoop-shaped, its hind margin truncated. Phallic lobes composed of large lateral ones and short median one; median lobes smally split as trilobate. Pseudepiphallus triangular, the height similar with the width, posterior margin roundly concave (Fig. 16). **<♀>** Body size nearly similar with male. Subgenital plate shorter than basal width, roundly triangular, its hind margin V-shaped notched at apex. Ovipositor longer than cerci, slightly recurved, with weak serration on ventral apex.

Distribution. Korea, Japan, China, Russia, Europe, North America: Cosmopolitan.

6. *Diestrammena* (*Tachycines*) *coreana* (Yamasaki 1969) 꼽등이 (Figs. 6, 17)

Tachycines coreanus Yamasaki 1969. Bull. nat. Sci. Mus. Tokyo, 12: 616, Figs. 1-2. "Korea: Is. Jejudo". Holotype ♂ in National Science Museum (Natural History), Tokyo.

Diestrammena apicalis nec Brunner von Wattenwyl 1888. Verhandlungen der Kaiserlich-Königlichen Zoologisch-Botanischen Gesellschaft in Wien, 38: 299. "Japan". Holotype ♀ in Naturhistorisches Museum Wien.

Korean records. ***Diestrammena apicalis***: Doi 1932; 38; Sohn 1957: 13; Cho 1959: 168, Fig. 45 (manual); Cho 1963: 163 (Is. Jejudo); Sohn 1963: 2, Fig. 1B; Cho 1965: 10 ("Dagelet"); Cho 1969: 765, pl. 52, text-Fig. 14(2), 15(2), 16(2) (illustrated encyclopedia); Ju 1969: 21 (North Korean check list); Kwon and Huh 1994: 48 (Korean check list); Kwon et al. 1996: 103 (Korean species list); Bae 1998: 115; ***Diestrammena apicaiis*** [!]: Kamijo 1933;

49; ***Tachycines coreanus***: Storozhenko 1990: 847; Kostia 1996: 109, Figs. 21–24, 30; Otte 2000: 56 (Orthoptera species file); ***Diestrammena coreana***: Kwon and Huh 1994: 48 (Korean check list: 우리굴꼽등이); Kwon et al. 1996: 103 (Korean species list); ***Tachysines*** [!] ***coreanus***: Hua 2000: 53 (Chinese list); ***Diestrammena*** (***Tachycines***) ***coreana***: Kim and Kim 2002: 146, Fig. 6 (taxonomy).

Specimens examined. <GW> 1♂, Gossigul cave Jinbyeol-ri Hadong-myeon Yeongwol, 20 vii 2001, Choi YG (KIB); 1♂, Daeyagul cave Daeya-ri Hadong-myeon Yeongwol, 29 vii 1966, Namkung J (KIB); 1♀, Yongdamgul cave Jinbyeol-ri Hadong-myeon Yeongwol, 30 vii 1966, Namkung J (KIB); 1♂, Dongdaegul cave Sangye-ri Okgye-myeon Gangneung, 13 ix 1999, Choi YG (KIB); 1♀, Jukhyeon-dong Gangneung, 29 vii 1997, Kim HJ (SSU); 2♂, Daraegigul cave Jucheon-ri Jucheon-myeon Yeongwol, 13 ix 2001, Choi YG (KIB); 2♂, Yumogjeonggul cave Panun-ri Jucheon-myeon Yeongwol, 13 ix 2001, Choi YG (KIB); 1♂, Byeoggolgul cave Jumun-ri Hadong-myeon Yeongwol, 7 ix 2001, Choi YG (KIB); 1♂, Solgaengegul cave Changwon-ri Nam-myeon Yeongwol, 14 ix 2001, Choi YG (KIB); 2♂, Dongganggingul cave Gyulam-ri Jeongseon, 21 ix 1998, Choi YG (KIB); 1♀, Mt. Taebaeksan Taebaek, 13 viii 1999, Kim TW (SSU); 1♂, Hwaam-ri Dong-myeon Jeongseon, 18 viii 1998, Choi YG (KIB); 1♂, Ogaetang Nam-myeon Inje, 5 ix 1998, Choi YG (KIB); **<GG>** 1♀, Bulgwang-dong Seoul, 10 ix 1983, Park SH (SSU); 13♂12♀, ibid. 29 vii–9 x 1999, Kim TW; 1♂, ibid. 13 viii 2001, Kim TW; 1♀, Mt. Bukhansan Seoul, 30 v 1992, Choi SA (SSU); 1♀, ibid. 10 viii 1999, Kim TW; 2♂1♀, ibid. 12 ix 2000, Kim TW; 2♂, Gupabal Seoul, 22 ix 1998, Kang JH (SSU); 1♀, Wonji-dong Seoul, 14 viii 1985, Kim HS (SSU); 1♂1♀, Cheonggyesan Gwacheon, 7 ix 1986, Yang HS et al. (SSU); 1♀, ibid. 17 ix 1989, Ku HK (SSU); 1♂, Sungshin Univ. Campus Dongseon-dong Seoul, 2 xi 1980, Kim JS (SSU); 3♀, ibid. 19 vii–28 x 1981, Chang KS et al. (SSU); 1♀, ibid. 25 ix 1986, Lee JH (SSU); 1♀, ibid. 20 ix 1988, Shim HJ (SSU); 1♀, ibid. 10 x 1996, Park HM (SSU); 1♂, Amsa-dong Seoul, 29 viii 1995, Cho SE (SSU); 1♂3♀, Bongcheon-dong Seoul, 11 vi–11 x 1992, Lee EH (SSU); 1♀, Donam-dong Seoul, 30 ix 1982, Yoo HK (SSU); 1♂, ibid. 17 x 1988, Oh HJ (SSU); 1♂, Suyuri Seoul, 12 vi 1985, Kim MA (SSU); 1♀, ibid. 10 ix 1991, Kim EK (SSU); 1♀, Sinsa-dong Seoul, 14 vii 1990, No SA (SSU); 1♂, Mt. Suraksan Seoul, 28 ix 1995, Lee YH (SSU); 1♀, Mt. Umyeonsan Seoul, 20 ix 1995, Yeo YH (SSU); 1♂, Ui-dong Seoul, 22 ix 1984, Lee SH (SSU); 1♂, Mt. Dobongsan Seoul, 31 x 1992, Choi SA (SSU); 1♂, Heukseok-dong Seoul, 16 ix 1997, Cho HH (SSU); 1♂, Mapo Seoul, 3 x 1981, Park OH (SSU); 1♂, ibid. 20 ix 1985, Jang JA

(SSU); 1♂, Hangang riverbed Seoul, 9 viii 1995, Kim HM (SSU); 1♀, Jongam-dong Seoul, 23 x 1980, Lee EJ (SSU); 1♂, ibid. 27 vii 1989, Cho HS (SSU); 1♂, ibid. 19 ix 1998, Cho EH (SSU); 1♂1♀, Jamsil-dong Seoul, 14 ix 1997, Park JS (SSU); 1♂, Dongsung-dong Seoul, 31 viii 1993, Im JY (SSU); 1♀, Hwagok-dong Seoul, 17 ix 1988, Jeong MH (SSU);1♀, Hagye-dong Seoul, 20 vii 1998, Lee HJ (SSU); 1♀, Banghwa-dong Seoul, 10 x 1982, Park JK (SSU); 1♀, Bomun-dong Seoul, 4 x 1981, Lee JK (SSU); 1♀, Seocho-dong Seoul, 4 ix 1993, Jeong JH (SSU); 2♂, Mog-dong Seoul, 5-7 x 1995, Lee JY (SSU); 1♀, Silim-dong Seoul, 22 viii 1986, Choi SR (SSU); 2♀, ibid. 4 vii-7 viii 1993, Yoon HY et al. (SSU); 3♂, Mt. Myeongjisan Gapyeong, 28 viii-23 ix 1989, Kang YH et al. (SSU); 1♂, ibid. 23 viii 1996, Chu YJ (SSU); 2♀, Isl. Ganghwado Inchoen, 24 v 1997, Lee JS (SSU); 1♀, Namhansanseong Seongnam, 17 ix 1988, Kang JH (SSU); 1♀, Yeoncheon, 13 viii 1981, Lee EY (SSU); 1♂, Bogwangsa Mt. Goryeongsan Yeongjang-ri Gwangtan-myeon Paju, 22 ix 1974, Kang HY (SSU); 1♂, Mt. Chukryeongsan Naebang-ri Gapyeong, 10 viii 1999, Anonym, (SSU); 1♂, Sangdong-ri Sang-myeon Gapyeong, 6-7 viii 2001, Kim AY (SSU); 1♀, Isl. Deokjeokdo Onjin Incheon, 23 vii 1977, Nam SY (SSU); 1♀, Isl. Daebudo Ansan, 5 x 2001, Kim TW (SSU); 2♀, Eommi-ri Jungbu-myeon Gwangju, 18 ix 1981, Kim MO et al. (SSU); 1♀, Godeok-myeon Pyeongtaek, 25 ix 1988, Kim SB (SSU); 1♂, Palya-ri Jinjeop-eup Namyangju, 23 viii 1986, Lee KJ (SSU); 1♀, Seodun-dong Suwon, 9 x 2000, Lee HS (NIAST); 1♂, Mt. Paldalsan Suwon, 20 viii 1989, Choi YJ (SSU); 1♀, Mt. Gwanggyosan Suwon, 1 ix 1992, Kim HS (SSU); 1♂, Mt. Cheonmasan Sudong-ri Hwado-eup Namyangju, 2 viii 1989, Hwang JH (SSU); 1♀, Gwangneung Pocheon, 9 x 1985, Park GJ (SSU); 1♀, Gwangjiwon, 23 ix 1984, Jeong HK (SSU); 1♀, Pyeongnae Namyangju, 18 ix 1982, Kwak HH (SSU); 1♀, ibid. 14 x 1984, Lee YN (SSU); **<CB>** 1♂, Mt. Sobaeksan Gagok-myeon Danyang, 2 viii 1994, Moon TY (KU); 1♂1♀, Yonggul cave Unam-ri Miwon-myeon Cheongwon, 14 ix 1975, Namkung J (KIB); 1♂, Edendonggul cave Osa-ri Yeongchun-myeon Danyang, 23 ix 2001, Choi YG (KIB); 1♂, Gosugul cave Gosu-ri Danyang, 17 vii 1999, Choi YG (KIB); 1♀, Bagjuigul cave Mt. Surisan Chapyeong-ri Saenggeug-myeon Eumseong, 5 xi 1966, Namkung J (KIB); **<CN>** 1♀, Mt. Gyeryongsan Gongju, 3 viii 1973, Kim CW (KU); **<GB>** 1♀, Huibangsa Mt. Sobaeksan Sucheol-ri Punggi-eup Yeongju, 6 ix 2000, Kim TW (SSU); 1♀, Dowon-dong Daegu, 12 x 1998, Choi JS (SSU); **<GN>** 1♂, Jindong-myeon Masan, 13 viii 1997, Lee JH (SSU); **<JB>** 1♀, Mipyeong Jeongju, 18 x 1992, Park HH (SSU); 2♂1♀, Mt. Daedunsan Wanju, 8 vii 2000, Lee YB (NIAST); **<JN>** 1♂, Malaise trap, Mt.

Cheongwansan Gwansan-eup Jangheung, 8 viii-29 ix 2000, Ku DS (SSU); 1♂, Malaise trap, Mt. Mudeungsan Gwangju, 9 viii-28 ix 2000, Ku DS (SSU); 2♂2♀, Mt. Baegunsan Okryong-myeon Gwangyang, 24 viii 1999, Kim TW (SSU); 2♂, Baegyangsa Mt. Baegamsan Yaksu-ri Bukha-myeon Jangseong, 23 viii 1999, Kim TW (SSU); 1♂5♀, Piagol Mt. Jirisan Naedong-ri Toji-myeon Gurye, 29 ix 2001, Kim TW (SSU); 1♂, Isl. Geomundo Yeocheon, 14 vii 1984, Kim JI (SSU); 1♂, Mt. Mandeoksan Haenam, 13 ix 1995, Lee YH (SSU); **<JJ>** 1♂1♀, Seongul cave Sinchang-ri Hangyeon-myeon Bukjeju, 9 x 1998, Choi YG (KIB); 8♂9♀, ibid. 11-12 x 1999, Kim TW et al. (SSU); 2♂1♀, Hyeopjaegul cave Hyeopjae-ri Halim-eup Bukjeju, 9 x 1999, Kim TW (SSU); 1♂, Socheongul cave Hyeopjae-ri Halim-eup Bukjeju, 11 x 1998, Choi YG (KIB); 3♂1♀, Waeulgul cave Hyeopjae-ri Halim-eup Bukjeju, 27 xi 1968, Namkung J (KIB); 1♀, Andeokgyegok Gamsan-ri Andeok-myeon Namjeju, 11 x 1999, Kim TW (SSU); 1♂1♀, ibid. 26 ix 2000, Kim MA (NIAST); 1♀, ibid. 9 viii 2001, Lee HA (NIAST); 2♂, Jeju race-course Yusuam-ri Aewol-eup Bukjeju, 17 vii 1990, Han KS et al. (KU); 1♂1♀, Bilremotgul cave Eoeum-ri Aewol-eup Bukjeju, 31 vii ?, Namkung J (KIB); 1♂1♀, Kwangnanmotgul cave Odeung-dong Jeju, 15 xi 1999, Choi YG (KIB).

Description. **<♂>** Body coloration bright shining brown without distinct maculation. Head with fastigium of vertex weakly blunted, its apex rather roundly separated. Pronotum as long as meso-, metanotum combined length. Fore coxa with a small spine. Fore femur with 11-15 denticulations on inner ventral carina; knee with a small fixed inner spine and a large movable outer spine. Fore tibia with two pairs of ventral spines. Middle femur without denticulation, knee with a pair of inner and outer movable spines. Middle tibia with 2-3 outer, and one inner ventral spines. Hind femora longer than body length, with 1-8 ventral spinules on inner carina apically. Hind tibiae with 41-68 spines as 2-4 grouped. Hind basitarsus with a dorsal spine apically, slightly longer than inner dorsal longest spur. Subgenital plate with truncated hind margin. Phallic lobes composed of smaller lateral ones and large median one; media lobe divided with two lobes. Pseudepiphallus diverged H-form, posteriorly slightly thicker, anteriorly more serrulated (Fig. 17). **<♀>** Slightly larger than male. Subgenital plate as long as basal width, triangular, its apex pointed without notch. Ovipositor longer than cerci, slightly recurved, without distinct serration.

Distribution. Korea, East China (Ningpo), Japan (Nagasaki).

Table 2. Measurements of *Diestrammena* spp.

Species	BL	PL	HFL	OL
D. unicolor	15.5−24.3	6.0−9.2	16.6−26.4	11.5−15.5
D. asynamora	11.5−16.8	4.6−7.6	13.0−22.8	9.8−14.8
D. coreana	12.5−20.8	5.0−7.3	16.3−22.2	10.6−16.6

Genus *Paratachycines* Storozhenko 검정꼽등이속

1990. Entomologicheskoe Obozrenie, 69(4): 844. Type species: *Paratachycines ussuriensis* Storozhenko 1990.

Diagnosis. Tubercles of vertex short, round. Fore knees without inner spine. Fore tibia and mid tibia with two ventral spurs and spine between them. Hind femora without ventral spines or with 1−6 ventral spines on inner carina. Hind tibia on both sides with 48−98 dorsal spines in group of 2−9 spines. Hind basitarsus with a dorsal spine. Posterior margin of tergite VII of abdomen rounded. Middle process of phallus not divided, not arcuate; dorsal plate well sclerotized (Storozhenko 1990). 15 species are known in the world, the measurements of two Korean *Paratachycines* compared in Table 3.

7. *Paratachycines* (*Paratachycines*) *ussuriensis* Storozhenko 1990 검정꼽등이 (Figs. 7, 18)

Paratachycines ussuriensis Storozhenko 1990. Entomologicheskoe Obozrenie, 69(4): 844, Figs. 30−36. "Russia: Ussuri". Holotype ♂ in Institute of Biology and Pedology of the Far East Branch of the Russian Academy of Sciences, Vladivostok.

Korean records. *Paratachycines ussuriensis*: Kostia 1996: 107, Figs. 16 28; Kim and Kim 2002: 147, Fig. 7 (taxonomy); Storozhenko 2004: 186, Figs. 475−482.

Specimens examined. <GW> 1♂5♀, Gachilbong Yanggu, 24 vii 1981, Nam SH et al. (KU); 2♂1♀, Baegdamsa Mt. Seoraksan Yongdae−ri Buk−myeon Inje, 29−30 viii 1984, Nam SH et al. (KU); 1♂, Guryongsa Mt. Chiaksan Wonseong, 28 vii 1975, Kim JI ; 1♂1♀, Mt. Jeombongsan Inje, 10 viii 1983, Moon TY (KU); 1♂, Oak valley Wonju, 11 ix 1997, Kim JS (SNU); 1♂, Dongsan−ri Jinbu−myeon Pyeongchang, 2 vii 1985, Lee EY (SSU); **<GG>** 1♂, Mt. Dobongsan Seoul, 13 viii 1986, Lee EJ (SSU); 1♀, ibid. 15 ix 1993, M−H. Park (SSU); 1♂, Mt. Bukhansan Seoul, 22 vii 1994, Kim KM (KU); 1♂, ibid. 24 vi 1998, Kim TW (SSU); 1♂, Mt. Cheonggyesan Gwacheon, 13 viii 1998, Kim TW (SSU); 1♂2♀, Mt. Baegunsan Idong−myeon Pocheon, 6 viii 1984, Park HC (KU); 1♀, Mt. Surian Gunpo, 9 ix 2000, Kim TW (SSU); 1♀, Mt. Yongmunsan Yangpyeong, 28 vii 2000, Kim TW (SSU); 1♀, Jangwi−dong Seoul, 3 ix 1981, Moon HJ (SSU); 2♀, Mt. Maengsan Bundang Seongnam,

16 ix 1999, Park HC (NIAST); **<CB>** 1♂, Mt. Namsan Chungju, 25 viii 2000, Kim TW (SSU); 1♂, Mt. Sokrisan Boeun, 9 viii 1990, Kim JI (SSU); 1♂, Yonggul cave Unam-ri Miwon-myeon Cheongwon, 14 ix 1975, Namkung J (KIB); **<CN>** 1♂1♀, Mt. Gwangdeoksan Cheonan, 22 vii 1994, Kim JI (SSU); **<GB>** 1♀, Mt. Juwangsan Cheongsong, 6 ix 2000, Kim TW (SSU); 1♂, Guribawuigul cave Byeolbang-ri Gamcheon-myeon Yecheon, 30 viii 1966, Namkung J (KIB); **<GN>** 3♂4♀, Mt. Jirisan Jungsan-ri Sicheon-myeon Sancheong, 30-31 viii 1981, Yoon IB et al. (KU); 1♂, Mt. Bukbyeongsan Dongbu-myeon Geoje, 29 viii 2000, Lee YB (NIAST); **<JB>** 1♀, Mt. Daedunsan Wanju, 8 vii 2000, Lee YB (NIAST); 1♀, Malaise trap, Mt. Naejangsan Jeongeup, 24 viii-28 ix 2000, Ku DS (SSU); **<JN>** 1♀, Dogapsa Mt. Wolchulsan Dogap-ri Gunseo-myeon Yeongam, 26 vii 1988, Lee SH (KU); 1♂, Mt. Baegunsan Okryong-myeon Gwangyang, 27 vi 1995, Woo KS (SNU); 1♂, ibid. 24 viii 1999, Kim TW (SSU); 2♀, Piagol Mt. Jirisan Naedong-ri Toji-myeon Gurye, 29 ix 2001, Kim TW (SSU); 1♂1♀, Songgwangsa Mt. Jogyesan Songgwang-myeon Suncheon, 7-10 viii 1976, Ryu JH (KU); **<JJ>** 1♀, Gwaneomsa Ara-dong Jeju, 14 vii 1990, Park HC (KU); 1♂, Susangul cave Susan-ri Seongsan-eup Namjeju, 6 vii 1981, Namkung J (KIB).

Description. **<♂>** Body coloration darkish black, appendages more bright brown; pro- and metanotum shining black. Head ovoidal, higher than wide; fastigium of vertex weakly protruding as small two tubercles, separated by median furrow; antennal socket as wide as vertical diameter of an eye. Pronotum longer than meso-, metanotum combined length, its hind margin roundly convex. Paranotum longer than height. Fore femur without spine. Fore tibia with a pair of ventral spines in mid. Middle knee with a pair of long movable spines. Middle tibia with a pair of ventral spines in mid. Hind femur as long as body length, without spines. Hind tibia with 48-64 pairs of dorsal spines densely ungrouped. Hind basitarsus with a dorsal apical spine, slightly longer than inner apical longest spur or remaining three segments combined length. Cercus as long as middle femur. Subgenital plate shorter than basal width, with roundly emarginated hind margin. Pseudepiphallus rectangular with protrusions at apex (Fig. 18). Phallic lobes composed of two pairs of lateral ones and triangular median one; median lobe covered by short sparse hairs. **<♀>** Cerci slightly shorter than middle femur. Subgenital plate triangular, shorter than basal width. Ovipositor pale brown, slightly recurved, its ventral apex with undistinguishable serration.

Distribution. Korea, Russian Far East, Japan (Is. Tsushima).

Subgenus *Hemitachycines* Storozhenko 굴꼽등이아속

1990. Entomologicheskoe Obozrenie, 69(4): 844. Type species: *Tachycines boldyrevi* Uvarov 1926.

Diagnosis. Hind femora with 1–6 spines on inner ventral carina. Hind tibia with 76–98 dorsal spines on both sides. Middle process of phallus round, with dense bristles (Storozhenko 1990).

8. *Paratachycines* (*Hemitachycines*) *boldyrevi* (Uvarov 1926) 굴꼽등이 (Figs. 8, 19)

Tachycines boldyrevi Uvarov 1926. Annals and Magazine of Natural History, London, 9(17): 284. "Russia: Vladivostok". Syntype ♀ in Zoological Institute of the Russian Academy of Sciences, St. Petersburg.

= *Tachycines uenoi* Yamasaki 1969. Bull. nat. Sci. Mus. Tokyo, 12: 618, Figs. 3–6. "Korea: Yongdamgul". Holotype ♂ (larva) in National Science Museum (Natural History), Tokyo. [Kim and Kim 2002]

Korean records. ***Paratachycines* (*Hemitachycines*) *uenoi***: Storozhenko 1990: 845; Otte 2000: 55 (Orthoptera species file); Storozhenko 2004: 189; ***Tachycines uenoi***: Kwon and Huh 1994: 48 (Korean check list: 굴꼽등이); Kwon et al. 1996: 103 (Korean species list); ***Paratachycines* (*Hemitachycines*) *boldyrevi***: Kostia 1996: 108, Figs. 17–20, 29; Kim and Kim 2002: 148, Fig. 8 (taxonomy); Storozhenko 2004: 188, Figs. 9, 483–490.

Specimens examined. <GW> 1♂, Yongdamgul cave Jinbyeol-ri Hadong-myeon Yeongwol, 15 vi 2001, Choi YG (KIB); 10♂12♀, Ssanggul cave Mitan-myeon Pyeongchang, 11 vi–8 vii 1999, Kim TW et al. (SSU); 1♂1♀, Yujigul cave Gasu-ri Jeongseon, 5 vii 1999, Choi YG (KIB); 3♂, unnamed cave Hami Jeongseon, 13 vi 1999, Kim TW et al. (SSU); 1♀, Dongdaegul cave Sangye-ri Okgye-myeon Gangneung, 31 vii 1999, Choi YG (KIB); 1♂, unnamed cave Gyulam-ri Jeongseon, 4 vii 1999, Choi YG (KIB); 1♂, Machabagjuigul cave Macha-ri Bug-myeon Yeongwol, 2 vi 2001, Choi YG (KIB); 1♂, Gossigul cave Jinbyeol-ri Hadong-myeon Yeongwol, 27 vii 1999, Choi YG (KIB); 1♂, Yongjeonggul cave Cheolwon, 14 viii 1999, Choi YG (KIB); 1♂1♀, Ogaetang Nam-myeon Inje, 5 ix 1998, Choi YG (KIB); 1♀, Mt. Taebaeksan Taebaek, 13 viii 1999, Kim TW (SSU); 1♂, Malaise trap, Mt. Hambaeksan Taebaek, 14 v–20 vii 1999, Ku DS (SSU); 1♀, Buyeongyegok Samsan-ri Yeongok-myeon Gangneung, 18–20 viii 2001, Kim JI (SSU); 1♀, Guryongsa Mt. Chiaksan Wonseong, 28 vii 1975, Kim JI (SSU); 1♀, Hantangang riverbed Cheolwon, 7 viii 1994,

Kwon YJ (SSU); 1♂1♀, Gwaneumgul cave Daei-ri Singi-myeon Samcheok, 30 vii 1970, Namkung J (KIB); **<GG>** 1♂, Sajeongdonggul cave Sajeong-ri Gwanin-myeon Pocheon, 7 vii 2001, Choi YG (KIB); 1♂, Bogwangsa Mt. Goryeongsan Yeongjang-ri Gwangtan-myeon Paju, 18 vii 1998, Kim TW (SSU); 1♀, Mt. Yongmunsan Yangpyeong, 18 viii 1985, Park KJ (SSU); 1♀, ibid. 28 vii 2000, Kim TW (SSU); 1♂, Mt. Gwanggyosan Suwon, 1 vii 1997, Park HC (NIAST); **<CB>** 1♂, Simbokgul cave Galgeum-ri Yeonpung-myeon Goesan, ? v 1996, Choi YG (KIB); 1♂1♀, Tohyeonbagjuigul cave Mireug-ri Sangmo-myeon Jungwon, 18 vi 1967, Namkung J (KIB); **<GN>** 1♂1♀, Ssanggyesa Mt. Jirisan Hwagye-myeon Hadong, 31 vi 2001, Kim TW (SSU); **<JN>** 1♀, Piagol Mt. Jirisan Naedong-ri Toji-myeon Gurye, 29 ix 2001, Kim TW (SSU).

Description. **<♂>** Body coloration darkish dirty brown without luster, appendages rather bright. Head with short and rounded fastigium of vertex, separated by median furrow. Lateral ocelli distinct. Antennal socket large, wider than horizontal diameter of an eye. Pronotum as long as meso-, metanotum combined length. Fore coxa with a basal spine. Fore femur without spine, only one outer apical spines present on knee. Fore tibia with two pairs of ventral spines. Middle knee with a long inner and a short outer spines. Middle tibia with two pairs of ventral spines. Hind femora longer than body length, with 1-6 ventral spinules on inner carina apically (sometime absent). Hind tibia with 76-98 dorsal spinules densely ungrouped, only the largest spine present on two thirds. Hind basitarsus with a dorsal apical spine, as long as remaining three segments combined length, clearly longer than inner dorsal longest tibial spur. Cercus shorter than middle femur. Subgenital plate shorter than basal width, scoop-shaped, its hind margin slightly concave. Pseudepiphallus rectangular, wider than long (Fig. 19). Phallic lobes composed of smaller lateral ones and large median one; median lobe covered by clear dense bristles. **<♀>** Slightly larger than male. Subgenital plate triangular, shorter than basal width. Ovipositor slightly recurved, shorter than hind femur; ventral apex with undistinguishable serration.

Distribution. Korea, Russian Far East.

Remarks. Storozhenko (1990, 2004) regarded the *P. uenoi* as distinct species by *P. boldyrevi,* there are, however, a good criterion was not presented as a good species. Since describing the *P. uenoi* was based on the nymphal specimen, it is impossible to objective comparison. I had examined the male topotype of *P. uenoi* and more adult specimens collected from geographically adjoining several caves with Yongdamgul, the type locality, all were correspond with *P. boldyrevi.* Both are consequently regarded just in the adult-juvenile

relationship as like to indistinctly noted by Yamasaki (1969). Number difference of dorsal spines on hind tibia was rather overlapped and variable depending on the body size of specimens and different localities (Kim and Kim 2002).

Table 3. Measurements of *Paratachycines* spp.

Species	BL	PL	HFL	OL
P. ussuriensis	10.2−15.7	4.3−5.7	11.7−15.2	8.0−10.3
P. boldyrevi	13.8−25.5	4.6−6.9	17.5−26.0	13.3−17.0

Superfamily Tettigonioidea 여치상과

As known as bush−crickets, long−horned grasshoppers, or katydids. All tarsi four segmented. Front tibiae usually with basal auditory apparatus. Male tegmina with stridulatory area of specialized veins at their bases. Male cerci short and concrete, forceps−like suitable for copulation with female. Ovipositors fairly to very long and sickle−, sword−, or dagger−like, composed of six valves well developed.

Family Tettigoniidae 여치과

Body compressed and elongated. Coloration green or brown basically, two forms frequently present in same species. Antennal sockets situated on same level or more higher than between eyes. Fore tibia with tympana. Tegminal length variable, male tegmina composed of basal stridulatory apparatus the left with ventral files over right plectrum with mirror. Male cerci modified to external genitalia. Ovipositor composed of three pairs of valves.

Key to Subfamilies of Tettigoniidae

1. Tarsi semicylindrical, first and second tarsomeres without lateral grooves; ovipositor short sickle−shaped ····· **Phaneropterinae** (p. 30)
− Tarsi depressed, first and second tarsomeres with lateral grooves; ovipositor long sword−shaped ····· 2
2. Fore tibia with oval−shaped tympana ····· 3
− Fore tibia with slit−shaped tympana ····· 4

3. Body feeble, size smaller less than 25 ㎜; prosternum smooth ····· **Meconematinae** (p. 50)
– Body stouter, size larger more than 30 ㎜; prosternum bispinose ····· **Mecopodinae** (p. 56)
4. Fore tibia with 2–4 dorsal spines ····· **Tettigoniinae** (p. 58)
– Fore tibia without dorsal spines ····· 5
5. Fore and mid tibiae with weak and unmovable ventral spines, its length shorter than combined length of 1st and 2nd tarsomeres ····· **Conocephalinae** (p. 91)
– Fore and mid tibiae with strong and movable ventral spines, its length longer than combined length of 1st and 2nd tarsomeres ····· **Listroscelidinae** (p. 116)

Subfamily Phaneropterinae 실베짱이아과

Head round and short; the face not flattened or slanted. Eyes typically small and round, the antennae inserted between the eyes. Prosternum lacks spines. Anterior tibiae flattened dorsally and rather square in cross section distally. Hind tibia with an apical spine on each side. First and second segments of the tarsi subcylindrical and not laterally grooved. Hind wings longer than tegmina in fully alate species, projecting well beyond them at rest. Ovipositor rather short, sickle–shaped, very flat, usually with a rather obtusely pointed apex, and often distinctly crenulated or serrated.

Key to Species of Phaneropterinae

1. Fore tibia with tympana of identical shapes on each sides; ♂ right tegmina with clear mirror area; ♂ subgenital plate without styli ····· 2
– Fore tibia with slit–shaped inner and oval–shaped outer tympana; ♂ right tegmina without mirror area; ♂ subgenital plate with styli ····· 6
2. Fore tibia with slit–shaped tympana; tegmina with developed cross veins (Fig. 20) ····· ····· ***Elimaea fallax*** (p. 31)
– Fore tibia with oval–shaped tympana; tegmina without developed cross veins ····· 3
3. Pronotum with strong humeral sinus; tegmina with small dark spots; hind femur without ventral spinules ····· 4
– Pronotum with weak humeral sinus; tegmina without dark spots; hind femur with ventral spinules ····· 5
4. Antennae pale, concolorous with body; eyes slightly convex, less than hemispherical ·····

..... ***Phaneroptera falcata*** (p. 34)

− Antennae black with whitish annulations; eyes strongly convex, more than hemispherical ..... ***Phaneroptera nigroantennata*** (p. 36)

5. ♂ subgenital plate deeply bifurcate (Figs. 35−36); ♀ hind wings longer than tegmina ..... ***Ducetia japonica*** (p. 39)

− ♂ subgenital plate semicylindrical (Fig. 40); ♀ hind wings shorter than tegmina ..... ***Kuwayamaea sapporensis*** (p. 42)

6. Pronotal disc with conspicuous flange along hind margin ..... ***Psyrana japonica*** (p. 44)

− Pronotal disc without flange 7

7. ♂ last abdominal tergite bilobate (Fig. 43); ovipositor with weakly truncated apex, serrated along dorsal margin ..... ***Holochlora japonica*** (p. 46)

− ♂ last abdominal tergite trilobate (Fig. 42); ovipositor with strongly truncated apex, only serrated on dorsal apex ..... ***Sinochlora longifissa*** (p. 48)

Genus *Elimaea* Stål 큰실베짱이속

1874. Recencio Orthopterorum, 2: 11. Type species: *Phaneroptera subcarinata* Stål 1861.

Diagnosis. Tegmina with conspicuous longitudinal and cross veins. Wings longer than tegmina. Fore femora distinctly compressed laterally, to markedly S−shaped in dorsal view, basally more flattened and narrower than remaining part. Fore coxae without spine. RS branching from R before the middle of tegmina. Male cerci long, thin and curved. Fore tibial tympana covered with swollen structure. 77 species are known in the world.

9. *Elimaea fallax* Bey−Bienko 1951 큰실베짱이 (Figs. 20, 32−34)

Elimaea fallax Bey−Bienko 1951. Trudy Vsesoyeiznogo Entomologicheskojo Obshchestva, Moskva, 43: 130, Figs. 1−2. "Russia: Ussuri". Holotype ♀ in Zoological Institute of the Russian Academy of Sciences, St. Petersburg.

Phaneroptera grandis nec Matsumura and Shiraki 1908. Jour. Coll. Agric. Tohoku Imp. Univ. 3(1): 23, pl. 2, Fig. 15a. "Formosa = Taiwan". Syntype in Hokkaido University, Sapporo.

Korean records. ***Phaneroptera grandis***: Doi 1932: 37; Cho 1959: 164, Fig. 37 (manual); Cho 1969: 760, pl. 51 (illustrated encyclopedia); Ju 1969: 18 (North Korean check list); Lee 1990: 106 (systematic notes); ***Elimaea fallax***: Bey−Bienko 1954: 116, Figs. 14, 15, 69 (North Korea); Storozhenko 1980: 11; Liu and Jin 1993: 104; Hua 2000: 49 (Chinese list); Kim and Kim 2001: 148, Figs. 1a, 1b, 9 (taxonomy): Storozhenko 2004: 64, Figs. 34, 35,

92−96; ***Elimaea gradis*** [!]: Moon and Yoon 1993: 56 (KEI); ***Eirema*** [!] ***grandis***: Park et al. 1993: 165; ***Elimaea grandis***: Kwon and Huh 1994: 48 (Korean check list); Kwon et al. 1996: 103 (Korean species list); Bae 1998: 119.

Specimens examined. <GW> 1♀, Sangye Okgye Gangneung, 29 x 1999, Namkung (NIAST); 1♀, Gangchon Chuncheon, 18 ix 1982, Kim (SSU); 2♂2♀, Gojindong Mt. Geonbongsan, 28 viii 1990, Kim et al. (SSU); 1♂1♀, Heulri Jinburyeong Goseung, 31 viii 1984, Jang et al. (SSU); 1♂, "Kankakei", = Mt. Geumgangsan 24 viii 1924, Okamoto et al. (NIAST); 1♀, Naeseorak, 24 x 1971, Im (EU); 2♀, Mt. Seoraksan, 9−10 x 1970, Lee et al. (EU); 1♂2♀, Changwon−ri Yeongwol, 13 viii−14 ix 1999, Kim (NIAST); 6♂2♀, Mt. Chiaksan Wonju, 14 viii−15 x 1999, Kim et al. (NIAST); 2♀, Mt. Jeombongsan Gwidun−ri Inje, 26 ix 1998, Kim (NIAST); 3♂2♀, Mulgubi Jinburyeong, 10−12 viii 1979, Yoon et al. (EU); 1♀, Goseokjeong Cheolwon, 24 viii 1977, Yoon (EU); 1♂1♀, Malaise trap, Mt. Myeongseongsan Cheolwon, 17 viii−14 x 1999, Ku (NIAST); 3♀, Balsan−ri Chuncheon, 28 viii−10 xi 1998, Park (NIAST); 3♂1♀, Mt. Taebaeksan, 12−13 viii 1999, Kim et al. (SSU); 1♀, Yongpyeong Pyeongchang, 26 viii 1996, Choi (NIAST); 1♂, Mt. Paekunsan Hwacheon, 15 viii 1996, Yoo; **<GG>** 1♀, Mt. Godongsan Gapyeong, 1 ix 1980, Jang (SSU); 1♂2♀, Mt. Myeongjisan Gapyeong, 23−25 viii 1996, Yim et al. (SSU); 1♂, Mt. Unaksan Gapyeong, 15 ix 1984, Choi (SSU); 1♀, Byeokje Goyang, 1 ix 1973, Yoon (EU); 1♂, Mt. Cheonggyesan, 14 viii 1983, Kim (SSU); 2♀, Gwangneung, 25 viii−22 ix 1990, Yoo (SSU); 1♀, Mt. Mugapsan Gwangju, 5 viii 1991, Kim (SSU); 3♀, Ungogae Gwangju, 15 IX−9 x 1984, Kim et al. (SSU); 1♀, Mt. Suraksan Namyangju, 15 ix 1991, Kim (SSU); 3♂, Mt. Cheonmasan, 11 IX−9 x 1965, Sohn et al. (EU); 3♂4♀, Mt. Chukryeongsan, 16 viii 1999 Ku, (NIAST); 1♂, Mt. Soyosan, 1 ix 1991, Lee (SSU); 1♀, Namhansanseong, 17 x 1980, Kim (SSU); 1♀, light trap, Suwon, 4 ix 1991, Anonym, (NIAST); 1♂4♀, Mt. Seounsan Anseong, 30 ix 1995, Choi (NIAST); 1♂1♀, Mt. Yongmunsan Yangpyeong, 22 vii−9 ix 1989, Kim et al. (SSU); 1♂, Yeongjongdo Incheon, 20 viii 1967, Park (EU); 1♀, Mungapdo Ongjin Incheon, 28 vii 1972, Lee (EU); 1♂, Papyeong Paju, 22 viii 1995, Yoon (EU); 1♀, Mt. Gwanaksan, 6 x 1996, No (SSU); 1♀, Mt. Guryongsan, 2 ix 1990 Kim, (SSU); 1♀, Mt. Namsan, 15 ix 1967, Cho (EU); 1♀, Mt. Daemosan, 19 viii 1996, Anonym, (SSU); 1♂1♀, Mt. Dobongsan, 25−26 ix 1982, Kim et al. (SSU); 1♂1♀, Mt. Bukhansan, 21 ix 1996, Lee (SSU); 1♀, Mt. Suraksan, 29 ix 1995, Jang (SSU); 1♀, Mt. Cheonggyesan, 20 x 1973, Park (EU); 1♀, Hangang riverbed, 24 viii 1997, Lee (SSU); **<CB>** 2♂1♀, Mt. Sobaeksan, 31 ix 1994, Lee (SSU); 1♂1♀, Daemok

Mt. Songrisan, 9 viii 1990, Kim et al. (SSU); 1♀, Eumseong, 10 ix 1995, Lee (SSU); 3♀, Deokgok Jecheon, 22 x 1995, Jeon (SSU); 1♀, Noeun Jungwon, 16 viii 1986, Lee (SSU); **<CN>** 1♂, Mt. Gyeryongsan Gongju, 24 vii 1973, Kim (SSU); 1♀, Daecheon Boryeong, 15 viii 1997, So (SSU); **<GB>** 1♀, Sangri Seongsan Goryeon, 28 vii 1997, Lee (YNU); 5♂2♀, Mt. Sudosan Gimcheon, 1 ix 1995, Choi (NIAST); 1♂, Mungyeongsaejae, 14 ix 1980, No (SSU); 1♂4♀, Malaise trap, Mt. Sobaeksan Yeongpung, 13 viii–15 x 1999, Ku (NIAST); 1♂, Mt. Paekamsan Uljin, 11 viii 1999, Ku (NIAST); **<GN>** 4♂3♀, Jungsan-ri Mt. Jirisan, 30–31 vii 1981, Han et al. (SSU); 1♀, Gajwa-dong Jinju, 2 viii 1996, Jeong (GSU); **<JB>** 1♀, Gwanganru Namwon, 19 viii 1990, Choi (SSU); **<JN>** 1♀, Toji Gurye, 27 ix 1996, Huh (SSU); 1♀, Mt. Mudeungsan Gwangju, 10 x 1988, Lee (SSU); 1♀, Mt. Naejangsan, 5 x 1992, Oh et al. (SSU); 1♀, Is. Wando, 30 viii 1984, Ahn (NIAST); 1♂, Mt. Paekyangsan Jangseong, 23 viii 1999, Kim (NIAST).

Description. **<♂>** Body coloration green or green with purple, tegminal venation rather reddish. Head rounded and vertical. Antennae dark brown with small whitish annulations in regular distance. Pronotum somewhat longer than height with V-shaped sulcus in median disc; paranotum with faint white longitudinal strips; reddish speckles scattered. Fore femur slightly sinuated in base like a Phasmida; fore tibiae swollen basally with tympana slit-shaped on both sides. Fore coxae without spine. Tegmina with well developed longitudinal and cross veins; each cells with a little number of dark dots; RS divided from 1/3 basally of R, posteriorly producing 2–3 short branches. Left tegminal base obtusely blunted. Hind wings surpassing tegmina more than a seventh. Last abdominal tergite roundly protruding, its hind margin truncated. Epiproct long tongue-shaped, its apex rather triangular. Cercus long and thin, C-shaped, incurved, its apex flat and pointed with weak dilation subapically (Fig. 32). Subgenital plate long and narrower, gently recurved and bifurcated in the middle; basal half with conspicuous median carina; apical lobes slender with smooth apex. **<♀>** Epiproct long triangular. Cerci long incurved, its apex tapering without expanding. Ovipositor with serration more than two third in dorsal margin from the apex and slightly ventral apex (Fig. 34). Gonangulum convex with small projection upwardly, its apex blunt. Subgenital plate triangular as long as basal width, with obtuse apical notch (Fig. 33). **<Measurements>** BL 17–26 (HWL 34–50); PL 3.5–5.0; TL 27.5–35.5; HFL 19.5–22.5; OL 6.5–7.5.

Distribution. Korea, Northeast China, Russian Far East.

Genus *Phaneroptera* Audinet-Serville 실베짱이속

1831. Annales des Sciences Naturelles, Paris, 22(86): 158. Type species: *Gryllus falcatus* Poda 1761.

Diagnosis. Tegmina narrow, tapering to round apex. Pronotum with sharp deep humeral sinus and round posterior margin. Fore coxae with conspicuous thin spine. All femora without ventral spine. Wings much longer than tegmina. Fore tibial tympana oval exposed without covering lobes. 44 species are known in the world, the measurements of two Korean *Phaneroptera* compared in Table 4.

10. *Phaneroptera falcata* (Poda 1761) 실베짱이 (Figs. 27, 39)

Gryllus falcatus Poda 1761. Insecta Musei Græcensis, quæ in ordines, genera et species juxta systema naturæ Caroli Linnæi: 52. "Austria: Graz". Type lost.

Korean records. ***Phaneroptera falcata***: Bey-Bienko 1954: 64, Figs. 1-6, 7(1), 12, 17, 43, 55 (North Korea); Cho 1959: 164, Fig. 39 (manual); Cho 1969: 760, pl. 51 (illustrated encyclopedia); Storozhenko 1980: 11; Storozhenko 1986: 250, Figs. 116(3, 8), 117(7), 119(3), 120(1); Tadauchi 1989: 51 (Japanese check list); Lee 1990: 105 (systematic notes); Moon and Yoon 1993: 56 (KEI); Kwon and Huh 1994: 48 (Korean check list); Kwon et al. 1996: 103 (Korean species list); Bae 1998: 122; Hua 2000: 51 (Chinese list); Kim and Kim 2001: 150, Figs. 2a, 2b, 10 (taxonomy); Storozhenko 2004: 56, Figs. 17, 31-33, 76-79.

Specimens examined. **<HB>** 1♀, "Ranan" = Nanam, 22 viii 1922, Okamoto et al. (NIAST); 1♂, "Kwainei" = Hoeryeong, 22 viii 1922, Okamoto et al. (NIAST); **<GW>** 1♂, Mt. Kumgangsan near Hotel Kumgang, 27 ix 1979, H. Steinmann and T. Vasarhelyi, No. 590 (Hungarian Natural History Museum, Budapest); 1♂, Geojin, 14 viii 1980, Yoon (EU); 1♀, Changwon-ri Yeongwol, 14 ix 1999, Kim (NIAST); 1♂, Mt. Chiaksan Wonju, 14 viii 1999, Ku (NIAST); 1♀, Mt. Jeombongsan Gwidun-ri Inje, 26 ix 1998, Kim (NIAST); 1♀, Seohwa Inje, 29 viii 1992, Park (SSU); 1♀, Tojeon Jeongseon, 26 viii 1997, Kim et al. (SSU); 4♂4♀, Mulgubi Jinburyeong, 10-13 viii 1979, Yoon et al. (EU); 1♀, Balsan-ri Chuncheon, 10 xi 1998, Park (NIAST); **<GG>** 1♂, Mt. Godongsan Gapyeong, 10 ix 1977, Lee (SSU); 1♂1♀, Songchu Goyang, 16 x 1983, Park, (SSU); 1♀, Gwangneung, 2 x 1966, Lee (EU); 1♀, Mt. Mugapsan Gwangju, 5 viii 1991, Kim (SSU); 1♀, Mt. Bulamsan Namyangju, 18 ix 1982, Kim (SSU); 3♀, Daeseong-ri, 22 IX-17 x 1984, Seo et al. (SSU); 1♂2♀, Mt. Chukryeongsan Sudong, 6 viii-28 ix 1980, Jang et al. (SSU); 1♂1♀,

"Suigen" = Suwon, 14 vii 1921, Okamoto (NIAST); 1♀, "Yugato" = light trap, ibid. 8 vii 1926, Anonym (NIAST); 1♂1♀, Anseong, 30 ix 1966, Kim (EU); 1♀, Anyang, 8 x 1967, Tak (EU); 1♂1♀, Mt. Yongmusan Yangpyeong, 31 vii 1978, Jang (SSU); 1♂1♀, Mt. Hobongsan Incheon, 2 x 1994, Yoon (SSU); 1♀, Mt. Gamaksan Paju, 8 ix 1984, Kim (SSU); 1♂2♀, Mt. Cheonmasan Pyeongnae, 30 ix–14 x 1984, Lee et al. (SSU); 1♂, Misari Hanam, 14 vii 1991, Cho (SSU); 2♀, Mt. Gwanaksan, 4 x 1997, Ahn (SSU); 1♂, Mt. Namsan, 7 xi 1972, Kim (EU); 1♂1♀, Mt. Dobongsan, 22 ix 1984, Park (SSU); 2♀, Mt. Bulamsan, 18 ix 1966, Kim et al. (EU); 2♀, Ehwa Univ. Campus, 21 IX–2 x 1965, Kim et al. (EU); 1♂, Taeneung, 12 ix 1969, Kim (EU); 1♂, Hangang riverbed, 24 viii 1997, Lee (SSU); **<CB>** 1♀, Bogyeongsa Mt. Naeyonsan, 1 viii 1983, Jang (SSU); 1♀, Nohyeon Boeun, 23 x 1990 Kim (SSU); 4♀, Sojeon Gunbuk Okcheon, 23 x 1990, Kim et al.; 1♀, Onyang, 27 ix 1988, Jeon (SSU); **<CN>** 1♂, Muryangsa Mt. Mansusan Boryeong, 19 vii 1999, Kang (SSU); 1♂1♀, AB area Seosan, 4 vii 2000, Lee (NIAST); 1♀, Hyudaeri Asan, 20 ix 1992, Kim (SSU); **<GB>** 1♂, Yeongnam Univ. Campus Gyeonsan, 24 vi 1994, Huh (YNU); 1♀, ibid. 18 vii 1998, Lee (YNU); 1♂, Mt. Sudosan Gimcheon, 1 ix 1995, Choi (NIAST); 1♂, Daegu, 30 vi 1975, Yeo (EU); 1♂, Mt. Sobaeksan, 29 vii 1983, Yoon (SSU); 1♀, Mt. Paekamsan Uljin, 2 viii 1999, Kim et al. (NIAST); 1♀, Bulyeonggyegok Uljin, 1 viii 1999, Han (NIAST); **<GN>** 1♀, Jinyeong Gimhae, 26 ix 1996, Ahn (SSU); 1♂, Daeyeon–dong Busan, 22 vii 1972, Lee (EU); **<JB>** 1♂1♀, Munsujae Buan, 18 vii 1998, Ryu (YNU); 3♀, Bongeun Buan, 10 x 1981, Jang (SSU); 1♀, Saja–dong Buan, 13 ix 1998, Ryu (YNU); 1♂1♀, Sannae Buan, 28 vi 1990, Jeon (SSU); 1♂, Sanoe Jeongeup, 1 ix 1998, Park (SSU); **<JN>** 1♀, Gwangju, 18 ix 1965, Jang (EU); 1♂, Mt. Mudeungsan Gwangju, 10 x 1988, Lee (SSU); 4♂1♀, Geomundo Yeocheon, 12–13 vii 1984, Kim et al. (SSU); 1♂2♀, Wando, 6–7 vii 1982, Kim et al. (SSU); **<JJ>** 2♀, Donnaeko, 12 vii 1983, Anonym (SSU); 1♂2♀, Topyeong–ri Seogwipo, 12–20 vii 1983, Jang et al. (SSU).

Description. <♂> Body coloration pale green. Head short and vertical; fastigium of vertex compressed and narrower than scape, with shallow longitudinal furrow in mid; inner margin of antennal socket elevated tightly touched with fastigium of frons; scape longer than width; antennae pale, without annulations, unicolorous with body; eyes protruding not more than hemisphere. Pronotum with roundly convex hind margin and strong humeral sinus; paranotum with lower hind margin rounded, the height shorter than the length of pronotal disk. Tegmina macropterous, surpassing hind knees, its apex rounded; RS branched before

the mid of R; stridulatory area more darkish, as long as pronotal disk. Hind wings much longer than tegmen, protruding more a half of tegmina, reaching mid of hind tibia, its apex acute. Fore coxa with a small basal spine. All femora without any spine, middle femur longer than fore one, hind femur 2.5 times longer than middle one. Fore tibia with both tympana oval-shaped. Epiproct large, slightly transversely quadrangular, covering the cercal base, its hind margin rather wider than base, slightly concave and lateral angles rounded. Cercus arcuate, longer than epiproct or subgenital plate, six times longer than basal width, its apex spiniform, subapically rather swollen. Subgenital plate longer than basal width and epiproct, widened at the apex with two divergent lobes like a form of fishtail (Fig. 39); median and lateral carinae present. Styli absent. **<♀>** Slightly larger than male. Cercus simply conical, five times longer than basal width. Subgenital plate triangular, as long as basal width, its apex obtuse with unnoticeable median notch. Lateral gonangulums roundly blunted, a little smaller than subgenital plate. Ovipositor sickle-shaped, strongly recurved in base, the lamella sinuated; serrations present on whole dorsal margin and apical ventral margin.

Distribution. Korea, Japan, China, Russia, Europe: Transpalaearctic.

11. *Phaneroptera nigroantennata* Brunner von Wattenwyl 1878 검은다리실베짱이 (Figs. 26, 38)

Phaneroptera nigroantennata Brunner von Wattenwyl 1878. Verhandlungen der Kaiserlich-Königlichen Zoologisch-Botanischen Gesellschaft in Wien, 28: 215. "Japan". Holotype ♂ in Museum für Naturkunde der Humbolt Universitat, Berlin.

= *Phaneroptera nakanoensis* Matsumura and Shiraki 1908. Jour. Coll. Agric. Tohoku Imp. Univ. 3(1): 21. "Japan: Tokyo". Syntype in Hokkaido University, Sapporo. [Ragge 1957]

Korean records. ***Phaneroptera nigroantennata***: Doi 1932: 37; Mori 1933: 56 (Korean Tettigoniidae); Bey-Bienko 1954: 69; Ju 1969: 19 (North Korean check list); Tadauchi 1989: 51 (Japanese check list); Lee 1990: 106 (systematic notes); Moon and Yoon 1993: 56 (KEI); Kwon and Huh 1994: 48 (Korean check list); Kwon et al. 1996: 104 (Korean species list); Bae 1998: 121; Hua 2000: 51 (Chinese list); Kim and Kim 2001: 151, Figs. 3a, 3b, 11 (taxonomy); ***Pheneroptera*** [!] ***nigroantennata***: Kamijo 1933: 49; ***Phaneroptera nakanoensis***: Mori 1933: 56 (Korean Tettigoniidae); Bey-Bienko 1954: 70; Cho 1959: 164, Fig. 38 (manual); Cho 1969: 760, pl. 80 (illustrated encyclopedia: 나카노실베짱이).

Specimens examined. <GW> 1♂, Gangneung, 19 ix 1971, Kim (SSU); 1♀, Gangchon Chuncheon, 18 ix 1982, Kim (SSU); 8♂, Gojindong Mt. Geonbongsan, 28 viii 1990, Park et

al. (SSU); 2♀, Okgye Myeongju, 13−15 ix 1993, Jeong (SSU); 1♂, Mt. Seoraksan, 9 ix 1972, Yoon (EU); 7♂, Changwon−ri Yeongwol, 1 ix−30 x 1999, Kim (NIAST); 1♂1♀, Oeseorak, 26 ix 1979, Jang (SSU); 2♂1♀, Malaise trap, Mt. Chiaksan Wonju, 4 viii−15 x 1999, Ku (NIAST); 2♂, Seohwa Inje, 29 viii 1990, Park (SSU); 1♂1♀, Goseokjeong Cheolwon, 24 viii 1977, Yoon (EU); 1♂, Mt. Myeongseongsan, 17 viii 1999, Ku (NIAST); 8♂21♀, Balsan−ri Chuncheon, 25 viii−10 xi 1998, Park (NIAST); 1♀, Noil Hongcheon, 19 ix 1993, Kim (SSU); **<GG>** 2♂, Mt. Godongsan Gapyeong, 4−10 ix 1977, Seok et al. (SSU); 3♂6♀, Mt. Myeongjisan Gapyeong, 23 ix 1989, Park et al. (SSU); 1♀, Wondang Goyang, 10 viii 1988, Paik (SSU); 1♂, Mt. Cheonggyesan, 23 x 1994, Mo (SSU); 1♀, Gwangneung, 5 ix 1954, Lee (EU); 3♂2♀, Mt. Mugapsan Gwangju, 15 ix 1991, Kim et al. (SSU); 2♂1♀, Eommi−ri Gwangju, 15 ix 1984, Kim et al. (SSU); 4♂, Bogwangsa Gwangtan, 4−17 ix 1977, Park et al. (SSU); 3♂, Mt. Suraksan Namyangju, 15 ix 1991, Kim et al. (SSU); 1♂1♀, Mt. Soyosan, 6 x 1981, Jang (SSU); 2♂1♀, Namhansanseong, 6−28 ix 1997, Jang et al. (SSU); 5♂2♀, Mt. Yeogisan Suwon, 27 viii−31 x 1982, Ryu et al. (NIAST); 2 ♂s, Mt. Seounsan Anseong, 30 ix 1995, Choi (NIAST); 1♀, Yangsuri, 14 x 1978, Yoon (EU); 2♂, Mt. Yongmunsan Yangpyeong, 1 ix 1980, Jang et al. (SSU); 1 ♂, Mt. Ungilsan Namyangju, 19 x 1995, Lee (NIAST); 1♂, Yeoju, 10 x 1975, Park (NIAST); 1♀, Mt. Cheolmasan Incheon, 10 ix 1995, Lee (SSU); 7♂1♀, Mt. Gamaksan Paju, 8 ix 1984, Jang et al. (SSU); 1♂, Mt. Cheonmasan Pyeongnae, 13 x 1984, Jang (SSU); 1♂, Yeongpyeong Pocheon, 21 ix 1996, Kim (SSU); 3♂, Mt. Gwanaksan, 3 x 1992, Lee (SSU); 1♀, Nanjido Seoul, 16 ix 1999, Yoon (EU); 1♂, Mt. Daemosan, 20 viii 1998, Jang (SSU); 3♂, Mt. Dobongsan, 4−16 ix 1982, Kim et al. (SSU); 9♂1♀, Mt. Umyeonsan Seoul, 1−19 ix 1991, Oh et al. (SSU); 6♂, Wonji−dong Seoul, 14 viii−14 ix 1985, Kwon et al. (SSU); 1♂, 8. X. 1995, 이; 4♂2♀, Ehwa Univ. Campus, 21 ix 1976, Yoon (EU); **<CB>** 1♀, Hwayang Cheongcheon Goesan, 15 ix 1984, Kim (SSU); 1♀, Yeongdong, 18 vii 1981, Oh (SSU); 1♂, Deokgok Jecheon, 18 viii 1996, Park (SSU); 1♀, Mt. Wolaksan Jecheon, 29 viii 1994, Lee (SSU); 1♂, Cheonan, 12 ix 1992, Bae (SSU); 1 ♀, Danwol−dong Chungju, 14 ix 1996, Jeon (SSU); **<CN>** 1♂1♀, Mt. Gyeryongsan Gongju, 30 vii 1982, Ko (NIAST); 2♂1♀, ibid. 8 x 1994, Kim (SSU); 1♀, Daejeon, 1 ix 1992, Nam (EU); 2♀, Seochang, 17 ix 1997, Yeom (SSU); 1♀, Hyudae−ri Asan, 20 ix 1992, Kim (SSU); **<GB>** 1♀, Yeongnam Univ. Campus Gyeongsan, 24 viii 1997, Anonym (YNU); 1♀, Goryeongyo Goryeong, 6 ix 1997, Lee (YNU); 1♀, Mt. Sudosan Gimcheon, 1 ix 1995, Choi (NIAST); 3♂1♀, Ehwaryeong Mungyeong, 31 viii 2000, Lee (NIAST); 1♂,

Mungyeongsaejae, 14 ix 1980, Kim (EU); 1♀, Andong Univ. Campus, 17 viii 1990, Lee (NIAST); 1♂1♀, Malaise trap, Mt. Sobaeksan, 13 viii–15 x 1999, Ku (NIAST); **<GN>** 1♂, Deokgye, 18 viii 1996, Park (SSU); 1♀, Jinjeon Masan, 28 viii 2000, Kang (NIAST); 1♀, Duseo Ulju, 11 ix 1992, Choi (SSU); 1♀, Donam-dong Chungmu, 11 ix 1992, Shin (SSU); **<JB>** 1♂, Oncheon Byeonsan, 13 ix 1998, Ryu (YNU); 1♂1♀, Maljae Buan, 13 ix 1998, Ryu (YNU); 1♂, Saja-dong Buan, 13 ix 1998, Ryu (YNU); 1♂, Unju Wanju, 10 viii 1995, Ku (SSU); 2♂, Iri, 22 ix 1991, Oh (SSU); **<JN>** 1♂, Dapgok Gwangyang, 11 viii 1993, Ha (SSU); 1♂1♀, Mt. Mudeungsan Gwangju, 10 x 1988, Lee (SSU); 3♂, "Hakuyosan" = Mt. Paekyangsan Jangseong, 9 x 1921, Hasegawa (NIAST); 1♂, ibid. 23 viii 1999, Kim (NIAST).

Description. **<♂>** Body coloration deep green. Head short and vertical; fastigium of vertex narrower than scape; scape longer than basal width; antennae black with regularly white annulations. Eyes greatly protruding more than hemisphere. Pronotum with roundly convex hind margin and strong humeral sinus; paranotum as high as the length of pronotum, the lower hind margin rounded. Prothorasic spiracle mostly covered by paranotum. Tegmina macropterous, but not reaching hind knees, with well developed black dots in veinlets, its apex rounded; stridulatory apparatus darker, distinctly protruding, as wide as the length of pronotum. Hind wings longer than hind knee, more protruding than a half of tegmen, its apex pointed. Fore coxa with undistinguishable spine. All femora without ventral spinules. Fore tibia longer than fore femur, with basal tympana both inner and outer oval-shape. Hind femur 2.5 times longer than middle femur. Hind tibia dark black, with short white area subasally. Last abdominal tergite truncated. Epiproct shorter than basal width, moderately transverse, posteriorly widened than base, its hind margin weakly concave, each lateral angles rounded (Fig. 38). Cercus six times longer than basal width, incurved, its apex sharply pointed without swollen. Subgenital plate longer than basal width and epiproct, laterally paralleled, its hind margin with deep V-shaped median notch. Styli absent. **<♀>** Cercus simply conical, five times longer than basal width. Subgenital plate wider than long, triangular, with median notch apically. Lateral gonangulum smaller than subgenital plate. Ovipositor sickle-shaped, strongly recurved at base; serration present on dorsal margin and apical ventral margin.

Distribution. Korea, Japan, East China, Taiwan.

Table 4. Measurements of *Phaneroptera* spp.

Species	BL	HWL	PL	TL	HFL	OL
P. falcata	♂ 12−18 ♀ 15−20	29−37	3.2−4.5	♂ 17.0−23.0 ♀ 20.0−25.0	♂ 17.5−21.0 ♀ 18.0−23.7	4.5−5.5
P. nigroantennata	♂ 14−15 ♀ 17−18	29−36	3.5−4.8	♂ 18.5 ♀ 23.0	♂ 21.0 ♀ 24.5	4.5−5.8

Genus *Ducetia* Stål 줄베짱이속

1874. Recencio Orthopterorum, 2: 11. Type species: *Locusta japonica* Thunberg 1815.

Diagnosis. Radius of fore wings almost always with pectinately arranged posterior branches, usually three or more in number and often closely parallel to each other. Pronotum without lateral carinae; lateral pronotal lobes with more or less distinct angle in antero−ventral region of margin. Fastigium of vertex compressed, sulcate above. Fore tibiae with oval tympanic opening on both sides. Fore coxal spine very small or absent (Ragge 1961). 34 species are known in the Ethiopian and Oriental Regions.

12. *Ducetia japonica* (Thunberg 1815) 줄베짱이 (Figs. 21−23, 35−37)

Locusta japonica Thunberg 1815. Mémoires de l'Académie Impériale des Sciences de St. Pétersbourg, 5: 282. "Japan". Type lost.

Locusta thymifolia nec Fabricius 1775. Supplementum Entomologiae Systematicae, 2: 283. "Australia: Murray river". Syntype in The Natural History Museum, London.

Korean records. ***Ducetia japonica***: Burr 1898: 29 ("Port Lazareff"); Doi 1932: 37; Kamiya and Miyasaka 1938: 63; Bey−Bienko 1954: 89, Figs. 59, 62; Cho 1959: 165, Fig. 40 (manual); Cho 1965: 10 ("Dagelet"); Cho 1969: 761, pl. 51, text−Fig. 12 (illustrated encyclopedia); Ju 1969: 17 (North Korean check list); Tadauchi 1989: 51 (Japanese check list); Lee 1990: 107 (systematic notes); Lee and Kim 1993: 39 (ecology and control); Moon and Yoon 1993: 56 (KEI); Kwon and Huh 1994: 48 (Korean check list); Kwon et al. 1996: 103 (Korean species list); Bae 1998: 124; Hua 2000: 49 (Chinese list); Kim and Kim 2001: 152, Figs. 4a, 4b, 12 (taxonomy); Storozhenko 2004: 62, Figs. 37, 38, 89, 90; ***Dicetia*** [!] ***japonica***: Mori 1933: 56 (Korean Tettigoniidae); ***Dicetia*** [!] ***thymifolia***: Mori 1933: 56 (Korean Tettigoniidae); ***Ducetia thyrnifolia*** [!]: Ju 1969: 17 (North Korean check list).

Specimens examined. <GW> 1♂1♀, Gyodong Gangneung, 12 ix 1993, Park (SSU); 3♀, Gangchon Chuncheon, 4−18 ix 1982, Kim et al. (SSU); 4♂2♀, Gojindong Mt. Geonbongsan, 28 viii 1990, Park et al. (SSU); 2♀, Sinpyeong Goseong, 26 viii 1998, Nam

(SSU); 2♀, Mt. Seoraksan, 9 x 1970, Byeon et al. (EU); 5♀, Chanwon-ri Yeongwol, 16 x 1998, Park (NIAST); 4♂, Malaise trap, Mt. Chiaksan Wonju, 4 viii-15 x 1999, Ku (NIAST); 1♀, Gyeonggang Chunseong, 16 ix 1984, Jang (SSU); 6♂27♀, Balsan-ri Chuncheon, 28 viii-10 xi 1998, Park (NIAST); 1♀, Noil Hongcheon, 18 ix 1993, Kim (SSU); 1♀, Mt. Paekunsan Hwacheon, 16 ix 1990, Lee (SSU); **<GG>** 2♀, Gwangneung, 5-9 x 1968, Cho et al. (EU); 3♂6, Mt. Chukryeongsan Sudong, 6 IX-19 x 1980, Jang et al.; 2♂1♀, Mt. Cheonggyesan, 31 viii-1 ix 1991, Kim et al. (SSU); 1♀, Maseok Namyangju, 17 ix 1988, Lee (SSU); 1♂1♀, Mt. Suraksan, 15 ix 1991, Kim (SSU); 1♂4♀, Suwon, 8 viii-28 ix 1992, Yeom et al. (NIAST); 1♂2♀, Mt. Myeongjisan 23 ix 1989, Cho et al. (SSU); 1♀, Ganghwado, 25 x 1992, Yoon (SSU); 1♂, Jangheung Goyang, 18 ix 1991, Paik (SSU); 1♂1♀, Mt. Gwanaksan, 8-15 ix 1990, Kim et al. (SSU); 1♀, Mt. Namsan, 7 XI 1992, Kim (EU); 4♂1♀, Mt. Daemosan, 29 viii-13 x 1998, Park et al. (SSU); 5♂2♀, Mt. Dobongsan, 21 viii-11 x 1992, Jeon et al. (SSU); 3♂10♀, Ungogae Gwangju, 15 IX-9 x 1984, Park et al. (SSU); 1♂, Bogwangsa Gwangtan, 3 x 1998, Kim (NIAST); 3♀, Mt. Soyosan Dongducheon, 1-22 ix 1991, Lee (SSU); 3♀, Mt. Bukhansan, 3 ix 2000, Kim (NIAST); 2♂2♀, Mt. Bulamsan, 14 vii-13 ix 1986, Jegal et al. (SSU); 1♂2♀, Namhansanseong, 31 viii-3 x 1996, No et al. (SSU); 2♂, Mt. Achasan, 28 viii 1997, Cho (SSU); 1♂2♀, Mt. Yongmunsan, 16-22 ix 1990, Kim (SSU); 2♀, Mt. Yumyeongsan Yangpyeong, 3 viii 1998, Sohn (SSU); 1♀, Gunnam Yeoncheon, 4 ix 1994, Yang (SSU); 5♂1♀, Wonji-dong, 14 ix 1985, Kim et al. (SSU); 1♀, Uijeongbu, 27 ix 1998, Kim (SSU); 1♀, Juan Incheon, 10 IX. 1967, Kim (EU); 1♂3♀, Mt. Gamaksan Paju, 8 ix 1984, Kim et al. (SSU); 1♂2♀, Mt. Cheonmasan Pyeongnae, 29 viii-4 ix 1981, Kim et al. (SSU); 2♂, Yeongpyeong Pocheon, 18 viii-21 ix 1996, Kim et al. (SSU); 1♀, Hyangnam Hwaseong, 18 ix 1988, Lee (SSU); **<CB>** 1♀, Goesan 9 x 1987, Ahn (NIAST); 1♀, Sojeong Gunbuk Okcheon, 23 x 1990, Kim (SSU); 1♀, Ewol Jincheon, 12 viii 1998, Lee (NIAST); 1♂, Cheonju, 2 viii 1960, Jeong (EU); **<CN>** 1♂, Mt. Gyeryongsan Gongju, 28 vii 1984, Kim (SSU); 2♂, Dusan Dangjin, 17 viii 1984, Choi (SSU); 1♀, Daejeon, 30 ix 1993, Lee (SSU); 1♀, Jiksan, 15 viii 1971, Park (SSU); 1♀, Cheonan, 14 x 1996, Jeong (SSU); 1♀, Hongseong, 23 x 1983, No (SSU); **<GB>** 2♀, Yeongnam Univ. Campus Gyeongsan, 30 viii-2 ix 1993, Kim et al. (YNU); 1♀, ibid. 18 viii 1996, Park (YNU); 1♀, Sangri Seongsan Goryeong, 6 ix 1997, Ryu (YNU); 1♂1♀, Jikjisa Gimcheon, 22 x 1972, Cho (EU); **<GN>** 1♂, Mt. Bukbyeongsan Dongbu Goje, 29 viii 2000, Lee (NIAST); 1♂, Mt. Gudeoksan Busan, 23 viii 1971, Kim (EU); 1♀, Yaeum Ulsan, 22

ix 1991, Shim (SSU); **<JB>** 1♀, Maljae Buan, 13 ix 1998, Ryu (YNU); 1♂2♀, Bongeun Buan, 10 x 1981, Jang (SSU); 1♀, Imsil, 17 x 1970, Han (EU); 1♂, Jangsu, 1 viii 1960, Lee (EU); **<JN>** 1♀, Toji Gurye, 27 ix 1996, Huh (SSU); 1♂1♀, Mt. Paekunsan Gwangyang, 24 viii 1999, Kim (NIAST); 2♂, Gwangju, 5−13 viii 1985, Yoon (SSU); 1♀, Mt. Mudeungsan, 29 ix 1984, Jang (SSU); 1♂, ibid. 10 x 1988, Im (SSU); 1♀, Yeosu, 23 ix 1991, Shim (SSU); 1♂, Is. Wando, 23 viii 1982, Jang (SSU); 1♂, ibid. 31 viii 1984, Ahn (NIAST); 2♂2♀, "Hakuyosan" = Mt. Paekyangsan Jangseong, 9 x 1921, Hasegawa (NIAST); 1♂, Haenam, 28 vii 2000, Kim (NIAST); **<JJ>** 1♀, Jeju, 17 viii 1975, Kim (SSU); 1♂, ibid. 12 viii 1983 Lee, (NIAST).

Description. <♂> Body coloration green or brown, two contrastive forms present, but the green dominant. Head short and vertical, the fastigium of vertex not protruding than scape or antennal sockets; antennal socket as wide as the greatest width of an eye. Antennae monochromatic, without annulation; scape longer than basal width. Pronotum with slightly concave anterior margin and roundly convex posterior margin, and weak humeral sinus. Paranotum the height shorter than length of pronotal disk. Tegmina macropterous, surpassing hind knee, its apex rounded; radius with 4−6 closely parallel posterior branches before the mid of R; stridulatory area narrower than posterior margin of pronotum, the overlapping margin of tegmina on dorsum brownish. Hind wings more protruding behind tegmina a fifths, its apex acute. Fore coxa without distinct basal spine. Fore femur with 4−6 pairs of ventral spinules, middle femur with 9−11 outer ventral spinues, hind femur with 12−14 outer, 6−7 inner ventral spinules apically. Fore tibia with basal tympana both inner and outer ones oval−shaped. Last abdominal tergite downwardly truncated, its hind margin slightly concave. Epiproct short, triangular. Cercus six times longer than basal width, with interno−ventral ridge at apex, the narrowest part two thirds from the base; downwardly recurved than subgenital plate (Fig. 35). Subgenital plate recurved, three times longer than basal width, deeply bifurcate in two thirds from the base forming contiguous a pair of lobes (Fig. 36). Styli absent. **<♀>** More larger and robuster than male. Last abdominal tergite narrower, its hind margin weakly concave. Epiproct longer than basal width, triangular. Cercus simply conical, five times longer than basal width. Subgenital plate tongue−shaped, as long as basal width, with round apex; carinae and notch absent. Lateral gonangulum roundly blunted, smaller than subgenital plate. Ovipositor sickle−shaped, gently recurved, four times longer than middle width; distinct small protuberance present on ventral base its apex downward; serration present on dorsal margin and apical ventral

margin (Fig. 37). **<Measurements>** BL ♂ 16−20, ♀ 19−23 (HWL ♂ 35−37, ♀ 36−39); PL ♂ 3.5−4.0, ♀ 3.5−4.5; TL ♂ 24.0−28.0, ♀ 22.0−29.0; HFL ♂ 17.0−20.0, ♀ 20.0−22.0; OL 5.0−6.0.

Distribution. Korea, Japan, China, Taiwan, India, Indonesia, Philippines, Is. Solomon, North Australia.

Genus *Kuwayamaea* Matsumura and Shiraki 북방실베짱이속

1908. Jour. Coll. Agric. Tohoku Imp. Univ. 3(1): 7. Type species: *Kuwayamaea sapporensis* Matsumura and Shiraki 1908.

Diagnosis. Tegmina wide and relatively short, slightly wider than pronotal length; R producing near mid a simple, unbranched sector of RS and more distally giving rise to 1−2 oblique branches. Subgenital plate of male tubular, nonbifurcate. Wings shorter than tegmina only in the female. Ovipositor with smooth upper margin. 10 species are known in the East Asia.

13. *Kuwayamaea sapporensis* Matsumura and Shiraki 1908 북방실베짱이 (Figs. 24−25, 40−41)

Kuwayamaea sapporensis Matsumura and Shiraki 1908. Jour. Coll. Agric. Tohoku Imp. Univ. 3(1): 8. "Japan: Hokkaido". Syntype in Hokkaido University, Sapporo.

Isotima chinensis nec Brunner von Wattenwyl 1878. Verhandlungen der Kaiserlich−Königlichen Zoologisch−Botanischen Gesellschaft in Wien, 28: 113. "China: Chekiang". Neotype ♂ in Zoological Institute of the Russian Academy of Sciences, St. Petersburg.

Isotima japonica nec Matsumura and Shiraki 1908. Jour. Coll. Agric. Tohoku Imp. Univ. 3(1): 10, pl. 1, Fig. 9a−b. "Japan: Hagi". Lectotype ♂ in Hokkaido University, Sapporo.

Korean records. ***Kuwayamaea sapporensis***: Uvarov 1926: 274 ("Quelpart"); Doi 1932: 37; Mori 1933: 56 (Korean Tettigoniidae); Bey−Bienko 1954: 92, Figs. 22, 60; Cho 1959: 165, Fig. 41A−B (manual); Cho 1963: 163 (Is. Jejudo); Cho 1969: 762, pl. 51, 80, text−Fig. 13 (illustrated encyclopedia); Ju 1969: 18 (North Korean check list); Rentz and Miller 1971: 270 (Mt. Palgongsan); Gorochov et al. 1993: 288, Figs. 1−11; Kwon et al. 1996: 103 (Korean species list: 극동실베짱이); Hua 2000: 50 (Chinese list); Kim and Kim 2001: 153, Figs. 5a, 5b, 13 (taxonomy); Storozhenko 2004: 58, Figs. 36, 80−84; ***Isotima japonica***: Nagaoka 1938: 29 ("Myoko" = Mt. Myohyangsan); ***Ducetia chinensis***: Ragge 1961: 190, Figs. 2, 8, 24, 35, 56, 84 ("Quelpart"); Storozhenko 1980: 12; Storozhenko 1986: 250, Figs. 117(8), 120(2); Tadauchi 1989: 51 (Japanese check list); Moon and Yoon 1993: 56 (KEI); Kwon and Huh 1994: 48 (Korean check list); Hua 2000: 49 (Chinese list); ***Decutia***

[!] ***chinensis***: Lee 1990: 107 (systematic notes); ***Duetia*** [!] ***chinensis***: Moon and Kim 1995: 231; ***Kuwayamaea chinensis***: Kwon et al. 1996: 103 (Korean species list); ***Ducetia sapporensis***: Hua 2000: 49 (Chinese list).

Specimens examined. **<GW>** 1♂, Malaise trap, Mt. Chiaksan Wonju, 4 vii–15 x 1999, Ku (NIAST); 1♀, Jindong-ri Inje, 1 x 1995, Moon (KU); 1♂2♀, Balsan-ri Chuncheon, 13 vii–10 viii 1998, Park (NIAST); **<GG>** 1♂, Gwangreung, 4 viii 1981, Yoon (EU); 1♂, Pocheon, 30 vii 1994, Choi (NIAST); **<CN>** 5♂, Mt. Gwangdeoksan Cheonan, 9 viii 1999, Kim (NIAST); **<GB>** 1♀, Andong, 2 vii 1988, Lee (NIAST); 1♀, Mt. Juwangsan Cheongsong, 6 ix 2000, Kim (NIAST); **<GN>** 2♂, Hyangrobong Dongsan-ri Sangri-myeon Goseong, 5 viii 1999, Jeon (GSU); 1♂, Mt. Muisan Munsuam Sangri-myeon Goseong, 7–8 viii 1996, Lee (GSU); 1♂, Mt. Odusan Osan-ri Sangri-myeon Goseong, 7–8 viii 1996, Jeon (GSU); 1♂, Mt. Yeohangsan Happo Masan, 12 viii 1999, Kim (GSU); 1♀, Cheokgwa-ri Beomseo-myeon Ulju, 17 viii 1987, Anonym (GSU); 1♂, Mt. Jirisan, 19 viii 1982, Kim (KU); **<JB>** 2♂1♀, Mt. Naejangsan, 2–3 viii 1974, Kim et al. (KU); 1♂, Selcheon-myeon Muju, 22 viii 1977, Nam (KU); 1♀, Naesosa Buan, 17 vii 1998, Ryu (YNU); 1♀, Bongnae Buan, 20. VII. 1998, Ryu (YNU); **<JN>** 2♀, Mt. Baekunsan Gwangyang, 20 viii 1992, Ahn (NIAST); 2♂, ibid. 25 viii 1999, Kim (NIAST); 1♂, Songgwangsa Senamsa, 8 viii 1976, Kim (KU); 1♂1♀, Dogapsa Mt. Wolchulsan Yongam, 27–28 vii 1988, Park (KU); 2♂, Mt. Paekyangsan Jangseong, 4–5 viii 1974, Kim (KU); 1♀, Wonsan Gusan-ri Nasan-myeon Hampyeong, 28. VII. 2000, Park WS; 1♂, Yongseong-ri Daedong-myeon Hampyeong, 25 vii 2000, Lee SM; **<JJ>** 1♂, Donnaeko Seogwipo, 29 vii 1998, Park (NIAST); 3♂2♀, Seongpanak, 5 viii 1984, Park WS; 1♂, ibid. 12 viii 1995, Anonym (NIAST); 1♀, Eoseungsaeng, 11 viii 1984, Park WS; 3♀, ibid. 2 ix 1994, Park WS; 1♂1♀, Mt. Hallasan, 11 viii 1984, Lee SM; 1♂, "Quelpart Island", 1 ix 1905, S. Ichikawa (The Natural History Museum, London).

Description. **<♂>** Body coloration deep green. Head short, vertical. Antennae pale brown, longer than body; antennal socket slightly wider than horizontal diameter of an eye. Fastigium of vertex short, ventrally notched by fastigium of frons. Pronotal disk longer than width, its anterior margin weakly sinuated, posterior margin roundly wide, with median concavity; median carina distinct only in metazona, V-shaped sulcus located behind the mid. Paranotum longer than high with a sulcus and humeral sinus. Tegmina macropterous, longer than abdominal end, but not reaching hind knee, its apex round; R with 4–5 RS pectinated, media not branched; basal stridulatory area brown, shorter than pronotum; hind wings longer

than tegmina reaching hind knee. Fore coxa with a very small basal spine. Fore femur with 4−5 inner spinules. Fore tibia with oval−shaped tympana. Middle femur longer than fore one, with 7−10 outer ventral spinules. Hind femur longer than body, with 10−15 outer, 7−8 inner ventral spinules. Cercus thick and conical, as long as three times longer than basal width, fairly recurved, its apex sharply pointed. Subgenital plate tubular, more three times longer than basal width, its hind margin with feebly sclerotized long triangular membrane at distal median part; basal part with triangular−shaped carina, depressed inward; at apices with two inwardly−directed apical teeth (Fig. 40). **<♀>** Body more robuster than male. Fore coxa without basal spine. Tegmina just reaching end of ovipositor, R branched as three RS. Hind wings significantly shorter than tegmina, not visible fully covered by them. Subgenital plate triangular, shorter than basal width, with obtusely pointed apex (Fig. 41). Ovipositor shorter than middle femur, strongly recurved sickle−shape. delicate serration present apically. **<Measurements>** BL ♂ 18−23, ♀ 22−27 (HWL ♂ 32−38, ♀ 32−36); PL ♂ 4.3−4.7, ♀ 4.9−5.8; TL ♂ 23.5−27.0, ♀ 25.0−27.6; HFL ♂ 23.0−26.5, ♀ 24.5−27.5; OL 7.5−9.3.

Distribution. Korea, Japan, Russian Far East.

Genus *Psyrana* Uvarov 검은테베짱이속

1940. Annals and Magazine of Natural History, London, (11)6: 117. Nom. nov. for *Psyra* Stål 1876 nec Walker 1870. Type species: *Psyrana melanonota* Stål 1876.

Diagnosis. Pronotum with flat posterior disc, Posterior margin widely rounded, with conspicuous or moderately thin convex ridge. Stridulatory apparatus of male triangular. Ovipositor long and narrower, more than a thirds, sometimes half as long as hind femora. 22 species are known in the world.

14. *Psyrana japonica* (Shiraki 1930) 검은테베짱이 (Figs. 29, 44−45)

Psyra japonica Shiraki 1930. Trans. Nat. Soc. Formosa, 20: 339. "Japan: Wakayama". Syntype in Taiwan University, Taipei.

Korean records. *Psyrana japonica*: Kim and Kim 2001: 154, Figs. 6a, 6b, 14 (taxonomy).

Specimens examined. <JJ> 1♂, Donnaeko, 15 viii 1990, Yoon JG (KU); 1♂, Gwaneumsa, 14 viii 1990, Han KD (KU); 1♀, ibid. 21 viii 1995, Park WS; 1♂, ibid. 10 viii 2001, Kim MA (NIAST).

Description. <♂> Body coloration deep green. Head short and vertical, the height two times

longer than of the greatest width. Fastigium of vertex very short, with shallow median furrow, not protruding than fastigium of frons or scape; scape longer than wide, the antennal sockets with elevated inner margins. Eyes projected more than hemisphere, larger than antennal socket. Pronotum with disk longer than wide, its hind margin roundly wide, with a dark flange; V-shaped sulcus in mid; lateral lobe of pronotum longer than high with distinct humeral sinus. Prothorasic spiracle large, oval, but concealed by pronotum. Fore coxa with a small basal spine. Fore femur with 4-6 inner spinules apically, middle femur with 2-6 outer spinules apically, hind femur with 3-7 outer, 7-9 inner spinules. Fore tibia with swollen base, the tympana opened oval-shape externally, slit-shaped internally. Middle femur longer than fore one, hind femur two times longer than middle one. Tegmina macropterous, surpassing half of hind tibia, its apex rounded; precostal area contacted with costa darkish brown; RS branched just before the mid of R; stridulatory area ovoidal, the left margin obtusely blunted; the blunt line with stridulatory files more dark (Fig. 45). Hind wings a little longer than tegmen, its apex roundly pointed. Last abdominal tergite simply truncated. Epiproct long, triangular. Cercus four times longer than basal width and thick, horn-shaped with granulation, its apex pointed; a short inner spine located on middle dorsum of cercus, its apex sharply pointed (Fig. 44). Subgenital plate trapezoidal, longer than basal width, slightly more projected than cerci, recurved from the mid; hind margin with V-shaped notch; median and lateral carinae distinct, the lateral sides rather paralleled. Stylus small, two times longer than basal width. **<♀>** Subgenital plate trapezoidal, its hind margin widely rounded. Ovipositor sickle-shaped as long as four times of middle width. **<Measurements>** BL 21-23 (HWL 44-48); PL 5.3-5.6; TL 28.0-37.0; HFL 24.5-25.0; OL 10.0.

Distribution. Korea (Is. Jejudo), Japan.

Genus *Holochlora* Stål 베짱이붙이속

1873. Öfversigt af Kongl. Vetenskaps-Akademiens Förhandlinger Stockholm, 30(4): 42. Type species: *Holochlora venosa* Stål 1873.

Diagnosis. Female with the dorsal valvulae bear, if at all, only slight evidence of truncation with the entire upper margin denticulate. Female possess a triangular subgenital plate uncleft at the apex. Male possessing the pair of knob-like processes, male subgenital plate usually strongly constricted and parallel-sided in the apical half, the apices bearing long styli. Femoral spines not conspicuously black and the base of the tegmina concolorous with

the rest of the tegmina. 55 species are known in the world.

15. *Holochlora japonica* Brunner von Wattenwyl 1878 베짱이붙이 (Figs. 30-31, 43)

Holochlora japonica Brunner von Wattenwyl 1878. Verhandlungen der Kaiserlich-Königlichen Zoologisch-Botanischen Gesellschaft in Wien, 28: 181. "Japan". Holotype ♂ in Naturhistorisches Museum Wien.

Korean records. ***Holochlora japonica***: Mori 1933: 56 (Gwangju); Bey-Bienko 1954: 108, Figs. 24, 65, 68; Cho 1959: 166, Fig. 42 (manual); Cho 1969: 762, pl. 51 (illustrated encyclopedia); Ju 1969: 18 (North Korean check list); Tadauchi 1989: 51 (Japanese check list); Moon and Yoon 1993: 56 (KEI); Kwon and Huh 1994: 48 (Korean check list); Kwon et al. 1996: 103 (Korean species list); Hua 2000: 50 (Chinese list); Kim and Kim 2001: 154, Figs. 7a, 7b, 15 (taxonomy).

Specimens examined. <GB> 1♀, Yeongnam Univ. Campus Gyeongsan, 16 x 1993, Lee (YNU); 1♀, Sangri Seongsan Goryeong, 6 ix 1997, Ryu (YNU); 1♀, Inan Seongsan Goryeong, 6 ix 1997, Lee (YNU); **<GN>** 1♀, Mt. Bukbyeongsan Dongbu Geoje, 29 viii 2000, Lee et al. (NIAST); 3♂, Jangsuam Yulpo Dongbu Geoje, 25-26 viii 1990, Yoon et al. (GSU); 1♀, Soksa Geumsan, 17 x 1985, Jeon (GSU); 1♀, Mt. Muhaksan Masan, 3 viii 1997, Lee (SSU); 1♂, Mt. Gudeoksan Busan, 4 viii 1971, Kim (EU); 1♀, Soho-dong Yeosu, 23 ix 1991, Shim (SSU); 1♀, Gajwa-dong Jinju, 20 viii 1984, Ku (GSU); 1♂, ibid. 18 viii 1985, Oh (GSU); 1♂ 1♀, ibid. 27 x 1986, Paik et al. (GSU); 1♀, ibid. 27 viii 1987, Anonym (GSU); 8♂4♀, Mt. Bibongsan Sangbongseo-dong Jinju, 10 viii-12 x 1984, Oh (GSU); 2♀, Jinyangho Jinju, ix 1985, Song (GSU); 1♀, Jinhae, 18 ix 1988, Yoon (EU); 1♂, Changwon, 8 ix 1991, Lee (NIAST); 1♂, Gadeok-ri Geumseong Hadong, 19 ix 1998, Jeon (GSU); 1♀, Pyeongchon Cheongam Hadong, 17 ix 1981, Anonym (GSU); **<JJ>** 1♀, Seongeup Namjeju, 3 ix 1994, Lee SM; 1♀, Musucheon, 9 x 1999, Kim TW (NIAST); 1♀, Seoguipo, 16 viii 1973, Huh (EU); 1♀, Donnaeko Seoguipo, 3 ix 1994, Lee SM.

Description. <♂> Body coloration deep green. Head with round vertex, the fastigium of vertex depressed with median longitudinal shallow furrow. Scape longer than wide, the antennal socket with more protruding inner margin than fastigium of frons. Pronotum with deep lateral lobes, the height as long as pronotal length; humeral sinus present; anterior margin truncated, posterior margin convex, the width similar each other; V-shaped notch in mid, a shallow longitudinal median furrow present from three quarters to hind margin. Tegmina broad leaf-shaped, macropterous, reaching half of hind tibia, its apex rounded;

costa whitish with contacted narrow dark band towards precostal area. Hind wings a little longer than tegmina, its apex roundly pointed. Fore coxa with a small basal spine anteriorly. Fore femur with 4−5 inner ventral spinules, middle femur with 4−5 outer ventral spinules, hind femur with 4−5 outer, 5−6 inner ventral spinules apically. Fore tibia with five pairs of ventral spinules and four outer dorsal spinules; inner tympana slit−shaped, outer tympana oval−shaped. Last abdominal tergite largely developed, covering the anus and phallic structure, bilobated by median incision; each lobe rectangular laterally, its hind margin truncated (Fig. 43). Cercus five times longer than basal width and tapering apically, its apex sharply pointed and incurved, just visible below the large last abdominal tergite. Subgenital plate longer than basal width, slightly more protruding than last abdominal tergite, triangularly narrower from the mid; hind margin narrower with clear V−shaped notch deeply, the lateral carinae parallel developed. Styli short and blunt, two times longer than basal width. **<♀>** Larger and longer than male. Cercus simple, conical, five times longer than basal width, gently incurved. Subgenital plate triangular, as long as basal width, with distinct median carina, without median notch. Lateral gonangulums developed, as large as subgenital plate. Ovipositor stout sickle−shaped, serrated along with dorsal margin and the apex weakly truncated. **<Measurements>** BL ♂ 20−26, ♀ 28−35 (HWL ♂ 43−46, ♀ 54−61); PL ♂ 5.4−5.8, ♀ 6.2−7.3; TL ♂ 34.4−36.0, ♀ 45.8−48.5; HFL ♂ 25.0−26.0, ♀ 28.5−31.0; OL 9.5−10.5.

Distribution. Korea, Japan, China, Taiwan, Vietnam, Hawaii (introduced).

Genus *Sinochlora* Tinkham 날베짱이속

1945. Transactions of the American Entomological Society, 70: 235. Type species: *Sinochlora kwangtungensis* Tinkham 1945.

Diagnosis. Female with the blade of the ovipositor equally broad throughout, the upper valvulae strongly truncate at the apex, the truncate portion only strongly denticulate. Female subgenital plate cleft at the apex. Male possessing the a pair of forcipate processes on the epiproct which also bears a median knob−like swelling is enormously produced. Male subgenital plate broader, more deeply cleft and from moderately to very strongly arcuately reflexed. Strong black femoral spines and the black and white costal vein at the base of the tegmina. Eight species are known in China, Japan and Korea, subgenric status under *Holochlora* considered in OSJ (2006).

16. *Sinochlora longifissa* (Matsumura and Shiraki 1908) 날베짱이 (Figs. 28, 42)

Holochlora longifissa Matsumura and Shiraki 1908. Jour. Coll. Agric. Tohoku Imp. Univ. 3(1): 18. "Japan: Yamaguchi". Holotype ♂ in Hokkaido University, Sapporo.

Korean records. ***Holochlora longifissa***: Lee 1990: 107 (systematic notes); Moon and Yoon 1993: 56 (KEI); Kwon and Huh 1994: 48 (Korean check list); Kwon et al. 1996: 103 (Korean species list); Bae 1998: 130; ***Sinochlora longifissa***: Kim and Kim 2001: 155, Figs. 8a, 8b, 16 (taxonomy).

Specimens examined. **<GW>** 1♀, Gangchon Chuncheon, 20 ix 1996, Huh (SSU); **<GG>** 1♂3♀, Seondu-ri Gilsang-myeon Ganghwa, 12 viii 1991, Kim (SSU); 1♂, Mt. Manisan Ganghwa, 11 viii 1991, Kim (SSU); 1♂, Jeondeungsa Ganghwa, 15 ix 1991, Ahn (SSU); 1♂, Ilsan Goyang, 4 x 1998, Choi (NIAST); 1♂, Gwacheon, 8 ix 1990, Kim (SSU); 1♀, Mt. Cheonggyesan Gwacheon, 20 ix 1998, Kim (NIAST); 1♂1♀, Mt. Taehwasan Gwangju, 11 viii 1989, SHS et al. (KU); 1♂, Bogwangsa Gwangtan, 3 x 1998, Kim (NIAST); 1♂, Songnae Dongducheon, 11 viii 1991, Yoon (SSU); 1♂, Seongnam, 14 ix 1987, Lee (SSU); 1♀, Namhansanseong, 26 viii 1990, Kim (SSU); 1♂, Bundang, 5 ix 1997, Lee (SSU); 1♂, Suwon, 21 viii 1985, Ahn (NIAST); 1♀, Mt. Gwanggyosan Suwon, 18 viii 1999, Chang (NIAST); 13♂1♀, Mt. Surisan Anyang, 23 viii 1986, Ahn et al. (NIAST); 1♂, Osan, 11. IX. 1992, Park (SSU); 1♀, Myeongji Univ. Campus Yongin, 10 viii 1996, Kim (SSU); 1♀, Mt. Sohyeonsan Yongin, 16 ix 1991, Lee (SSU); 6♂2♀, Jangheung, 3 ix 1999, Yoon (EU); 4♂2♀, Mt. Jugeumsan Pocheon, 12 ix 1999, Park (NIAST); 1♀, Mt. Dobongsan, 24 ix 1995, Lee (SSU); 1♂, Mt. Cheonggyesan, 22 viii 1973, Oh (SSU); 1♀, ibid. 15 viii 1998, Kang (SSU); **<CB>** 1♀, Dongi-myeon Okcheon, 28 ix 1993, Lee (SSU); 1♀, Mipyeong Cheongju, 18 x 1992, Park (SSU); **<CN>** 2♂1♀, Gapsa Mt. Gyeryongsan Gongju, 4-6 viii 1973, Nam et al. (KU); 1♀, ibid. 19 viii 1976, Lee (KU); 1♂1♀, Cheondong Daejeon, 10 vii-22 viii 1997, Lee et al. (SSU); 1♂, Daecheon Boryeong, 15 viii 1987, Sohn (SSU); 1♂, Onseok-dong Seosan, 18 viii 1997, Choi (SSU); 1♀, Seochang, 17 ix 1997, Yeom (SSU); 1♂1♀, Hyudae-ri Asan, 20 ix 1992, Kim (SSU); **<GB>** 1♂, Ehwaryeong Mugyeong, 31 viii 2000, Lee (NIAST); 1♂, Samgye-ri Unmun-myeon Cheongdo, 26 viii 1990, Park (GSU); **<GN>** 1♀, Bonggoksa Geoje, 14-15 viii 1985, Kim (GSU); 1♀, ibid. 14 viii 1986, Park (GSU); 1♀, Sinhyeon Geoje, 6 viii 1987, Anonym (GSU); 1♂, Yongyeon Habuk Yangsan, 20 viii 1987, Anonym (GSU); 1♀, Seochang Ungsang Yangsan, 19 viii 1987, Anonym (GSU); 1♀, Yeongpo Wondong-myeon Yangsan, 15 viii 1989, Anonym (GSU); 1♂, Gampo Ulju, 12 viii 1990, Shin (NIAST); 1♂1♀, Gangdong Ulju, 18

viii 1987, Anonym (GSU); 10♂, Cheokgwa-ri Beomseo-myeon Ulju, 17-18 viii 1987, Anonym (GSU); 1♂, ibid. 14-18 viii 1989, (GSU); 3♂, Pyeonchon Cheonam Hadong, 17 ix 1987, Anonym (GSU); 7♂1♀, Hwagae Hadong, 19-29 ix 1987, Anonym (GSU); **<JB>** 2♂, Byeonsan, 20 vii 1982, Ko (SSU); 3♂1♀, Naesosa Buan, 6 ix 1998, Ryu et al. (YNU); 1♂, Maljae Buan, 13 ix 1998, Ryu (YNU); 2♂1♀ Buan Dam Buan, 5 ix 1998, Lee et al. (YNU); **<JN>** 1♀, Mt. Paekunsan Gwangyang, 20 viii 1992, Ahn (NIAST); 1♂, ibid. 25 viii 1999, Kim (NIAST); 1♂, Mt. Naejangsan, 6 x 1974, Yoo (KU); 2♂, Suncheon, 20 viii-10 ix 1987, Paik (KU); 1♀, Mt. Paekyangsan Jangseong, 13 x 1971, Han (EU); 1♂1♀, ibid. 23 viii 1999, Kim (NIAST); 2♂, Mt. Jirisan, 17 x 1992, Kim et al. (EU); 1♀, ibid. 17 ix 1996, Choi (NIAST); 2♂2♀, Mt. Daedunsan Haenam, 14-15 viii 1972, Kim et al. (KU).

Description. **<♂>** Body coloration bright green. Head with round vertex and vertical. Fastigium of vertex depressed, with shallow median furrow. Antennal socket smaller than eye, with projecting inner margin. Pronotum with deep lateral lobe, the height as long as the pronotal length; humeral sinus clear. Tegmina broad leaf-shaped, macropterous, surpassing the half of hin tibia, its apex rounded; costa whitish with dark precostal marginal band; right tegmen without mirror. Hind wings a little longer than tegmen, its apex pointed. Fore coxa with a small basal spine. Fore femur bright pink in alive state, with 5-6 darkish small inner ventral spinule. Middle femur a little longer than fore one, with four outer ventral spinules. Hind femur with 7-9 outer, six inner ventral spinules. Fore tibia with slit-shaped inner tympanum and oval-shaped outer tympanum. Last abdominal tergite with three short blunted prolongations of which the median is wider, truncated, whereas lateral ones short hook-shaped, its apex incurved (Fig. 42). Epiproct upwardly spinal shaped with two pointed apices. Cercus thin, simple, hardly protruding beyond apex of lateral prolongations. Subgenital plate longer than basal width, narrower, deeply bifurcate in the middle; more protruding than last abdominal tergite. Stylus very short and thick, 1.5 times longer than basal width. **<♀>** Larger and longer than male. Cercus simply conical, five times longer than basal width. Subgenital plate shorter than basal width, triangular, with distinct median notch V-shaped at apex. Lateral gonangulums smaller than subgenital plate. Ovipositor stout sickle-shaped, with developed serrations on dorsal truncated margin and ventral apical margin. **<Measurements>** BL ♂ 25-28, ♀ 27-30 (HWL ♂ 46-55, ♀ 53-57); PL ♂ 5.5-6.0, ♀ 6.0-7.2; TL ♂ 40.0-47.0, ♀ 43.0-48.0; HFL ♂ 25.0-28.5, ♀ 28.0-32.0; OL 7.5-9.5.

Distribution. Korea, Japan, China.

Subfamily Meconematinae 어리쌕새기아과

Size smallest (less than 25㎜) and the body feeble among Tettgoniids, always green or greenish-yellow. Prosternum lacks spine. Anterior tibiae with long, raptorial ventral spines, but lack apicodorsal ones. Auditorial tympana usually open and of uniform width. First and second tarsal segments laterally grooved. Ovipositor rather delicate and curved upward. The members have most complex external structures of the male genitalia.

Key to Species of Meconematinae

1. Pronotum longer than tegmina micropterous (Figs. 46-47) … ***Cosmetura fenestrata*** (p. 51)
- Pronotum shorter than tegmina macropterous …… 2
2. Pronotum with a pale longitudinal stripe along median; tegmina with a few small black spots …… ***Kuzicus suzukii*** (p. 52)
- Pronotum with a pair of black longitudinal stripes along lateral sides; tegmina clear without spots …… ***Xizicus coreanus*** (p. 54)

Genus *Cosmetura* Yamasaki 민어리쌕새기속

1983. Mem. natn. Sci. Mus. Tokyo, 16: 138. Type species: *Cosmetura ficifolia* Yamasaki 1983.

Diagnosis. Fastigium of vertex with a weak sulcus. Pronotum rather long, shiny, poorly with an arcuate sulcus in distal fourth of prozona, and without humeral sini; metazona roundly convex in male and normally level in female. Male tegmina sometimes reaching the posterior margin of the second abdominal tergite and showing typical degenerated venation, and almost all female tegmina concealed under pronotum. Tibial auditory structure long elliptical. Male epiproct base forming a pair of triangular horizontal plate directed outside, dorsal surface variable. Male cerci gently incurved, dorso-basally with triangular inner plate. Male subgenital plate transverse, rapidly recurved at apical third. Ovipositor short, recurved just before middle, sharp at the apical part, and without hook at the apex. Female subgenital plate covering only the ventral base of ovipositor. Only five species are known in Japan and Korea.

17. *Cosmetura fenestrata* Yamasaki 1983 민어리쌕쌔기 (Figs. 46-47, 61)

Cosmetura fenestrata Yamasaki 1983. Mem. natn. Sci. Mus. Tokyo, 16: 141, Figs. 9-15. "Japan: Miyagi". Holotype ♂ in National Science Museum (Natural History), Tokyo.

Korean records. ***Cosmetura fenestrata***: Kim and Kim 2001: 159, Figs. 2-3 (taxonomy).

Specimens examined. <GB> 2♀, Dodong Ulleungdo, 2 x 1981, Park WS; 1♂, Jeodong Ulleungdo, 1 x 1981, Park WS; **<GN>** 2♂5♀, Jungsan-ri Sicheon-myeon Sancheong, 7-8 ix 1992, Jeon et al. (GSU); 2♂, Mt. Jirisan, 30 IX-1 x 2000, Chae (SNU); **<JJ>** 3♀, Mt. Hallasan, 10-11 viii 1984, Park WS; 1♂, Gwaneumsa, 14 viii 1990, Park (KU); 1♂1♀, ibid. 10 viii 2001, Park et al. (NIAST); 1♀, Eorimok, 15 viii 1990, Yoon (KU).

Description. <♂> Body coloration pale green with yellowish dorsal median line. Head short and vertical, vertex round; fastigium of vertex small and conical, narrower than scape, not protruding beyond scape; antennal socket as wide as the diameter of an eye. Pronotum two times more longer than width in dorsal view with strongly oblique lateral lobes; anterior margin truncated, posterior margin widely round; carinae and sulci indistinct, disk rather smooth. Prothorasic spiracle very small, but clearly opened. Prosternum unarmed. Fore coxa with a small basal spine. All femora without spinules. Fore tibia with five pairs of ventral spines, the tympana oval-shaped. Middle tibia with four pairs of ventral spines. Tegmina micropterous, mostly covered by pronotum, only its hind margin slightly visible. Last abdominal tergite with concavity. Epiproct strongly swollen at distal part as bell-shaped, with a small dorsal rounded projection proximally, three tubercles located ventrally; median tubercle smallest; hind margin rather concave its hind angle bent downward. Cercus longer than epiproct, with a large triangular basal lobe dorsally, its apex tapering, incurved (Fig. 61). Subgenital plate wider than long, its hind margin undulate with median convexity. Stylus very small, nipple-shaped. **<♀>** Tegmina micropterous, wholly covered by pronotum. Cercus simple, conical, five times longer than basal width, apically tapering. Subgenital plate triangular, slightly shorter than basal width, its apex round without emargination. Ovipositor dagger-shaped, shorter than hind femur, moderately recurved. **<Measurements>** BL 8-14; PL 4.7-5.2; TL 1.8-2.5; HFL 9.0-10.0; OL 5.8-6.5.

Distribution. Korea, Japan.

Genus *Kuzicus* Gorochov 어리쌕쌔기속

1993. Zoosystematica Rossica, 2(1): 71. Type species: *Teratura suzukii* Matsumura and

Shiraki 1908.

Diagnosis. Last abdominal tergite of male with hind margin with large symmetrical processes at lateral corners of median notch; cerci strongly curved, with internal process at middle of their length and with various apex. Epiproct very small, subgenital plate normal with rather long styli. Male genitalia with large sclerotized dorsal lobe and button-like locking device. Female subgenital plate various; cerci rather short. Nine species are known in the world.

18. *Kuzicus suzukii* (Matsumura and Shiraki 1908) 어리쐑쌔기 (Figs. 48, 62)

Teratura suzukii Matsumura and Shiraki 1908. Jour. Coll. Agric. Tohoku Imp. Univ. 3(1): 48, pl. 1, Fig. 4. "Japan: Kyoto". Syntype in Hokkaido University, Sapporo.

Korean records. ***Xiphidiopsis suzukii***: Doi 1933: 88; Cho 1959: 163, Fig. 36 (manual); Cho 1969: 759, pl. 51 (illustrated encyclopedia: 쐑쌔기붙이); Ju 1969: 19 (North Korean check list); Moon and Yoon 1993: 57 (KEI); Kwon and Huh 1994: 49 (Korean check list); Kwon et al. 1996: 104 (Korean species list); ***Xiphidiopsis suzuki*** [!]: Mori 1933: 56 (Korean Tettigoniidae); ***Kuzicus suzukii***: Kim and Kim 2001: 160, Figs. 4-5, 10-11 (taxonomy).

Specimens examined. <PN> 1♂, Chang-lyong san 50 km N of Pyongyan and 15 km E from Sa-gam, 13 viii 1971, S. Horvatovich and J. Papp, No. 169 (Hungarian Natural History Museum, Budapest); 1♂, Zamosan 60 km NE from Pyongyang, 2 ix 1971, S. Horvatovich and J. Papp, No. 230 (Hungarian Natural History Museum, Budapest); 2♂, Taesong-ho, 26 ix 1978, A. Vojnits and L. Zombori, No. 404 (Hungarian Natural History Museum, Budapest); 1♂2♀, Mt. Lyongaksan 15 km W of Pyongyang, 9 ix 1980, L. Forro and GY. Topal, No. 617 (Hungarian Natural History Museum, Budapest); **<GW>** 1♀, Yeongok-myeon Gangneung, 12 viii 1995, Seong (SSU); 1♀, Changwon-ri Nam-myeon Yeongwol, 7 ix 1998, Park (NIAST); 1♀, ibid. 13 viii 1999, Kim (NIAST); 1♂2♀, Balsan-ri Sinbuk-myeon Chuncheon, 25 viii 1998, (NIAST); 1♂3♀, ibid. 10-25 ix 1998, Park (NIAST); **<GG>** 1♀, Guimokgogae Gapyeong, 4 ix 1999, Ryu (YNU); 2♂1♀, Mt. Godongsan Gapyeong, 9 ix 1980, Jang (SSU); 1♀, Ungogae Gwangju, 23 x 1982, Kim (SSU); 2♂1♀, Mt. Surisan Gunpo, 5 ix 1996, Lee SM; 1♂, Maseok Namyangju, 17 ix 1988, Jeon (SSU); 3♂1♀, Mt. Chukryeongsan Sudong, 6-28 ix 1980, Kim (SSU); 1♂, ibid. 10 x 1981, Seo (SSU); 1♂, Mt. Gwanggyosan Suwon, 4 ix 1996, Lee SM; 1♂, Mt. Yongmunsan Yangpyeong, 1 ix 1980, Park (SSU); 1♂, ibid. 29 ix 1986, Lee (SSU); 1♂, Mt. Gamaksan Paju, 24 viii 1967, Kim (KU); 1♂1♀, Sanjeongho Yeongbuk Pocheon, 26 viii 1984, Park WS; 1♂, Yeongpyeong Pocheon, 18 viii 1996, (SSU); 1♀, Mt. Cheonmasan

Sudong Hwado, 2 viii 1989, Hwang (SSU); 1♀, Galhyeon-dong Seoul, 20 x 1992, Choi (EU); 1♀, Mt. Dobongsan, 16 ix 1982, Lee (SSU); 1♂, ibid. 18 viii 1983, Lee (SSU); 1♂3♀, ibid. 22 IX-7 x 1984, Ahn et al. (SSU); 1♂, ibid. 8 x 1987, Kim (SSU); 1♀, Dongseon-dong Seoul, 20 ix 1979, Jeong (SSU); 1♂, Mt. Bukhansan, 29 ix 1991, Han (SSU); 2♀, Bulgwang-dong Seoul, 28 ix 1993, Huh (SSU); 1♂, Sungshin Univ. Campus, 14 XI 1982, Kang (SSU); 1♀, ibid. 4 ix 1999, Kang (SSU); 1♀, Mt. Suraksan, 3 x 1980, Kim (SSU); 1♂, Mt. Yongmasan, 29 viii 1993, Park (SSU); 1♂1♀, Wonji-dong Seoul, 14 ix 1985, Kwon et al. (SSU); 1♂, ibid. 8 x 1995, Lee (SSU); 1♂, Jangui-dong Seoul, 31 viii 1980, Kim (SSU); 3♂1♀, Mt. Cheonggyesan, 6 vii-6 ix 1986, Jegal et al. (SSU); **<GB>** 1♂1♀, Mt. Hwaaksan Gaknam-myeon Cheongdo, 15 ix 1998, Park et al. (GSU); **<GN>** 1♂, Jangsuam Geoje, 25-26 viii 1990, Yoon (GSU); 1♀, Saengrim Gimhae, 14 viii 1987, (GSU); 1♀, Songdeokam Ojeon-ri Obu-myeon Sancheong, 5 ix 1998, Ju (GSU); 1♀, Yongyeon-ri Habuk-myeon Yangsan, 20 viii 1987, (GSU); 1♀, Jinju, 23 ix 1984, Oh (GSU); **<JN>** 1♂, Dosa-ri Daap-myeon Gwangyang, 19-20. IX. 1998, Ahn (GSU); **<JJ>** 1♀, Seonhle, 10 x 1999, Kim (NIAST); 1♂, Jeju, 4 xii 1993, Ahn (NIAST).

Description. <♂> Body coloration pale yellowish green. Head short, rather inclined; fastigium of vertex compressed, shortly conical, not protruding than scape; scape longer than basal width; antennae concolorous with body; antennal socket smaller than the diameter of an eye, its inner margin rather elevated. Pronotum with a bright median longitudinal line in disk, the length shorter than fore femur; anterior margin truncated, posterior margin triangularly projecting, its apex obtuse; lateral lobe of pronotum shorter than pronotal length, with a weak humeral sinus. Prothorasic spiracle elliptical, visible, not covered by pronotum. Tegmina macropterous, surpassing hind knee, with a few black small dots, its apex rounded; stridulatory area weakly exposed from hind margin of pronotum. Hind wings longer than tegmina, the projecting length as long as pronotal length. Fore coxa with a small basal spine. All femora without spinules. All tibiae longer than femora. Fore and middle tibia each with six outer, five inner ventral spines. Tympana opened oval-shape. Pro- and mesosternum smooth. Last abdominal tergite largely developed, bilobate, forming clasps; downwardly curved lobe with pointed apex and a subasal dorsal tooth, as long as distance to apex. Cercus largely incurved, the basal half much thick, remaining apical part sharply pointed, tapered; inner lobe of teeth-form located in mid. Subgenital plate shorter than basal width, its hind margin narrower with a pair of small styli; anchor-shaped median large tubercle connected in base, its apex with complex hook, three pairs (Fig. 62). **<♀>**

Last abdominal tergite small roundly concave. Cercus simply conical, incurved, five times longer than basal width. Subgenital plate and ventral base of ovipositor forming three lateral pairs of projections; middle pairs largest, its hind margin triangularly projected with apex shortly incised. Ovipositor sword-shaped, shorter than hind femur; a thirds from the base rather widened, gently recurved apically; the apex of ventral valve shortly pointed downwardly. **<Measurements>** BL 11-15 (HWL 22-25); PL 3.3-4.0; TL 14.8-16.5; HFL 10.5-11.5; OL 8.6-10.3.

Distribution. Korea, Japan, China, Taiwan.

Genus *Xizicus* Gorochov 등줄어리쌕쌔기속

1993. Zoosystematica Rossica, 2(1): 76. Type species: *Xiphidiopsis fascipes* Bey-Bienko 1955.

Diagnosis. Wings extending to hind part of hind tibiae; tegmina slightly shorter than hind wings. Last abdominal tergite of male with paired symmetrical processes on hind edge. Cerci rather simple, also symmetrical, with longer hooked external or ventral process and shorter internal or dorsal process. Epiproct very small, male genitalia entirely membranous. 45 species are known in the world.

19. *Xizicus coreanus* (Bey-Bienko 1971) 등줄어리쌕쌔기 (Figs. 49-50, 63)

Xiphidiopsis coreana Bey-Bienko 1971. Entomological Review, Washington, 50: 837, Figs. 23-25. "Korea: Mt. Palgongsan". Holotype ♂ in Academy of Natural Sciences, Philadelphia.

Korean records. ***Xizicus* (*Eoxizicus*) *coreanus***: Gorochov 1993: 76, Figs. 116-117; ***Xizicus* (*Eoxizicus*) *coreana*** [!]: Otte 1997: 93 (Orthoptera species file); ***Eoxizicus coreanus***: Liu and Zhang 2000: 159; Kim and Kim 2001: 161, Figs. 6-7, 12-13 (taxonomy).

Specimens examined. **<HN>** 2♀, Mt. Suyongsan, 27 ix 1978, A. Vojnits and L. Zombori, No. 413 (Hungarian Natural History Museum, Budapest); **<JG>** 1♂1♀, Mt. Myohyangsan Hotel Myohyang, 12 ix 1980, L. Forro and GY. Topal, No. 652 (Hungarian Natural History Museum, Budapest); **<PN>** 1♂1♀, Zamosan 60 km NE from Pyongyang, 2 ix 1971, S. Horvatovich and J. Papp, No. 230 (Hungarian Natural History Museum, Budapest); **<GW>** 1♀, Okgye-myeon Gangneung, 29 x 1999, Namkung (NIAST); 1♂, Gojindong Mt. Geonbongsan, 28 viii 1990, Lee (SSU); 1♀, Mt. Seoraksan, 24 x 1971, Lee (EU); 1♀, Baekdamsa Mt. Seoraksan, 30 viii 1984, Park (KU); 1♂, Changwon-ri Nam-myeon Yeongwol, 7 ix 1998, Park (NIAST); 6♂11♀, Mt. Chiaksan Wonju, 14-15 viii 1999, Kim

et al. (SSU); 1♀, Mt. Geonbongsan Inje, 29 ix 1972, Kim (KU); 9♂9♀, Malaise trap, Mt. Myeongseongsan Cheolwon, 17 viii–14 x 1999, Ku (NIAST); 2♀, Sinsulhyeon Cheolwon, 18 viii 1997, Park (NIAST); 1♂, Chuncheon, 30 x 1997, Lee (NIAST); 1♂, Gangchon Chuncheon, 14 vii 1997, Kim (SSU); 3♂3♀, Balsan–ri Sinbuk–myeon Chuncheon, 10 viii–8 x 1998, Park (NIAST); **<GG>** 3♂2♀, Gapyeong, 3 ix 1999, Ryu (YNU); 1♂, Mt. Myeongjisan Gapyeong, 23 ix 1989, Park (NIAST); 1♀, Gwacheon, 30 viii 1992, Choi (SSU); 1♂, Mt. Taehwasan Gwangju, 19 vii 1996, Choi (NIAST); 1♂, Yongmi–ri Gwangtan, 2 x 1987, Lee (SSU); 1♂, Mt. Surisan Gunpo, 23 viii 1986, Jang (NIAST); 1♀, Uri Maseok Namyangju, 29 viii 1986, Jang (SSU); 1♂, Mt. Suraksan Namyangju, 15 ix 1997, Kim (SSU); 1♀, Mt. Cheonmasan Namyangju, 14 viii 1977, Kim (KU); 1♂, ibid. 21 x 1980, Lee (SSU); 1♀, ibid. 13 viii 1981, Moon (SSU); 1♂, ibid. 10 viii 1990, Jeong (SSU); 1♂, Mt. Soyosan Dongducheon, 6 x 1981, Jang (SSU); 1♀, Bukhansanseong, 12 ix 1991, Kim (SSU); 1♀, Namhansanseong Seongnam, 23 viii 1997, Jeong (SSU); 1♂, Mt. Cheongyesan Seongnam, 15 viii 2000, Kang (NIAST); 1♀, Mt. Chukryeongsan Sudong, 28 ix 1980, Jang (SSU); 3♀, Malaise trap, ibid. 16 viii–14 x 1999, Ku (NIAST); 1♂, Mt. Gwanggyosan Suwon, 18 viii 1999, Jang; 1♀, light trap, Mt. Yeogisan Suwon, 4 ix 1991, (NIAST); 1♂, Mt. Yongmunsan Yangpyeong, 1 ix 1980, Park (SSU); 1♂, Mt. Yumyeongsan Yangpyeong, 5 viii 1998, Kang (SSU); 1♀, Echeon, 1 x 1982, Goh (SSU); 1♀, Mt. Gwanaksan, 15 ix 1997, Kim (SSU); 1♀, Mt. Guryongsan, 9 ix 1990, Lee (SSU); 1♀, Mt. Gusan–dong Seoul, 27 x 1992, Kim (SSU); 1♀, Mt. Kachisan, 21 viii 1997, Ham (SSU); 1♂, Mt. Namsan, 11 viii 1984, Kim (SSU); 1♀, Mt. Daemosan, 1 viii 1996, Lee (SSU); 1♂, Mt. Dobongsan, 16 ix 1982, Kim (SSU); 2♀, ibid. 29 viii–4 ix 1992, Jeon et al. (SSU); 2♂, ibid. 12 ix 1993, Kim (SSU); 1♂, Mt. Bukhansan, 30 vii 1998, Kim (SSU); 1♀, Mt. Suraksan, 4 ix 1995, Cho (SSU); 1♂, Ehwa Univ. campus, 24 x 1992, Han (EU); 2♂, Mt. Cheongyesan, 15 viii 1988, Kim (SSU); 2♀, ibid. 17 IX–7 x 1995, An et al. (SSU); 1♂, ibid. 13 viii 1998, Kim (SSU); **<CB>** 1♀, Goesan, 9 x 1987, Ahn (NIAST); 2♂, Mt. Guryongsan Boeun, 23 viii 1997, Park (SSU); 1♂, Deokgok Jecheon, 28 viii 1998, Jeon (SSU); 1♂, Mt. Wolaksan Jecheon, 15 viii 1989, Kim (SSU); **<CN>** 1♀, Mt. Gyeryongsan Gongju, 8 x 1994, Kim (SSU); 1♂, ibid. 5 viii 2000, Kim (NIAST); **<GB>** 1♀, Huibangsa Mt. Sobaeksan Yeongpung, 4 viii 1994, Kim (KU); 6♂18♀, Malaise trap, ibid. 13 viii–15 x 1999, Ku (NIAST); 8♂5♀, Mt. Baekamsan Uljin, 11 viii 1999, Ku (NIAST); **<GN>** 1♀, Mt. Bukbyeongsan Dongbu Geoje, 29 viii 2000, Lee (NIAST); 1♂, Mt. Gamaksan Ogye–ri Namsang–myeon Geochang, 5 ix 1998, Park (GSU); 1♂, Mt.

Odusan Osan-ri Sangri-myeon Goseong, 7-8 ix 1996, Kim (GSU); 1♂2♀, Mt. Waryongsan Sacheon, 18-19 viii 1998, Park et al. (GSU); 1♂, Chodong-ri Anui-myeon Hamyang, 22 viii 1998, Ahn (GSU); **<JB>** 1♀, Maljae Buan, 13 ix 1998, Ryu (YNU).

Description. **<♂>** Body coloration pale green. Head with round vertex, weakly inclined; fastigium of vertex shortly conical, not protruding than scape; scape longer than width, two times wider than fastigium of vertex; antennae concolorous with body; antennal socket as wide as the greatest width of an eye, with rather elevated inner margin. Pronotum with yellowish disk, slightly shorter than fore femur, with a pair of dark brown longitudinal strips along with lateral margins of disk; anterior margin weakly convex, posterior margin triangularly blunted, its apex rounded; lateral lobe of pronotum shorter than the length of pronotum, with humeral sinus. Prothorasic spiracle ovoidal, visible, not covered by lateral lobe of pronotum. Tegmina macropterous, reaching a half of hind tibia, its apex rounded; stridulatory area entirely covered by hind margin of pronotum. Hind wings longer than tegmen, the protruding length shorter than pronotal length. Fore coxa with a small basal spine. All femur without ventral spinules. Fore tibia with five inner, six outer ventral spines and oval-shaped tympana. Middle tibia with five inner, six outer ventral spines. Prosternum smooth. Last abdominal tergite with a pair of small tubercles on hind margin, the median with a weak concavity. Cercus relatively large and strongly incurved as tongue-shape, its base and apex swollen, narrowest in mid; inferior tooth located in ventral base, the length shorter than apical part, with pointed apex (Fig. 63). Subgenital plate triangular, shorter than cercus, its hind margin narrower, weakly concave. Stylus small, two time longer than basal width. **<♀>** Last abdominal tergite with V-shaped notch. Cercus simply conical, three times longer than basal width. Subgenital plate longer than width, its hind margin roundly concave, lateral angles smooth. Ovipositor sword-shaped, as long as hind femur, nearly straight; rather thickened in a thirds from base, its apex pointed. **<Measurements>** BL 11-14 (HWL 21-23); PL 3.4-3.7; TL 17.0-18.0; HFL 9.5-11.0; OL 9.5-10.2.

Distribution. Korean endemic regarded.

Subfamily Mecopodinae 철써기아과

Largest sized body (more than 30 ㎜). Head with more or less rounded vertex, eyes widely separated. Prosternum with a pair of long spines. Basal auditory apparatus on the anterior tibiae typically widely open. Tegmina when present usually leaf-like, with a well

developed basal stridualtory apparatus in males. Ovipositor stout, dagger-like, and somewhat upwardly curved.

Genus *Mecopoda* Audinet-Serville 철써기속

1831. Annales des Sciences Naturelles, Paris, 22(86): 154. Type species: *Mecopoda maculata* Audinet-Serville 1831.

Diagnosis. Body large with tegmina leaf-shaped. Prosternum armed with long paired spines. Six species are known in the Oreintal Region.

20. *Mecopoda niponensis* (de Haan 1842) 철써기 (Figs. 52, 64)

Locusta (*Mecopoda*) *niponensis* de Haan 1842. In Temminck. Verhandelingen over de natuurlijke geschiedenis der Nederlandsche overzeesche bezittingen. Zoologie: 188. "Japan". Syntype in Nationaal Natuurhistorische Museum, Leiden.

Korean records. *Mecopoda niponensis*: Kim and Kim 2001: 159, Fig. 1 (taxonomy).

Specimens examined. **<GN>** 10♂, Ssanggyesa Mt. Jirisan Hwagye-myeon Hadong, 1 ix 2001, Kim TW (NIAST); **<JN>** 3♂1♀, "Hakuyosan" (= Mt. Baekyangsan) Jangseong, 8 ix-9 x 1921, Hasegawa et al. (NIAST); 11♂, ibid. 23 viii-9 ix 1999, Kim TW (NIAST); 14♂2♀, ibid. 11-12 ix 2004, Kim TW and Rhee HW (SSU); 1♀, Mt. Baegwunsan Gwangyang, 24 vii 2001, Kim HJ (SNU).

Description. **<♂>** Body coloration green or brown, two contrastive types present. Head short and vertical, the height 1.5 times of the greatest width. Antennae pale brown with black annulations; antennal socket as wide as the horizontal diameter of an eye. Fastigium of vertex truncated, 2.5 times wider than scape. Pronotum as long as wide, two transverse sulci distinct; prozona as long as metazona; anterior margin truncated, posterior margin widely round. Lateral lobe of pronotum higher than wide, without black patch markedly, with humeral sinus. Prothorasic spiracle narrowly opened. Fore coxa with a strong basal spine. Fore femur with 2-3 ventral inner teeth apically. Fore tibia with swollen base, the tympana oval-shaped. Prosternum bispinose. Tegmina broad leaf-shaped, macropterous, reaching hind knee; stridulatory area wider than hind margin of pronotum, occupy two fifths of tegmen. Hind wings slightly longer than tegmina. Hind femur 2.5 times longer than middle femur, with 7-8 ventral spinules on each inner and outer carinae apically. Last abdominal tergite truncated. Paraproct with a small tubercle outward. Cercus elongated, conical with two small teeth at apex, shorter than subgenital plate (Fig. 64). Subgenital

plate long and narrow, divided as a pair of lobes from two thirds of the base; each lobes with longitudinal carinae. Stylus small, nipple-shaped, as long as wide. **<♀>** Body larger and longer, tegmina longer and narrower than male. Subgenital plate trapezoidal, wider than long, its hind margin weakly emarginated. Ovipositor almost straight with pointed apex, shorter than hind femur, slightly surpassing tegminal end or hind knees. **<Measurements>** BL 30-38 (HWL ♂ 44-53, ♀ 53-58); PL 8.0-8.5; TL ♂ 40.0-43.0, ♀ 50.3; HFL ♂ 33.0-38.0, ♀ 42.0; OL 33.

Distribution. Korea, Japan, China (Chekiang).

Subfamily Tettigoniinae 여치아과

Head generally fairly short with a narrow vertex forming a short, truncated or rounded rostrum. Fore tibia always with 2-4 dorsal spines.

Key to Tribes of Tettigoniinae

1. Prosternum smooth (Fig. 68) ..... **Platycleidini** (p. 58)
- Prosternum bispinose (Figs. 98-99) ..... **Tettigoniini** (p. 69)

Tribe Platycleidini 애여치족

Prosternum smooth, without spine-like tubercles. Head with wide and round fastigium of vertex. Smaller than Tettigoniini.

Key to Species of Platycleidini

1. Pronotum shorter, as long as fore femur 2
- Pronotum longer, 1.2-1.7 time of fore femur 3

2. Frons with distinct black stripes (Fig. 72); ♂ cercus with inner tooth considerably shorter than apical part of cercus (Fig. 70); ♀ subgenital plate with widely separated a pair of lobes, its apex sharply pointed (Fig. 71) ..... ***Sphagniana monticola*** (p. 59)
- Frons without stripes; ♂ cercus with inner tooth longer than apical part of cercus (Fig. 69); ♀ subgenital plate with narrowly separated a pair of lobes, its apex acute .....

..... ***Sphagniana ussuriana*** (p. 61)

3. Tegmina shorter than pronotum (Figs. 59–60) ..... ***Chizuella bonneti*** (p. 62)

– Tegmina longer than pronotum 4

4. ♂ cerci short, staying hind margin of subgenital plate; inner tooth of cercus located basal part from the mid (Fig. 73); ♀ subgenital plate shorter, covering a little of base of ovipositor ..... ***Metrioptera brachyptera*** (p. 65)

– ♂ cerci longer, surpassing hind margin of subgenital plate; inner tooth of cercus located distal part from the mid; ♀ subgenital plate longer, covering more a third of base of ovipositor 5

5. Body dorsally pale brown, laterally green; ovipositor short, 1.2–1.5 times longer than pronotum, strongly recurved near the base (Fig. 77) ..... ***Bicolorana bicolor*** (p. 67)

– Body dorsally green or brown, laterally dark black; ovipositor long, 1.6–2.5 times longer than pronotum, slightly recurved ..... ***Eobiana engelhardti*** (p. 68)

Genus *Sphagniana* Zeuner 산여치속

1941. Transactions of the Royal Entomological Society of London, 91: 43. Type species: *Decticus sphagnorum* Walker 1869.

Diagnosis. Pronotum much widened and enlarged in the metazona, and lateral lobes bent down at a sharp angle. Hind legs comparatively short and weak. Male with enlarged last tergite, incised in middle, and with two expanded lobes covering the cerci. Female with a very small subgenital plate, which wider than long. Ovipositor long and regularly curved. Three species are known in the world, the measurements of two Korean *Sphagniana* compared in Table 5.

21. *Sphagniana monticola* (Kim and Kim 2001) 산여치 (Figs. 57, 70–72)

Metrioptera (*Zeuneriana*) *monticola* Kim and Kim 2001. Korean Journal of Entomology, 31(2): 93, Figs. 21, 23–28. "Korea: Mt. Taebaeksan". Holotype ♂ in NIAST.

Korean records. ***Sphagniana monticola***: Storozhenko 2004: 166, Figs. 416–420.

Specimens examined. **<GW>** 1♂, Mt. Taebaeksan Taebaek, 23 vii 1986, Kim JI (SSU); 1♂, Mt. Jeombongsan Inje, 26 ix 1998, Kim TW (NIAST); 1♂, Mt. Odaesan, 5 viii 1983, Lee SM; 1♂, Mt. Seoraksan, 30 vii 1982, Park WS; 1♂1♀, ibid. 29–30 vii 1982, Anonym (DCU); 1♀, Mt. Odaesan, 30 viii 2000, An SL (NSM); **<GB>** 1♂, Mt. Sobaeksan 1 viii 1991, Jung KS (YNU); 2♂, Mt. Sobaeksan, 3 viii 1994, Moon TY (KU).

Description. **<♂>** Body coloration dark brown. Head relatively short, eyes largely prominent. Fastigium of vertex round smoothly, as broad as two times of antennal scape dorsally. Notch closed between fastigia of vertex and frons. Antenna blackish brown, as long as about 1.5 times of body length. Around eyes and gena with specific patterns of black band linked (Fig. 72). Around of mouth parts black. Lateral lobe of pronotum with marginal pale part posteriorly or indistinct. Pronotum with disc narrowed anteriorly; median carina distinct in metazona, lateral carina mostly indicated; V-shaped sulcus very clear, separated. Lateral lobe of pronotum round at anterior angle; posterior margin oblique, slightly sinuate. Tegmina brown with black veins, mesopterous, almost covering abdomen very broadly, but not surpassing beyond abdominal end; tegminal apex truncate widely with very weak concave or not; left stridulatory files of CuP vein with about 75 teeth; right speculum largely subquadrate. Prosternum unarmed. Fore coxal process small but clear. Fore tibia with three dorso-external spines and six pairs of ventral spines. Middle tibia with two external, four internal spines in dorsum and six pairs of ventral spines. Hind tibia with 25 external, 22 internal spines in dorsum and 8-9 pairs of ventral spines and four apical spurs distally. All femora without any spines or spinules. Plantular of hind tarsus well developed, as long as 0.5 times of basitarsus. Last abdominal tergite forming a pair of small triangular lobes with a small V-shaped incision in median. Cercus very short and thick, flattened dorso-ventrally, not projecting beyond subgenital plate; the base almost covered by last abdominal plate; internal tooth located at base, very short and slender relatively to apical part, its apex hook-like incurved (Fig. 70). Subgenital plate extending beyond cerci, caudal margin with V-shaped median incision; median and lateral carinae well developed. Style simple, as long as four times of basal width. Titillators large developed comparatively to body size, almost straight apical portion with median elevation dorsally; each sides of apical portion with denticles, apex sharply pointed. Basal portion shorter than apical one. **<♀>** Slightly larger than male. Tegmina a little shorter than male, reside abdominal mid. Subgenital plate covering base of ovipositor, forming a pair of lobes with apices sharply tapering (Fig. 71). Ovipositor black moderately curved upward, basal part bright.

Distribution. Korean endemic regarded.

Remarks. Storozhenko (2004) transferred this into the *Sphagniana*, but, the character of female subgenital plate (Fig. 71) is showing the close relationship with the European *Zeuneriana* having a pair of lateral lobes which apices sharply tapering.

22. *Sphagniana ussuriana* (Uvarov 1926) 우수리여치 (Figs. 58, 69)

Metrioptera ussuriana Uvarov 1926. Annals and Magazine of Natural History, London, 9(17): 282, Fig. 8. "Russia: Spassky". Holotype ♂ in Zoological Institute of the Russian Academy of Sciences, St. Petersburg.

Korean records. ***Metrioptera ussuriana***: Bey-Bienko 1931: 674 (Mt. Baekdusan); Mori 1933: 54. pl. 1, Fig. 4 (Korean Tettigoniidae); Mori and Cho 1939: 4, pl. 1, Fig. 3 (Chailbong); Mori and Cho 1940: 20 (Mt. Geumgangsan); Cho 1947: 79 (Mt. Diamond); Cho 1959: 157, Fig. 23 (manual); Cho 1969: 752, pl. 50, text-Fig. 5 (illustrated encyclopedia); Ju 1969: 18 (North Korean check list: 거품여치); Lee 1990: 109 (systematic notes); ***Metrioptera* (*Sphagniana*) *ussuriana***: Storozhenko 1980: 17, Figs. 1-2; Kim and Kim 2001: 93 (taxonomy); ***Sphagniana ussuriana***: Storozhenko 1986: 254, Figs. 118(1), 121(5, 6); Kwon and Huh 1994: 49 (Korean check list); Kwon et al. 1996: 104 (Korean species list); Storozhenko 2004: 164, Figs. 408-415; ***Sphagniana ussuriama*** [!]: Moon and Yoon 1993: 58 (KEI).

Specimens examined. <RG> 2♂, Chann-Pay plateau Samziyon 1600 m, 25 viii 1971, S. Horvatovich and J. Papp, No. 197 (Hungarian Natural History Museum, Budapest); 1♂, Chann-Pay plateau Samziyon 1700 m, 27 viii 1971, S. Horvatovich and J. Papp, No. 206 (Hungarian Natural History Museum, Budapest); 4♂5♀, Mt. Pektusan 1900 m, 28 viii 1971, S. Horvatovich and J. Papp, No. 216 (Hungarian Natural History Museum, Budapest).

Description. <♂> Body coloration yellowish brown, laterally more bright. Head short and ovoidal; fastigium of vertex wider than scape of horizontal diameter of an eye; behind of eyes with black strips. Pronotum with truncated anterior margin and weakly convex posterior margin; lateral lobe shorter than the length of pronotum, the lower hind margin more brightly banded. Tegmina mesopterous, widely covering three quarters of abdomen, its apex widely truncated; stridulatory area slightly wider than hind margin of pronotum, almost occupy tegmen. All femora without spinules. Fore and middle tibiae each with six pairs of ventral spines. Fore tibia with three outer dorsal spines and slit-shaped tympana. Last abdominal tergite with a pair of triangular lobes diverged, its hind margin with V-shaped notch at apex. Cercus short and thick, as long as basal width; a large inner tooth located in base, not visible covered by last abdominal tergite, the length longer than the distance to apex of cercus (Fig. 69). Subgenital plate trapezoidal, as wide as long, its hind margin with V-shaped notch; median and lateral carinae present. Stylus four times longer than basal width. Titillators with long apical portion and short basal portion; the apical one with a

small number of denticules at apex. **<♀>** Tegmen slightly shorter than male, just covering a half of abdomen, its apex rounded. Subgenital plate widely triangular form, wider than long, its hind margin with deeply V−shaped notch. Ovipositor dagger−shaped, moderately recurved, as long as a half of hind femur.

Distribution. North Korea, China (Heilongjiang), Russian Far East.

Table 5. Measurements of *Sphagniana* spp.

Species	BL	PL	TL	HFL	OL
S. monticola	16.5−20.0	4.5−5.1	♂ 9.7, ♀ 7.6	16.7−19.0	8.5
S. ussuriana	16.0−25.0	5.5−6.2	♂ 8.0−9.0, ♀ 7.5	16.0−20.8	8.0−9.7

Genus *Chizuella* Furukawa 잔날개여치속

1950. Iconographia Insectorum Japonicorum: 40. Type species: *Platycleis bonneti* Bolívar 1890 by monotypy.

Remarks. Because of lacking correct definition and designation by the author, this genus had been disregarded for a long time just synonymously considered under *Metrioptera,* poorly reconsidered in Storozhenko (2004).

23. *Chizuella bonneti* (Bolívar 1890) 잔날개여치 (Figs. 59−60, 68, 78−79)

Platycleis bonneti Bolívar 1890. Anales de la Sociedad Española de Historia Natural, 19: 326. "Japan: Yezo = Hokkaido". Syntype in Instituto Espanol de Entomologia, Madrid.

Korean records. ***Metrioptera bonneti***: Furukawa 1930: 109; Doi 1932: 38; Mori 1933: 54 (Korean Tettigoniidae); Cho 1959: 156, Fig. 21 (manual); Cho 1963: 163 (Is. Jejudo); Cho 1969: 751, pl. 79 (illustrated encyclopedia); Ju 1969: 18 (North Korean check list); Rentz and Miller 1971: 267 (Mt. Palgongsan); Storozhenko 1980: 16; Storozhenko 1986: 258, Figs. 118(2, 3), 121(14), 124(3, 4); Moon and Yoon 1993: 57 (KEI); Kwon and Huh 1994: 49 (Korean check list); Kwon et al. 1996: 103 (Korean species list); Bae 1998: 148; Kim and Kim 2001: 94, Figs. 14−15 (taxonomy); ***Chizuella bonneti***: Furukawa and Shiraki 1950: 40, Fig. 101; Ju 1969: 16 (North Korean check list); Tadauchi 1989: 52 (Japanese check list); Hua 2000: 48 (Chinese list); Storozhenko 2004: 162, Figs. 62, 401−407; ***Chizuella bonniti*** [!]: Lee 1990: 111 (systematic notes).

Specimens examined. <PN> 2♂, Tesson water basin about 35 km SW from Pyongyan, 4 vii 1977, O.Gy. Dely and A. Dely−Draskovits, No. 343 (Hungarian Natural History Museum,

Budapest); **<GW>** 3♂2♀, Samhwasa Bukpyeong, 26–27 vi 1984, Chang et al. (SSU); 2♂, Mt. Daewusan Dong-myeon Yanggu, 10 vii 2003, Kim TW (SSU); 1♀, Guryongsa Mt. Chiaksan Wonseong, 29 vii 1975, Kim JI (SSU); 1♂, Mt. Daeamsan Inje, 27 vii 1986, Park (SSU); 1♀, Mulgubi Jinburyeong, 12 viii 1980, Yoon SJ (EU); 1♀, Mt. Samaksan Chungseong, 23 viii 1987, Hwang (SSU); 1♂2♀, Palmi-ri Sindong-myeon Chuncheon, 1 vii 2006, Kim TW (SSU); 1♀, Mt. Taebaeksan Taebaek, 23 vii 1986, Chang (SSU); 1♀, Mt. Balwangsan Pyeongchang, 24 vi 1993, Kim (SSU); 1♂, Mt. Gyebangsan Jinbu Pyeongchang, 22 vi 2005, Kim TW (SSU); 1♀, Mapyeong Jinbu Pyeongchang, 30 vi 1985, Han (SSU); 1♀, Mt. Baekunsan Hwacheon, 13 vii 1986, Park (SSU); **<GG>** 1♀, Mt. Godongsan Gapyeong, 19 vi 1977, Seok (EU); 1♀, Mt. Myeongjisan Gapyeong, 1 viii 1991, Kim (SSU); 1♂, Mt. Chenggyesan Gwacheon, 2 vii 1996, Lee (SSU); 1♂, Gwangneung, 17 vi 1977, Kim (EU); 1♀, Mt. Soyosan Dongducheon, 14 viii 1986, Kim (SSU); 1♀, Songnae Dongducheon, 11 viii 1991, Yoon (SSU); 1♂, Namhansanseong Seongnam, 7 viii 1993, Lee (SSU); 1♂, ibid. 22 viii 1997, Yoo (SSU); 1♀, Is. Pungdo Ansan, 11–12 viii 2006, Kim TW (SSU); 1♀, Is. Baekryeongdo Ongjin Inchen, 31 vii 1987, Yoo (SSU); 1♀, Bogwangsa Gwangtan Paju, 17 vi 1977, Jeong (KU); 1♂, ibid. 22 v 1985, Shin (SSU); 1♀, Mt. Cheonmasan Pyeongnae Namyangju, 5 vii 1978, Kim (SSU); 1♂, Mt. Bukhansan Seoul, 3 vii 1987, Kim (SSU); **<CB>** 4♂, Wongpung Yeongpung Goesan, 25 vi 1986, Lee et al. (SSU); 1♀, Hwajangam Mt. Taehwasan 800 m Osa-ri Danyang, 27 viii 2001, Kim SY and Kim AY (SSU); 1♂1♀, Songmyeon Cheongcheon, 23 vi 1989, Ku et al. (SSU); 1♀, Mt. Gyemyeongsan Chungju, 24 viii 2000, Kim TW (SSU); 2♂1♀, ibid. 17 vi 2003, Han KD and Kim TW (SSU); 1♂2♀, Mt. Namsan Chungju, 25 viii 2000, Kim TW (SSU); 1♀, sweeping, Mt. Cheondeungsan Sancheok-myeon Chungju, 28 viii 2002, Kim TW (SSU); **<GB>** 1♀, Mt. Geumosan Gumi, 19 vii 2001, Kim AY (SSU); 1♀, Mt. Hwanghaksan Mungyeong, 4 vi 1978, Cho (KU); 1♀, Andong, 2 vii 1988, Lee (KU); 1♀, Mt. Cheongryangsan Andong, 29 vii 1990, Kang (SSU); 1♂1♀, Yeongil, 26 vii 1983, Lee (SSU); 2♂2♀, Mt. Sobaeksan Yeongpung, 1–3 viii 1991, Jeong et al. (SSU); 3♀, ibid. 15 vii–4 viii 1994, Moon et al. (KU); 1♀, Bulyeonggyegok Uljin, 27 vi 1990, Park (SSU); 1♂1♀, Mt. Juwangsan Cheongsong, 30 vii 1983, Park (SSU); **<GN>** 1♂1♀, Munsuam Sangri Goseong, 7 viii 1998, An et al. (GSU); 2♂, Boriam Sinjeon Idong Namhae, 8 vii 1987, Anonym (GSU); 1♀, Mt. Jirisan, 26 vi 1986, Cho (KU); **<JB>** 1♂2♀, Muju, 13–21 viii 1970, Choi et al. (EU); 1♂, Namseongdong Buan, 18 vii 1998, Jang (SSU); 1♂, Naesosa Buan, 30 vii 1984, Jang (SSU); 1♂, Bongraegyegok Buan, 20 vii 1998, Ryu

(YNU); 1♂3♀, Mt. Naejangsan Jeongeup, 1−2 viii 1974, Nam et al. (KU); 1♂1♀, Baemsagol Mt. Jirisan, 3 viii 1984, Jang (SSU); **<JN>** 2♀, Baekchu Is. Geomundo, 17 vii 1977, Yoon (EU); 1♂, Mt. Mudeungsan Gwangju, 5 vii 1991, Yoon (SSU); 7♂5♀, Is. Geomundo Yeocheon, 12−13 vii 1984, Chang et al. (SSU); 1♂1♀, Is. Anmado Yeonggwang, 18−19 viii 1989, Lee (SSU); 1♀, Dogapsa Mt. Wolchulsan Yeongam, 26 vii 1988, Lee (SSU); 1♀, Is. Bogildo Wando, 23 viii 1982, Kim (SSU); 1♀, Is. Wando, 6 vii 1982, Lee (SSU); 6♂4♀, Mt. Jirisan, 24−26 vi 1986, Lee et al. (SSU); 2♀, Is. Gwanmaedo Jindo, 29 vii 1983, Kim (SSU); 1♀, Soseongnamdo Jindo, 28 vii 1983, Kim (SSU); 4♂4♀, Gigak−ri Hampyeong, 17 vi−21 vii 2000, Park WS; 1♀, Yongcheonsa Haebo Hampyeong, 31 vii 2000, Park WS; **<JJ>** 1♀, Gwaneumsa, 4 viii 1972, Kim (KU); 1♀, ibid. 2 viii 1974, Kim (KU); 1♂, Is. Sangchujado Bukjeju, 18 vii 1985, Yoon (KU); 5♂1♀, Hamdeok−ri Jocheon Bukjeju, 8 vii 2002, Kim TW (SSU); 1♂, Sangumburi, 31 vii 1980, Paik (SSU); 3♂1♀, Donnaeko Seoguipo, 4 viii 1972, Kim (KU); 1♂1♀, Ara−dong Jeju, 4 ix 1997, Lee (SSU); 2♂1♀, Eorimok, 30 vii 1972, Kim (KU); 1♂1♀, ibid. 15 vii 1983, Kim (SSU); 1♂, Wangkwandeung, 1 viii 1972, Kim (KU); 1♂1♀, Yongjinkak, 1 viii 1972, Kim JI (KU); 1♀, Oedodong Jeju, 18 viii 1996, Jeong (SSU); 1♂1♀, Cheonwangsa to Dokkabi road, 10 vii 2002, Kim TW (SSU); 1♂, Mt. Hallasan, 1 viii 1972, Kim (KU); 1♂, ibid. 11 vii 1979, Yoon (KU); 1♂1♀, ibid. 7−11 viii 1984, Park (SSU); 1♂2♀, Hyeopje, 26 ix 2000, Kim et al. (SSU).

Description. <♂> Body coloration dark black with brown. Head with round vertex; fastigium of vertex wider, four times wider than scape; scape shorter than wide; eye much larger than antennal socket; behind scape and eye, white longitudinal stripe present along with inner and outer black borders. Pronotum slightly longer than fore femur, with smooth disk, a weak median carina present from two thirds to posterior margin. Paranotum with weak humeral sinus, its lower hind margin bright; the height slightly shorter than pronotal length. Tegmina micropterous, covering a thirds of abdomen, as long as a half of pronotum, its apex rounded; radial and costal veins black; stridulatory area covered by pronotum. Prothorasic spiracle largely ovoidal, rather covered by lateral lobe of pronotum. Prosternum smooth, mesosternal lobe triangular, as long as basal width, metasternal lobe wider than long. Fore coxa with a strong basal spine. All femora without ventral spines. Fore tibia with six pairs of ventral spines, three outer dorsal spines and slit−shaped tympana. Middle tibiae with six pairs of ventral spines and 1−2 outer, four inner dorsal spines. Hind basitarsus as long as last tarsomere, with large plantulae as long as a half of basitarsus.

Last abdominal tergite with two triangular lobes, its hind margin with V-shaped notch. Cercus three times longer than basal width, not much longer than hind margin of subgenital plate; inner tooth located in base, not visible covered by last abdominal tergite. Subgenital plate trapezoidal, slightly longer than basal width, its hind margin with V-shape incision at apex; lateral carinae present. Stylus smaller, three times longer than basal width. Titillators with slender apical portion and thick basal portion, without denticulations. **<♀>** Coloration more brighter than male. Tegmina more shorter than male, mostly covered by pronotum, its apex just reaching first abdominal tergite. Last abdominal tergite with two small triangular lobes. Cercus simply conical, four times longer than basal width. Subgenital plate wider than long, with widely separated triangular lobes, its hind margin deeply concave with a median longitudinal groove. Ovipositor dagger-shaped, slightly longer than pronotum, moderately recurved, its base bright. **<Measurements>** BL 16-25; PL 6.0-7.5; TL ♂ 5.0, ♀ 4.5; HFL 15.5-20.0; OL 7.0-9.5.

Distribution. Korea, Japan, Northeast China, Russian Far East.

Genus *Metrioptera* Wesmael 꼬마여치속

1838. Bulletins de l'Acade´mie royale des sciences, des lettres et des beaux-arts de Belgique, 5: 592. Type species: *Gryllus brachypterus* Linnaeus 1761.

Diagnosis. Pronotum flat anteriorly with a median carina posteriorly. Tegmina do not extend beyond the abdominal end. Radial area of tegmina uniform in color. Male cerci conical, straight, and with an inward-facing tooth. 14 species are known in the Palaearctic Region.

24. *Metrioptera brachyptera* (Linnaeus 1761) 꼬마여치 (Figs. 54, 73)

Gryllus brachypterus Linnaeus 1761. Fauna Sueciae sistens animalia Sueciae. (ed. 2): 237, No. 868. "Sweden". Type in ?

Korean records. ***Metrioptera brachyptera***: Bey-Bienko 1931: 674 (Mt. Baekdusan); Mori 1933: 54 (Korean Tettigoniidae); Mori and Cho 1939: 4, pl. 1, Fig. 5 (Chailbong); Cho 1959: 156 (manual); Cho 1969: 751, text-fig 4 (illustrated encyclopedia); Ju 1969: 18 (North Korean check list); Storozhenko 1986: 257, Figs. 115(7), 119(14), 121(3, 15), 123(1); Lee 1990: 112 (systematic notes); Moon and Yoon 1993: 57 (KEI); Kwon and Huh 1994: 49 (Korean check list); Kwon et al. 1996: 103 (Korean species list); Kim and Kim 2001: 94 (taxonomy); Storozhenko 2004: 149, Figs. 65, 68, 361-366.

Specimens examined. <RG> 1♀, Chann-Pay plateau Samziyon 1600 m, 25 viii 1971, S.

Horvatovich and J. Papp, No. 197 (Hungarian Natural History Museum, Budapest); 3♂3♀, Samjiyon, 4 x 1978, A. Vojnits and L. Zombori, No. 451 (Hungarian Natural History Museum, Budapest).

Description. **<♂>** Body coloration variable dark brown. Head short, ovoidal; fastigium of vertex wider, 2.5 times wider than scape; scape quadrate, as long as wide; eye much larger than antennal socket. Pronotum with smooth disk, V-shape sulcus placed in mid; lateral lobe of pronotum as high as pronotal length, its lower hind margin rather brightly banded. Prothorasic spiracle largely oval, visible. Tegmina generally mesopterous (or macropterous type also present), not reaching abdominal end, its apex narrowly tapered; stridulatory area fully exposed, occupy basal a thirds of tegmen; R branched from two thirds of R apically; black dots present on radial and median areas. Fore coxa with a strong basal spine. All femur without spinules. Fore tibia with six pairs of ventral spines, three outer dorsal spines and slit-shaped tympana. Middle tibia with six pairs of ventral spines and two outer, four inner dorsal spines. Prosternum smooth, mesosternal lobe longer than width. Last abdominal tergite two triangular lobes and median deep notch, the lobe longer than basal width. Cercus short and thick, four times longer than basal width; inner tooth located in mid, its length shorter than distance to cercus apex. Subgenital plate trapezoidal, as wide as long, its hind margin with V-shaped notch; lateral and median carinae present. Stylus five times longer than basal width. Titillators smooth, with short apical portion and long basal portion, the apices hook-shaped outwardly curved. **<♀>** Slightly larger than male. Tegmina shorter than male, its apex rounded. Subgenital plate convex triangular, wider than long, its hind margin with U-shaped notch; just covering the base of ovipositor. Ovipositor moderately recurved, shorter than hind femur, two times longer than pronotum. **<Measurements>** BL 13.0-20.5; PL 4.5-5.5; TL 6.4-10.0 (Macroptera 18-23); HFL 14.0-20.5; OL 9.5-12.5.

Distribution. North Korea, China, Russia, Europe: Transpalaearctic.

Genus *Bicolorana* Zeuner 쌍색여치속

1941. Transactions of the Royal Entomological Society of London, 91: 44. Type species: *Locusta bicolor* Philippi 1830.

Diagnosis. Size medium, normally short-winged. Pronotum with rounded transition from back to lateral lobes. Hind femora long and slender. Coloration green with unspotted tegmina or brown. Female sternites not sculptured. Subgenital plate longer than wide, sometimes very long and slender apically, incised at the apex. Ovipositor comparatively small and short,

bent upwards beyond the apex of the subgenital plate. Eight species are known in the world.

25. *Bicolorana bicolor bicolor* (Philippi 1830) 쌍색여치 (신칭) (Figs. 53, 77)

Locusta bicolor Philippi 1830. Orthoptera Berolinensia: 24. "Germany: Berlin". Type lost.

Specimens examined. <RG> 1♀, Chann-Pay plateau Samziyon 1600 m, 25 viii 1971, S. Horvatovich and J. Papp, No. 197 (Hungarian Natural History Museum, Budapest).

Description. <♀> Body coloration bright green, but dorsal surface of occiput and disk of pronotum rather brown. Head short, ovoidal; fastigium of vertex wider than scape or the diameter of an eye; antennal socket smaller than the diameter of an eye. Pronotum with rounded transition from back to lateral lobes; V-shaped transverse notch present on mid, median longitudinal carina present on metazona; lateral lobe of pronotum without bright patterns. Tegmina mesopterous (macropterous also present), just covering two thirds of abdomen, its apex roundly pointed. Cercus simply conical, four times longer than basal width. Subgenital plate triangular, longer than wide without longitudinal carina, its hind margin narrowly incised. Ovipositor dagger-shaped, shorter than tegmina, 1.2-1.5 times longer than the length of pronotal disk, strongly recurved near the base. **<Measurements>** BL 14-20; OL 4.5-6.5.

Distribution. North Korea (new record), China, Mongolia, Russia, Europe (ssp. *angarica*: Mongolia): Transpalaearctic.

Genus *Eobiana* Bey-Bienko 애여치속

1949. Entomologicheskoe Obozrenie, 30(3-4): 310 (pro subgenus *Metrioptera*). Type species: *Decticus japonicus* Bolívar 1890.

Diagnosis. General coloration brown or black-brown. Fastigium of vertex smooth, broad, 2.1-2.8 times as broad as scape. Median carina distinct in metazona, faintly or not indicated in prozona. Tegmina 2.4-3.1 times longer than pronotum, with broadly or acutely rounded apex. Macropterous form present. Epiproct of male broader than long, posterior margin with two triangular lobes. Cercus slightly sinuate, almost straight, with inner hook-like tooth near middle or in preapical third. Subgenital plate of female very narrow and long, posterior margin deeply and very acutely excised. Ovipositor 1.4-1.7 times longer than pronotum (Storozhenko and Yamasaki 1993). Five species are known in the Far East.

26. *Eobiana engelhardti engelhardti* (Uvarov 1926) 애여치 (Figs. 55–56, 74–76)

Metrioptera engelhardti Uvarov 1926. Annals and Magazine of Natural History, London, 9(17): 281, Fig. 7. "Russia: Vladivostok". Holotype ♀ in Zoological Institute of the Russian Academy of Sciences, St. Petersburg.

Locusta grisea nec Fabricius 1781. Species Insectorum, 1: 359. "Italy". Type lost.

Decticus japonica nec Bolívar 1890. Anales de la Sociedad Española de Historia Natural, 19: 327. "Japan: Yezo = Hokkaido". Holotype ♀ in Instituto Espanol de Entomologia, Madrid.

Korean records. ***Metrioptera grisea***: Mori and Cho 1939: 4, pl. 1, Fig. 4 (Chailbong); ***Metrioptera japonica***: Cho 1959: 156, Fig. 22 (manual); Cho 1969: 752, pl. 80 (illustrated encyclopedia); ***Metrioptera engelhardti***: Lee 1990: 112 (systematic notes); Moon and Yoon 1993: 57 (KEI); Kwon et al. 1996: 103 (Korean species list); Bae 1998: 146; ***Metrioptera (Eobiana) engelhardti***: Kwon and Huh 1994: 49 (Korean check list); ***Eobiana engelhardti***: Kim and Kim 2001: 92, Figs. 18–20 (taxonomy); Storozhenko 2004: 153, Figs. 376–384.

Specimens examined. **<GW>** 1♂ (macroptera), Myeonon-ri Bongpyeong, 5 viii 2003, Rhee HW (SSU); 1♂, Mt. Seoraksan Inje, 24 vi 1986, Lee SM; 1♂1♀, Pilryeyaksu Mt. Seoraksan Inje, 21 viii 2005, Kim TW (SSU); 1♂, Bangha-ri Namsan-myeon Chuncheon, 8 vii 2006, Kim TW (SSU); **<GG>** 8♂5♀, Yeocha-ri Ganghwado, vi-vii 1991, Park HC et al. (KU); 1♂, Mt. Bukhansan Goyang, 28 vi 1998, Kim TW (SSU); 2♂, Uldae-ri Songchu Jangheung Goyang, 30 vi 2003, Rhee HW (SSU); 2♂2♀, ibid. 19 vii 2006, Kim TW (SSU); 1♂, Jikdong-ri Gwangneung, 16 vi 2002, Rhee HW (SSU); 1♂ (macroptera), Silim-dong Gwanak-gu Seoul, 1 vii 2001, Lee HS (NIAST); 1♀ (macroptera), Olympic park Songpa-gu Seoul, 29 vi 2004, Seung JB (SSU); 2♀, Jingwanoe-dong Eungpyeong-gu Seoul, 14 viii 2001, Lee HS (SSU); 1♀, Saetgang Eco-park Yeoeido Seoul, 22 vi 2003, Rhee HW (SSU); **<GN>** 1♂2♀ (macroptera), Jeongja-dong sand beach Buk-gu Wulsan, 22–23 vi 2003, Kang TH (SSU); 4♀, Mt. Jeongjoksan Ulsan, 17 viii 1997, Lee SM.

Description. **<♂>** Body coloration black with dorsal green or brown, two contrastive types present. Head with fastigium of vertex two times wider than scape. Eye clearly larger than antennal socket. Pronotum smooth, the V-shaped sulcus and carinae indistinct, only median carina on metazona distinct; lateral lobe of pronotum as high as long, the hind margin gently inclined, without humeral sinus. Tegmina mesopterous, just reaching abdominal end, or macropterous, surpassing hind knee, two contrastive types present; RS branched behind the middle of R in mesoptera, before the middle of R in macroptera; tegminal apex roundly pointed in mesoptera, widely rounded in macroptera. Hind wings shorter than half of tegmen

in mesoptera, as long as tegmen in macroptera. Prothorasic spiracle largely oval. Prosternum smooth, mesosternal lobes triangular, longer than basal width. Metasternal plate wider than long. All femora without ventral spine. Fore coxa with a strong basal spine anteriorly. Fore and middle tibiae with six pairs of ventral spines. Fore tibia with three outer dorsal spines and slit-shaped tympana. Middle tibia with two outer, four inner dorsal spines. Hind basitarsus shorter than remaining three segments combined length, with large plantulae as a half of basitarsus. Last abdominal tergite with very sharply pointed two lobes, its hind margin deeply incised in median. Cercus slender and longer, more surpassing the subgenital plate; five times longer than basal width; inner tooth located at two thirds from the base, its apex pointed, incurved. Subgenital plate longer than basal width, its hind margin rather truncated, weakly concave, shallowly notched. Stylus small, three times longer than basal width. Titillators with apical portion longer than basal portion, the benting apical portion more thicker than remaining parts; its apex hook-shaped, denticulation absent. **<♀>** Last abdominal tergites with sharply pointed lobes in hind margin. Cercus simple, conical, four times longer than basal width. Subgenital plate two times longer than basal width, covering a thirds of base of ovipositor; its hind margin deeply incised as V-shape; median carina clear, but lateral carinae indistinct. Ovipositor dagger-shaped, apically black, moderately recurved, weak serrulations present on ventral valves apically. **<Measurements>** BL 16-24 (HWL 19-25); PL 5.2-6.6; TL 13.6-19.5 (Macropterous 27.5-32.5); HFL 17.4-21.0; OL 9.2-10.0.

Distribution. Korea, Northeast China, Russian Far East (ssp. *subtropica*: Japan).

Tribe Tettigoniini 여치족

Prosternum with a pair of spine-like tubercles. Body larger than Platycleidinii.

Key to Species and Subspecies of Tettigoniini

1. Prosternal processes short and blunted (Fig. 98); mesosternal lobes shorter than basal width 2

- Prosternal processes long and sharply spine-like (Fig. 99); mesosternal lobes longer than basal width 4

2. Fore tibia with two dorso-apical spines (Fig. 103) ..... ***Paratlanticus ussuriensis*** (p. 70)

– Fore tibia with one dorso–apical spine externally, without internal one (Fig. 102) ····· 3

3. Pronotum shorter than fore femur; tegmina longer than pronotum in both sexes (Fig. 96); ovipositor decurved ····· ***Anatlanticus koreanus*** (p. 74)

– Pronotum longer than fore femur; tegmina shorter than pronotum in ♂ (Fig. 97), vestigial in ♀; ovipositor recurved ····· ***Atlanticus brunneri*** (p. 76)

4. Fastigium wider than scape; hind basitarsus with largely developed plantular (Fig. 100); ovipositor with obliquely truncated dorsal apex ····· 5

– Fastigium narrower than scape; hind basitarsus with shortly rounded plantular (Fig. 101); ovipositor with arrowhead–like apex ····· 6

5. Tegmina without dark spots or unclear; ovipositor longer, 2.9–3.3 times of pronotum ··· ····· ***Gampsocleis ussuriensis*** (p. 79)

– Tegmina with always well–defined dark spots (Fig. 104); ovipositor shorter, 2.0–2.1 times of pronotum ····· ***Gampsocleis sedakovii obscura*** (p. 82)

6. Tegmina shorter, 3.1–4.3 times of pronotum; RS divided from R behind the mid; male cercus with inner tooth located near mid of cercus (Fig. 110) ··· ***Tettigonia ussuriana*** (p. 86)

– Tegmina longer, 4.5–5.3 times of pronotum; RS divided from R before the mid; male's cercus with inner tooth located near base of cercus (Fig. 109) ····· 7

7. Tegmina longer, 5.2–5.3 times of pronotum; inner tooth of male cerci with acute apex; ovipositor longer, 4.1 times of pronotum ····· ***Tettigonia dolichoptera dolichoptera*** (p. 88)

– Tegmina shorter, 4.5–4.6 times of pronotum; inner tooth of male cerci with dentes; ovipositor shorter, 3.2–3.5 times of pronotum ····· ***Tettigonia dolichoptera maritima*** (p. 91)

Genus *Paratlanticus* Ramme 갈색여치속

1939. Mitteilungen aus dem Zoologischen Museum in Berlin, 24: 90. Type species: *Atlanticus ussuriensis* Uvarov 1926.

Diagnosis. Head short but wide; eyes relatively small. Pronotum shorter than fore femora, almost flat dorsally; metazona not forming median keel, though sometimes bearing a weak median line; side edge clear at least in metazona; no humeral sinus. Prosternum armed with a pair of short triangular spines. Brachypterous; female fore wings not so degenerated as in those *Atlanticus*. Fore tibiae dorsally with a subapical spine on each side (Yamasaki 1986). Two species are known only in the Far East.

27. *Paratlanticus ussuriensis* (Uvarov 1926) 갈색여치 (Figs. 80–81, 98, 103, 107)

Atlanticus ussuriensis Uvarov 1926. Annals and Magazine of Natural History, London, 9(17): 276, Fig. 4. "Russia: Spassky". Holotype ♂ in Zoological Institute of the Russian Academy of Sciences, St. Petersburg.

= *Paratlanticus palgongensis* Rentz and Miller 1971. Entomological News, 82(10): 268, Figs. 9–14. "Korea: Mt. Palgongsan". Holotype ♂ in Academy of Natural Sciences, Philadelphia. [Lee 1990]

Korean records. ***Atlanticus ussuriensis***: Bey-Bienko 1931: 673 (Mt. Baekdusan); Doi 1933: 88; Mori 1933: 54, pl. 1, Fig. 5–6 (Korean Tettigoniidae); Mori and Cho 1939: 4, pl. 1, Fig. 1 (Chailbong); Mori and Cho 1940: 20 (Mt. Geumgangsan); Tinkham 1941: 210; Cho 1947: 79 (Mt. Diamond); Cho 1958: 32 (sexual dimorphism: 긴어리여치); Cho 1959: 155, Fig. 20 (manual); Cho 1969: 750, pl. 50, text-fig 3 (illustrated encyclopedia); Ju 1969: 16 (North Korean check list); ***Paratlanticus ussuriensis***: Yamasaki 1986: 725, Figs. 1, 3, 7, 13, 18; Lee 1990: 113 (systematic notes); Park et al. 1993: 165; Kwon and Huh 1994: 49 (Korean check list); Kwon et al. 1996: 103 (Korean species list); Bae 1998: 150; Kim and Kim 2001: 94, Figs. 1A, 16–17, 22A–D (taxonomy); Storozhenko 2004: 118, Figs. 18, 56, 281–286; ***Paratlanticus palgonensis*** [!]: Storozhenko 1986: 253, Figs. 119(7, 8); Yamasaki 1986: 726, Figs. 2, 4, 8, 10, 14, 16, 19; Otte 1997: 303 (Orthoptera species file); ***Paratlanticus palgongensis***: Kwon and Huh 1994: 49 (Korean check list: 팔공여치); Kwon et al. 1996: 103 (Korean species list); Storozhenko 2004: 120.

Specimens examined. **<PB>** 1♀, Mt. Myohyangsan pathway Hwajangam, 19 vii 1982, L. Forro and L. Ronkay, No. 840 (Hungarian Natural History Museum, Budapest); **<GW>** 1♀, pitfall, Mt. Geumgangsan Onjong-ri, 25 x 1987, Z. Korsos and L. Ronkay, No. 1069 (Hungarian Natural History Museum, Budapest); 1♂, Gojindong Mt. Geonbongsan, 28 viii 1990, Park (KU); 2♂, Geonbongsa Goseong, 21 viii 2005, Kim TW (SSU); 1♂, Hyangnobong Goseong, 23 viii 1992, Moon TY (KU); 1♂, Geundeok Samcheok, 3 viii 1990, Jeon (SSU); 1♂, Baekdamsa Mt. Seoraksan, 29 viii 1984, Nam (KU); 7♂1♀, Changwon-ri Ssangyong Yeongwol, 8–24 vii 1999, Kim TW (SSU); 1♂2♀, Gunggol Mt. Taehwasan Heungwol-ri Yeongwol, 28 viii 2001, Kim SY and Kim AY (SSU); 1♀, Wonju, 29 vii 1987, Lee (KU); 1♂, Norumok Naeseorak Inje, 31 vii 1983, Ko (KU); 1♂, Mt. Bangtaesan Inje, 14 viii 1995, Kim (SSU); 1♂, Jeungsan Nam-myeon Jeongseon, 19 ix 2004, Kim TW (SSU); 1♂, Gwangha-ri Jeongseon, 16 vii 1999, Yeo JD (KU); 2♀, Jinburyeong, 12 viii 1979, Yoon (EU); 2♂2♀, Malaise trap, Mt. Myeongseonsan Cheolwon, 17 viii–14 x 1999, Ku DS (NIAST); 1♂, Gwangdeoksan Seo-myeon Cheolwon, 15 viii 2006, Kim TW (SSU); 2♂3♀,

Mt. Taebaeksan Taebaek, 11 viii 1999, Kim TW et al. (SSU); 5♂6♀, Mt. Hambaeksan Taebaek, 12−14 viii 1999, Kim TW et al. (SSU); 2♂6♀, Mt. Sambangsan Noron−ri Pyeongchang, 17 ix 2001, Kim TW (NIAST); 1♂1♀, Jinbu Pyeongchang, 30 ix 2000, Lee (SSU); 1♂, Hoenseong, 16 viii 2003, Kwon Y (SSU); **<GG>** 1♂, Hyeonri Gapyeong, 19 ix 1987, Yoon (SSU); 1♂, Mt. Cheonggyesan Gwacheon, 27 vi 1989, Kim (SSU); 1♂, Gwangneung, 28 vi 1959, Ji (KU); 1♂, Cheonjinam Gwangju, 15 vii 1993, Lee (SSU); 1♀, Mt. Munjusan Wolgot Gimpo, 1 vii 1987, Yoo (SSU); 1♂, Mt. Bulamsan Namyangju, 25 viii 1993, Kim (SSU); 7♂13♀, Malaise trap, Mt. Chunryeongsan Namyangju, 16 viii−13 x 1999, Ku DS (NIAST); 1♀, Mt. Soyosan Dongducheon, 12 viii 2006, Lee JG (SSU); 4♂2♀, Mt. Gwanggyosan Suwon, 1−30 vii 1999, Kim TW et al. (NIAST); 1♂, Mt. Yongmunsan Yangpyeong, 28 vii 2000, Kim (SSU); 1♂, Mt. Godaesan Sinseo−myeon Yeoncheon, 5 viii 2006, Kim TW (SSU); 2♂3♀, Paldang, 3 x 1963, Jeong et al. (KU); 1♀, Mt. Dobongsan Seoul, 11 vii 1967, Park (KU); 1♂, Mt. Cheonggyesan Seoul, 26 vii 1976, Choi (KU); **<CB>** 1♂5♀, Mt. Songnisan Boeun, 7 viii 1990, Lee (SSU); 1♂, Mt. Sobaeksan Danyang, 31 ix 1994, Lee (SSU); 1♂, Mt. Wolaksan Jecheon, 18 vii 1987, Yoo (SSU); 1♀, Mt. Namsan Chungju, 25 viii 2000, Kim TW (SSU); **<CN>** 2♂1♀, Mt. Gyeryongsan Gongju, 14 vii 1969, Kim (KU); 1♀, Seosan, 20 vii 1992, Kim (SSU); **<GB>** 1♀, Mt. Geumosan Gumi, 19 vii 2001, Kim AY (SSU); 1♂, Daehyeon Bonghwa, 25 vii 1986, Kim (SSU); 2♂, Andong, 2 vii 1988, Lee (KU); 1♀, Mt. Cheongryangsan Andong, 29 vii 1990, Kim (KU); 12♂4♀, Malaise trap, Mt. Sobaeksan Yeongpung, 13 viii−14 x 1999, Ku DS (NIAST); 1♀, Seonginbong Is. Ulreungdo, 9 vii 1986, Kim (SSU); 5♂10♀, Malaise trap, Mt. Baekamsan Uljin, 11 viii−13 x 1999, Ku DS (NIAST); 2♂2♀, Bulyeonggyegok, Uljin, 31 vii−1 viii 1999, Kim TW (SSU); 1♀, Mt. Juwangsan Cheongsong, 26 vii 1984, Nam (KU); **<GN>** 2♀, Mt. Nojasan Geoje, 18−20 vii 1990, Ku et al. (GSU); 1♀, Is. Geojedo, 20 vii 1970, Kim (KU); 1♀, Mt. Muisan Sanri Goseong, 7−8 viii 1996, Lee (GSU); 1♀, Sambangdong Gimhae, 14 viii 1987, Anonym (SSU); 1♂1♀, Boriam Namhae, 8 vii 1987, Anonym (GSU); 2♂2♀, Mt. Yeohangsan Happo Masan, 12−13 viii 1999, An et al. (GSU); 1♂2♀, Naewonsa Sancheong, 25 vii 1986, Ku et al. (GSU); 1♂, Sansudong Samcheonpo, 7−8 vii 1994, Kim (GSU); 1♂, Mt. Jeseoksan Tongyeong, 4 vii 1986, Anonym (KU); 1♀, Ssanggyesa Hwagye Hadong, 19 ix 1987, Anonym (KU); **<JB>** 1♂, Mt. Seonwunsan Gochang, 25 vi 1991, Oh (SSU); 1♂, Naesosa Buan, 30 vii 1984, Jang (SSU); 2♂, Mt. Daedunsan Wanju, 8 vii 2000, Lee (NIAST); 1♂2♀, Mt. Naejangsan Jeongeup, 2−3 viii 1974, Kim et al. (KU); **<JN>** 1♂, Dapgok

Gwangyang, 9 viii 1993, Jeong (SSU); 3♂4♀, Mt. Baekwusan Gwangyang, 25 viii 1999, Kim TW (SSU); 1♀, Dogapsa Mt. Wolchulsan Yeongam, 27 vii 1988, Kim (KU); 1♀, Mt. Baekyangsan Jangseong, 10 viii 1991, Song (SSU).

Description. **<♂>** Body coloration dark brown, ventral basal margin of hind femora and abdomen greenish. Head short and ovoidal; fastigium of vertex narrower than scape; scape as long as wide; antennal socket as wide as the greatest diameter of an eye. Pronotum with a first transverse sulcus at a fifths, V-shaped sulcus in mid; hind margin of pronotum 1.5 times wider than the narrowest distance; anterior and posterior margins truncated; lateral lobe of pronotum the height shorter than pronotal length, lower part bright, humeral area blackish. Tegmina micropterous, less covering half of the abdomen, slightly longer than pronotal length, as long as middle femur, its apex rounded; stridulatory area exposed. Hind wings vestigial two thirds of tegmen. Fore coxa with a basal spine. Fore femur with three inner ventral spinules apically, middle femur with 0-2 outer ventral spinules, hind femur with 4-6 outer, 5-7 inner ventral spinules apically. Fore tibia with six pairs of ventral spines, three outer dorsal spines, one inner apical spine, and slit-shaped tympana. Middle tibia with six pairs of ventral spines, three outer, four inner dorsal spines. Prosternum bispinose with a pair of small spines. Mesoternal lobe triangular as long as basal width. Last abdominal tergite with a pair of triangular lobes, its hind margin shallowly notched at apex. Cercus thick, rod-shaped, two times longer than basal width, its apex sharply pointed spiniform, incurved, with a small secondary tooth subapically. Subgenital plate trapezoidal, wider than long, its hind margin weakly concave; lateral carinae present. Stylus four times longer than basal width. Titillators with apical portion as long as basal one, denticulation present on apical portion outwardly. **<♀>** More brighter and larger than male. Tegmina as long as pronotal length, shorter than middle femur. Seventh abdominal sternum with a small ventral tubercle. Cercus thick and simply conical two times longer than basal width. Subgenital plate wider than long, with wide hind margin, its median weakly V-shaped forming largely rounded a pair of lobes. Ovipositor gently decurved, slightly longer than hind femora, its dorsal apex weakly truncated. **<Measurements>** BL 24.2-32.7; PL 7.0-8.6; TL ♂ 8.7-11.0, ♀ 8.0-8.5; HFL 22.3-26.7; OL 25.6-30.0.

Distribution. Korea, Northeast China, Russian Far East.

Remarks. According to authors, the *P. palgongensis* is separately considered by *P. ussuriensis* (Yamasaki 1986; Storozhenko 1986, 2004). However, an useful key with diagnostic value has not been provided at now. The former is just considered with large-sized form adapted

in southern province of the peninsula (Kim and Kim 2001). Besides, sporadic crowding of this have been intermittently reported from Chungju, Danyang, Yeongdong, Eumsoeng in Chuncheongbuk-do since 2001. It was reported that the katydids are eaten fruits in orchard as crowded large numbers, 30-40 individuals grouped along with each branches at one tree. The reason deemed to suspect that diapause capacity of their eggs over one year likely to some European Tettigoniids (Ingrisch 1984, 1985, 1988, 1990).

Genus *Anatlanticus* Bey-Bienko 우리여치속

1951. Trudy Vsesoyeiznogo Entomologicheskojo Obshchestva, Moskva, 43: 143. Type species: *Paradrymadusa uvarovi* Miram 1940.

Diagnosis. Pronotum shorter than fore femur. Hind margin of pronotum wider, two time of prozona. Tegmina longer than pronotum in both sexes. Prosternum with short paired spines. Ovipositor decurved. Only two species are described in the Amurian Province.

28. *Anatlanticus koreanus* Bey-Bienko 1951 우리여치 (Figs. 84-85, 96, 106)

Anatlanticus koreanus Bey-Bienko 1951. Trudy Vsesoyeiznogo Entomologicheskojo Obshchestva, Moskva, 43: 144, Fig. 8. "North Korea: Nunchi". Holotype ♂ in Zoological Institute of the Russian Academy of Sciences, St. Petersburg.

Korean records. ***Anatlanticus koreanus***: Storozhenko 1986: 254, Fig. 119(9); Kwon and Huh 1994: 49 (Korean check list); Jin and Xia 1994: 28; Kwon and Huh 1994: 49 (Korean check list); Kwon et al. 1996: 103 (Korean species list); Otte 1997: 297 (Orthoptera species file); Kim and Kim 2001: 95, Figs. 10-11 (taxonomy); Storozhenko 2004: 122.

Specimens examined. **<RG>** 2♂3♀, Chann-Pay plateau Samziyon 1600 m, 25 viii 1971, S. Horvatovich and J. Papp, No. 197 (Hungarian Natural History Museum, Budapest); 3♂, Chann-Pay plateau Samziyon Hotel, 25 viii 1971, S. Horvatovich and J. Papp, No. 199 (Hungarian Natural History Museum, Budapest); **<JG>** 1♂, Mt. Myohyangsan Hotel Myohyang, 13 ix 1980, Gy. Tapal and L. Forro No. 663 (Hungarian Natural History Museum, Budapest); **<GW>** 1♂, Mt. Odaesan, Jinbu Pyeongchang, 27 vii 1958, Anonym (KU); 1♂2♀, ibid. 4-5 viii 1983, Lee et al.; 5♂2♀, ibid. 10 vii 1994, Lee et al.; 1♂3♀, ibid. 10-11 viii 1997, Kim et al. (SSU); 1♂, ibid. 29 ix 2000, Kang TH (NIAST); 1♀, Mt. Bangtaesan Inje, 19 viii 1995, Kim (SSU); 2♀, Malaise trap, Mt. Hambaeksan Sododong Taebaek, 12 viii 1999, Ku DS (NIAST); 1♀, Haesanryeong Hwacheon, 13 ix 2000, Kim SS (SSU); 1♂1♀, Gwaneumsa Mt. Baekdeoksan Yeongwol, 26 viii 2001, Kim

SY and Kim AY (SSU); 1♀, Myeonon-ri Bongpyeong, 5 viii 2003, Rhee HW (SSU); 1♀, Mt. Cheongtaesan Dunnae Hoengseong, 3 x 2004, Jeong BH (SSU); 1♂, Mt. Gwangdeoksan Seo-myeon Cheolwon, 15 viii 2006, Kim TW (SSU); **<GG>** 1♂, Mt. Hwaaksan Gapyeong, 25 vii 1998, Lee HA (SSU).

Description. **<♂>** Body coloration bright brown with green patches. Head short and vertical; fastigium of vertex narrower than scape; scape short and thick, as long as wide. Antennal socket as wide as the horizontal diameter of an eye. Pronotum slightly shorter than fore femur, the disc with narrowest part at a thirds in length, its hind margin two times wider than the narrowest one; first sulcus distinct at a fifths, V-shaped sulcus distinct in mid; anterior margin truncated, posterior margin weakly roundly convex; posteriorly puncture and dots present; paranotum longer than height, without humeral sinus, with strongly slanted hind margin, its lower hind margin bright, humeral area blackish. Prothorasic spiracle largely opened, oval. Prosterum bispinose, the spine small, mesosternal lobe triangular as long as basal width, metasternal lobe obtuse, shorter than basal width. Fore coxa with a strong basal spine. Fore femur with a dorsal spine apicall, middle femur with spine, hind femur with 4-6 pairs of ventral spines apically. Fore tibia with six pairs of ventral spines and three outer dorsal spines; tympana slit-shaped. Middle tibia with six pairs of ventral spines and two outer, four inner dorsal spines. Tegmina mesopterous, longer than middle femur, covering three quarters of abdomen, its apex roundly wide; stridulatory area somewhat wider than hind margin of pronotum, occupy half of tegmen. Last abdominal tergite truncated, with small median notch. Cercus short and very thick, as long as less 1.5 time of basal width, with two small inner teeth at apex; numerous granules present; apical tooth sharply pointed spine-shape, down curved. Subgenital plate trapezoidal, slightly longer than basal width, clearly more protruding than cerci; lateral carinae present; hind margin with slightly concave; stylus small and short, two times longer than basal width. Titillators with slender apical portion, the length smilar with basal portion; denticulations present on apical portion, its apex hook-shaped. **<♀>** Tegmina shorter than male, as long as middle femur, just covering the half of abdomen. Cercus simple and conical, two times longer than basal width. Subgenital plate wider than long, its hind margin emarginated as V-shape forming widely separated two lobes; lateral carinae present. Ovipositor gently decurved, slightly shorter than hind femur. **<Measurements>** BL 23-29; PL 5.5-7.2; TL ♂ 9.0-13.0, ♀ 8.0-10.5; HFL 19.0-23.5; OL 15.5-19.5.

Distribution. Korean endemic regarded.

Genus *Atlanticus* Scudder 좀날개여치속

1894. Canadian Entomologist, 26(7): 179. Type species: *Decticus pachymerus* Burmeister 1838.

Diagnosis. Pronotum longer than fore femur, lateral carinae distinct. Tegmina shorter than pronotum in male, vestigial in female. Prosternum with short paired spines. Fore tibia with 3−4 external dorsal spines and six pairs of ventral spines. Male abdominal tergite incised as U− or V−shape. Ovipositor straight or recurved. 24 species are known in the East Asia and Nearctic Region.

29. *Atlanticus brunneri* (Pylnov 1914) 좀날개여치 (Figs. 82−83, 97, 102, 105, 108)

Amuria brunneri Pylnov 1914. Revue Russe d' Entomologique, 14: 109, Figs. 3−5. "Russia: Ussuri". Syntype in Museo Zoologico Academiae Caesareae Petropolitano conservantur.

Atlanticus sinensis nec Uvarov 1923. Transactions of the Entomological Society of London, 3−4: 512, pl. 28, Figs. 11−12. "China: Mt. Taipaishan". Holotype ♂ in The Natural History Museum, London. = *Atlanticus jeholensis* Mori 1935. Rep. First scient. Exped. Manchoukuo, Sec. 5, Div. 1, Part 5, Atr 17: 6, pl. 2, Figs. 2−3, text−Figs. 4−5. "China: Mt. Wulingshan". Type in ? [Bey−Bienko 1955]

Korean records. ***Atlanticus brunneri***: Mori 1933: 54 (Musanryeong); Cho 1959: 156 (manual); Cho 1969: 751 (illustrated encyclopedia); Kwon and Huh 1994: 49 (Korean check list); Kwon et al. 1996: 103 (Korean species list); Kim and Kim 2001: 95 (taxonomy: 북방좀날개여치); Storozhenko 2004: 116, Figs. 11, 273−280; ***Atlanticus jeholensis***: Mori and Cho 1940: 20 (Mt. Geumgangsan); Cho 1947: 79 (Mt. Diamond); Ju 1969: 16 (North Korean check list); ***Atlanticus bruneri*** [!]: Ju 1969: 16 (North Korean check list); ***Atlanticus chinensis*** [!]: Lee 1990: 113 (systematic notes); Kim 1995: 186; ***Anatlanticus*** [!] ***brunneri***: Moon and Yoon 1993: 57 (KEI); ***Atlanticus sinensis***: Kim and Kim 2001: 95, Figs. 12−13 (taxonomy); Storozhenko 2004: 117.

Specimens examined. <GW> 1♀, Mt. Kumgangsan, 14 x 1978, A. Vojnits and L. Zombori, No. 502 (Hungarian Natural History Museum, Budapest); 1♀, Jinburyeong Goseong, 12 vii 1983, Yoon SJ (EU); 1♂2♀, Sinseonbong Mt. Seoraksan Toseong Yangyang, 26 viii 2002, Kim TW (SSU); 1♂, Changwon−ri Ssangyong Yeongwol, 21 vii 2000, Kim (NIAST); 3♂3♀, Malaise trap, Mt. Chiaksan Wonju, 4 viii−12 x 1999, Ku DS (NIAST); 1♀, Hongcheon Wonju, 9 viii 1989, Bae (SSU); 1♀, Garisancheon Mt. Seoraksan Inje, 22 vii 2004, Kim

TW (SSU); 1♀, Jeungsan Nam-myeon Jeongseon, 19 ix 2004, Kim TW (SSU); 1♀, Songgye Imgye Jeongseon, 5 viii 1971, Nam et al. (KU); 1♀, Mt. Myeongseongsan Cheolwon, 23 vii 1999, Ku DS (NIAST); 1♂, Mt. Gwangdeoksan Sseo-myeon Cheolwon, 15 viii 2006, Kim TW (SSU); 1♂, Chugok Chunseong, 16 viii 1981, Kim (SSU); 1♀, ibid. 31 vii 1986, Lee (SSU); 1♀, Balsan-ri Chuncheon, 25 viii 1998, Park HC (NIAST); 1♀, Mt. Samyeongsan Chugok-ri Buksan-myeon Chuncheon, 25 vii 2003, Kim TW (SSU); 1♂, Mt. Taebaeksan Taebaek, 13 viii 1999, Kim TW (SSU); 1♀, Mt. Sambangsan Noron-ri Pyeongchang, 17 ix 2001, Kim TW (SSU); 1♂, Donggang riverbed Mitan Pyeongchang, 9 vii 1999, Kim TW (SSU); 1♀, Soppulsan Duchon-myeon Hongcheon, 25 viii 2002, Kim TW (SSU); **<GG>** 1♀, Mt. Pakyon 20-21 km NE from Kaesong both sides of and near to the road between Kaesong and Pakyon pokpo, 11 ix 1971, S. Horvatovich and J. Papp, No. 260 (Hungarian Natural History Museum, Budapest); 1♀, Beokjae Goyang, 2 vii 1973, Han (EU); 1♀, Soribong Gwangneung, 5 ix 1971, Kang (EU); 1♂, Anteo Gwangmyeong, 1 vii 2004, Kim TW (SSU); 1♀, Silchon Gwangju, 20 viii 1995, Yoo (SSU); 1♂1♀, Mt. Ungilsan Namyangju, 8-9 vii 1986, Lee et al. (SSU); 1♂, Mt. Cheonmasan Namyangju, 8 vii 1967, Kim (EU); 2♂, Mt. Chukryeongsan Namyangju, 16 viii 1999, Ku DS (NIAST); 1 ♂, Mt. Gwanggyosan Suwon, 21 vii 2000, Jang (NIAST); 1♂1♀, Mt. Yongmunsan Yangpyeong, 28 vii 2000, Kim TW (SSU); 1♂, Mt. Godaesan Sinseo-myeon Yeoncheon, 5 viii 2006, Kim TW (SSU); 2♀, Mt. Jugeumsan Naechon-myeon Pocheon, 25 ix 2004, Kim TW (SSU); 1♀, Mt. Dobongsan Seoul, 2 vii 1981, Kim (SSU); 1♂, Mt. Bukhansan Seoul, 11 vi 1998, Kim TW (SSU); 1♂, Mt. Yongmasan Seoul, 22 ix 1971, Won (EU); 1♀, Uidong Seoul, 27 ix 1992, An (SSU); 1♂, Jeongneung Seoul, 24 vi 1967, Cho (EU); 1♀, Mt. Cheonggyesan Seoul, 6 vi 1986, Song (SSU); **<CB>** 1♀, Gosa-ri Yeonpung Goesan, 24 viii 1982, Yoon (SSU); 1♀, light trap, Hwajangam Mt. Taehwasan Osa-ri Danyang, 27 viii 2001, Kim SY and Kim AY (SSU); 1♂, Jecheon, 22 viii 1984, Han (SSU); 2♀, Mt. Wolaksan Jecheon, 19 vii-13 viii 1987, Yoo (SSU); 1♂, Mt. Gyemyoengsan Chungju, 24 viii 2000, Kim TW (SSU); 1♂, Mt. Namsan Chungju, 25 viii 2000, Kim (SSU); **<CN>** 1 ♀, Mt. Wolmyeongsan Buyeo, 4 vii 2000, Kang (SSU); 1♀, Baekripo beach Taean, 30 ix 2006, Kim TW (SSU); **<GB>** 1♂1♀, Mungyeongsaejae, 10 vii 1971, Han et al. (SSU); 1 ♂, Baekwun Suryun Seongju, 31 viii-1 ix 1997, Park (SSU); 1♂, Mt. Baekamsan Uljin, 10 viii 1999, Ku DS (NIAST).

Description. <♂> Body coloration brown or gray. Head with fastigium of vertex wider than scape; scape short and thick, as long as wide; antennal socket slightly narrower than the

horizontal diameter of an eye. Pronotum slightly longer than fore femur, with indistinct first and V−shaped sulci; lateral carinae clear; the hind margin of pronotum 1.5 times wider than the narrowest part located a thirds in length; anterior margin weakly concave, posterior margin widely convex with a weak median concavity. Paranotum nearly dark black, with bright lower hind margin; humeral sinus weakly present. Tegmina micropterous, clearly shorter than pronotum, its posterior margin roundly projecting; stridulatory area a half covered by pronotum. Prosterum bispinose, the spine small, mesosternal lobe triangular as long as basal width, metasternal lobe obtuse, shorter than basal width. Fore femur with two inner, middle femur with one outer, hind femur with two inner ventral spinules apically. Fore coxa with a strong basal spine. Fore and middle tibiae with six pairs of ventral spines. Fore tibia with three outer dorsal spines and slit−shaped tympana. Middle tibia with two outer, four inner dorsal spines. Last abdominal tergite with median incision at posterior margin forming a pair of roundly projecting lobes. Cercus four times longer than basal width, the base thick, the apex sharply tapering; an internal tooth of cercus located in before the middle, its apex pointed. Subgenital plate as long as basal width, protruding same with cerci, its hind margin clearly incised as V−shape. Stylus four times longer than basal width. Titillators strongly bent, with apical portion longer than basal ones; apical portion with denticulations outward. **<♀>** Slightly larger than male. Tegmina squamipterous, not visible wholly covered by pronotum. Cercus simple, conical, three times longer than basal width. Subgenital plate two times wider than long, its hind margin deeply incised in median as V−shape forming widely separated a pair of lobes, its apex round. Ovipositor shorter than hind femur, strongly recurved, its dorsal apex more gently truncated. **<Measurements>** BL ♂ 23.0−25.0, ♀ 29.0−37.0; PL ♂ 8.0−8.5, ♀ 9.2−10.5; TL ♂ 6.0−8.0, ♀ 0.5−1.3; HFL ♂ 21.0−23.8, ♀ 26.0−28.4; OL 20.0−25.5.

Distribution. Korea, Northeast China, Russian Far East.

Remarks. I had studied type materials of *A. brunneri* and *A. sinensis* deposited in The Natural History Museum, London (web images available in OSF), both confusedly referred in Korea. In the comparison, there is a rather similarity in male cerci: internal tooth were seemed to rather differently located depending on the dry condition of abdominal end of the specimens (cf. Fig. 37 in Tinkham (1941) looked very different with *A. brunneri*), but the female ovipositors were more clearly differentiated as keyed in Uvarov (1923). The Korean specimens are consequently corresponded to the *A. brunneri* has the strongly recurved ovipositor.

Genus *Gampsocleis* Fieber 여치속

1852. In Kelch. Grundlage zur Kenntnis der Orthopteren (Geradflugeler) Oberschlesiens, und Grundlage zur Kenntnis der Käfer Oberschlesiens, erster Nachtrag (Schulprogr). Ratibor, Bogner (publication series): 2, 8. Type species: *Locusta glabra* Herbst 1786.

Diagnosis. Body large-sized. Fastigium of vertex wider than scape, its apex round. Tegmina macropterous. Prosternum with long paired spines. Fore tibia with three external dorsal spines and six pairs of ventral spines. Male cercus with round apex, inner tooth located in basal portion. Titillator two pairs. Ovipositor straight, weakly decurved, dorsal apex truncated. 18 species are known in the Palaearctic Region, the measurements of two Korean *Gampsocleis* compared in Table 6.

30. *Gampsocleis ussuriensis* Adelung 1910 긴날개여치 (Figs. 88-89, 112)

Gampsocleis ussuriensis Adelung 1910. Trudy Russkago Entomologicheskago Obshchestva, 39: 351. "Russia: Ussuri". Holotype ♂ in Zoological Institute of the Russian Academy of Sciences, St. Petersburg.

Locusta (*Decticus*) *bürgeri* nec de Haan 1842. In Temminck. Verhandelingen over de natuurlijke geschiedenis der Nederlandsche overzeesche bezittingen. Zoologie: 214. "Japan". Syntype in Nationaal Natuurhistorische Museum, Leiden. ?= *Gampsocleis mikado* Burr 1899. Entomologist's Record and Journal of Variation, 11(1): 297. "Japan". Syntype in Oxford HM. [Uvarov 1923]

Korean records. ***Gampsocleis buergeri***: Okamoto 1924: 57 ("Quelpart"); Doi 1936: 106; Cho 1959: 155, Fig. 19 (manual); Cho 1963: 163 (Is. Jejudo); Cho 1969: 750, pl. 79 (illustrated encyclopedia: 북방여치); Seok 1970: 175 (Is. Jejudo); Lee 1990: 114 (systematic notes); Kwon et al. 1996: 103 (Korean species list); ***Gampsocleis micado*** [!]: Okamoto 1924: 57 ("Quelpart"); Lee et al. 1985: 355; ***Gampsocleis ussuriensis***: Furukawa 1930: 108, Fig. 1-2; Mori 1933: 53 (Korean Tettigoniidae); Mori 1935: 4, 15, pl. 1, Figs. 3-4, text-fig 3; Mori and Cho 1940: 20 (Mt. Geumgangsan); Cho 1947: 79 (Mt. Diamond); Furukawa and Shiraki 1950: 40, Fig. 100; Cho 1955: 182; Cho 1958: 32 (sexual dimorphism); Cho 1959: 154, Fig. 18 (manual); Cho 1963: 163 (Is. Jejudo); Cho 1969: 749, pl. 49, 50, text-Fig. 2 (illustrated encyclopedia); Ju 1969: 17 (North Korean check list); Seok 1970: 175 (Is. Jejudo); Rentz and Miller 1971: 267 (Mt. Palgongsan); Storozhenko 1980: 15; Storozhenko 1986: 253, Fig. 121(9); Tadauchi 1989: 53 (Japanese

check list); Lee 1990: 114 (systematic notes); Moon and Yoon 1993: 57 (KEI); Kwon and Huh 1994: 49 (Korean check list); Kwon et al. 1996: 103 (Korean species list); Hua 2000: 50 (Chinese list); Kim and Kim 2001: 96, Figs. 4–5 (taxonomy); Storozhenko 2004: 105, Figs. 51, 235–242; ***Gompsocleis*** [!] ***ussuriensis***: Doi 1932: 37; Kamijo 1933: 49; Masaki 1936: 272; ***Gampsocleis burgeri*** [!]: Ju 1969: 17 (North Korean check list).

Specimens examined. **<GW>** 1♂, "Kongosan" = Geumgangsan, 14 viii 1937, Mori and Cho (KU); 2♂, Bogwang Phoenix park Myeonon-ri Bongpyeong, 5 viii 2003, Rhee HW (SSU); 1♀, Seokhang, Yeongwol, 12 viii 1999, Kim TW (NIAST); 1♂, Mt. Taebaeksan Taebaek, 13 viii 1999, Lee (SSU); 2♂2♀, Mt. Odaesan Pyeongchang, 27 vii 1958, Anonym (KU); 1♂1♀, Mt. Baekwunsan Hwacheon, 20 vii 1986, Jang (SSU); **<GG>** 3♂1♀, Mt. Myeongjisan Gapyeong, 28 vii–9 ix 1991, Kuk et al. (SSU); 1♀, Gwacheon, 27 vii 1995, Seong (SSU); 1♀, Is. Pungdo Ansan, 11–12 viii 2006, Kim TW (SSU); 3♂, Anseong, 10–12 viii 1961, Anonym (KU); 1♀, Yangpyeong, 8 viii 1970, Ryu JH (KU); 1♂, Mt. Gyeyangsan Incehon, 26 viii 2001, Kim TW (NIAST); 1♀, Is. Mungapdo Ongjin Incheon, 28 vii 1972, Lee (EU); 1♂, Musan Paju, 24 ix 1999, Kim TW (NIAST); 2♂1♀, Yeongpyeong Pocheon, 20 vii–18 viii 1996, Kim et al. (SSU); **<CB>** 3♀, Mt. Songnisan Boeun, 7 viii 1990, Kim et al. (SSU); 2♂, Suanbo, 23 viii 1982, Yoon (EU); 1♀, Yongam-ri Hwanggan-myeon Yeongdong, 4–5 viii 2001, Kim AY (SSU); 1♂, Bakdaljae Baekwun-myeon Jecheon, 28 viii 2002, Kim TW (SSU); 3♂, Sajo resort Suanbo Sangmo-myeon Chungju, 22 viii 2003, Rhee HW (SSU); **<CN>** 3♂1♀, Mt. Mansusan Boryeong, 19 vii 1999, Han (SSU); 2♀, Seosan, 21 viii 1968, Hong TS (EU); 2♀, Sindu-ri Wonbuk-myeon Taean, 18 vii 2002, Kim TW (SSU); 2♂, Hakampo Wonbuk Taean, 22 vii–26 viii 2006, Kim TW (SSU); **<GB>** 1♂, Mungyeongsaejae, 10 vii 1977, Park JH (KU); 2♂, Joryeong Mungyeong, 13 ix 1998, Park (SSU); 2♀, Andong, 2 vii 1988, Lee (KU); 10♂2♀, Bulyeonggyegok Uljin, 1 viii 1999, Kang TH (NIAST); 2♂, Mt. Juwangsan Cheongsong, 10 viii 1991, Kim (SSU); 1♀, Guryongpo Pohang, 7 ix 2000, Kim TW (NIAST); 8♂1♀, Hwajinpo Songra Pohang, 7 ix 2000, Kim TW et al. (NIAST); **<GN>** 1♂, Daeyeondong Busan, 5 viii 1972, Lee (EU); 1♂, Songjeong Busan, 3 viii 1964, Kim (EU); 1♂, Mt. Jirisan, 30 vii 1987, ISC (KU); 1♂1♀, Goajoadong Jinju, 3 viii–4 ix 1987, Kim (GSU); 1♂, Gukdo Tongyeong, 21 vii 1978, Nam SH (KU); **<JB>** 1♀, Seunwunsa Gochang, 29 vii 1984, Jang (SSU); 1♀, Buyong Gimjae, 28 vii 1984, Jang (SSU); 1♂, Namwon, 7 viii 1991, Park (SSU); 1♀, Mt. Naejangsan, 2 viii 1974, Nam SH (KU); 2♀, Mujugucheondong, 2 viii 1996, Jang (SSU); 1♀, Bongeun Buan, 10 x 1981,

Park (SSU); 1♂, Gyodong Jeonju, 18 vii 1997, Lee (SSU); **<JN>** 5♂1♀, Baekchu Is. Geomundo, 17 vii 1977, Yoon (KU); 1♂1♀, Is. Heuksando Sinan, 2 viii 2003, Kwon Y (SSU); 1♀, Sohodong Yeosu, 23 ix 1991, Sim (SSU); 1♂1♀, Yeocheon, 24 vii 1972, Park (EU); 1♂4♀, Is. Nakwoldo Yeonggwang, 15 viii 1989, Kim et al. (SSU); 1♀, Dogapsa Mt. Wolchulsan Yeongam, 26 vii 1988, Park HC (KU); **<JJ>** 4♂2♀, Gwaneumsa, 4 viii 1955, Cho PS et al. (KU); 2♂3♀, Andeokgyegok Gamsan-ri Andeok-myeon Namjeju, 13 viii 2004, Kim JK and Kim TW (SSU); 4♂1♀, Donnaeko, 4 viii 1972, Kim JI (KU); 2♀, Is. Sangchujado Bukjeju, 15-17 vii 1985, Yoon IB and Nam SH (KU); 5♂4♀, Hamdeok-ri Jocheon-myeon Bukjeju, 8 vii 2002, Kim TW (SSU); 2♂, Hado Chujado Bukjeju, 10 viii 1969, No YT (KU); 4♂7♀, Seoguipo, 23 vii 1957, Anonym (EU); 1♂1♀, Is. Udo, 12 vii 1979, An (EU); 2♀, Yongsu-ri Hangyeong, 26 ix 2000, Kim TW et al. (SSU); 2♂3♀, Northern slope Mt. Hallasan, 4 viii 1955, Cho PS et al. (KU); 2♂, Hallim, 8 vii 1965, Sim (EU); 1♂, Hyeopje, 26 ix 2000, Kim TW et al. (SSU).

Description. **<♂>** Body coloration pale green or brown, rather variable. Head large and vertical; fastigium of vertex perpendicular with frons, slightly wider than scape in dorsal view; scape as wide as long. Eye much larger than antennal socket. Pronotum with smooth disc, its anterior margin truncated, posterior margin widely round; lateral lobe of pronotum the height shorter than the length of pronotal disk, its hind margin slanted, humeral sinus unclear. Tegmina macropterous, longer than abdominal end, or surpassing hind knee, its apex round; black dots in median or radial areas unclear or absent; RS branched just behind the mid of R. Fore coxa with a strong basal spine. Fore femur with 8-9 inner ventral spinules, middle femur slightly longer than fore one, with 9-11 outer ventral spinules, hind femur with 8-11 inner, 2-4 outer ventral spinules in mid. Fore tibia with six pairs of ventral spines, three outer dorsal spines and slit-shaped tympana. Middle tibia with six pairs of ventral spines and two outer, four inner dorsal spines. Hind basitarsus with large plantulae as long as a half of basitarsus. Prosternum bispinose, mesosternal lobe longer than basal width, metasternal lobe as long as basal width. Last abdominal tergite triangularly projected, with median furrow forming two lobes. Cercus with thick base and conical apex tapered, the lateral outer margin rather straight; inner tooth located in basal triangular lobe, its apex pointed; the distance from the base to inner tooth shorter than the length of cercus. Subgenital plate two times longer than basal width; hind margin with deeply V-shaped notch. Stylus four time longer than basal width. Titillators the first ones smooth with short apical portion and longer basal portion; the second ones slender than first ones,

with denticulations at apex. **<♀>** Subgenital plate slightly shorter than wide, widely truncated, its hind margin thickened and weakly concave. Ovipositor slightly decurved, a little shorter than hind femora; dorsal apex gently truncated.

Distribution. Korea, Japan (Hokkaido), Northeast China, Russian Far East.

Remarks. The population of *G. ussuriensis* in Is. Jejudo is rather similar with Japanese *G. buergeri* which ranges extend to Is. Tsushima from Japan (OSJ 2006). Further study needed to that.

31a. *Gampsocleis sedakovii sedakovii* (Fischer von Waldheim 1846)

Decticus sedakovii Fischer von Waldheim 1846. Nouv. Mém. Soc. Imp. Natur. Moscou: 161, pl. 28, Figs. 3, 4. "Russia: Irkutsk". Type in ?

Korean records. ***Gampsocleis sedakovii***: Chang 1935: 70; Harz 1969: 478, Figs. 1547, 1568–1571; Ju 1969: 17 (North Korean check list); Hua 2000: 50 (Chinese list); ***Gompsocleis*** [!] ***sedakovi***: Masaki 1936: 272.

Distribution. China, Mongolia, Russia.

31b. *Gampsocleis sedakovii obscura* (Walker 1869) 여치 (Figs. 86–87, 100, 104, 111)

Decticus obscurus Walker 1869. Catalogue of the Specimens of Dermaptera Saltatoria in the Collection of the British Museum, 2: 261. "Corea". Syntype in The Natural History Museum, London.

= *Gampsocleis obscura hokusenensis* Mori 1933. J. Chosen Nat. Hist. Soc. 16: 53. "North Korea". Type lost. [Lee 1990]

Gampsocleis gratiosa nec Brunner von Wattenwyl 1862. Verhandlungen der Kaiserlich–Königlichen Zoologisch–Botanischen Gesellschaft in Wien, 12: 94. "China: Shanghai". Holotype ♂ in Vienna Museum.

Korean records. ***Gampsocleis obscurus***: Kirby 1906: 185; ***Gampsocleis obscura***: Uvarov 1923: 520; Mori 1933: 53, pl. 1, Fig. 1 (Korean Tettigoniidae); ***Gampsocleis sedakovi*** [!] ***obscura***: Dirsh 1927: 151, Figs. 12–15; Bey–Bienko 1931: 674; Chang 1935: 70; Haku 1937: 73 (Daegu); Mori and Cho 1939: 4, pl. 1, Fig. 2 (Chailbong); Cho 1959: 153, Fig. 17 (manual); Cho 1969: 748, pl. 49, text–Fig. 1 (illustrated encyclopedia); Rentz and Miller 1971: 266 (Mt. Palgongsan); Storozhenko 1980: 14; Storozhenko 1986: 253, Figs. 115(1), 117(5), 122(4); Kim et al. 1987: 216 (cytotaxonomy); Moon and Yoon 1993: 57 (KEI); Kwon et al. 1996: 103 (Korean species list); Otte 1997: 301 (Orthoptera species

file); Hua 2000: 50 (Chinese list); Kim and Kim 2001: 96, Figs. 2–3 (taxonomy); ***Gampsocleis sedakovii obscurus***: Furukawa 1930: 37; ***Gompsocleis*** [!] ***sedakovi*** [!] ***obscurus***: Doi 1932: 37; ***Gampsocleis obscura hokusenensis***: Mori 1935: 3 14. pl. 2, Fig. 1, text–Fig. 2; ***Gampsocleis gratiosa***: Wu 1935: 88 (Catalogus Insectorum Sinensium); Mishchenko 1968: 488; Hua 2000: 50 (Chinese list); Storozhenko 2004: 106, Figs. 243–249; ***Gompsocleis*** [!] ***sedakovi*** [!] ***obscura***: Cho 1955: 179; ***Gampsocleis sedakovi*** [!] ***abscura*** [!]: Cho 1963: 163 (Is. Jejudo); Kwon and Huh 1994: 49 (Korean check list); Kim et al. 1995: 90; Moon 1995: 162; Kim et al. 1996: 66; Bae 1998: 142; Moon 1998: 182; ***Gampsocleis sedakovi*** [!] ***obscura***: Lee and Ko 1988: 204 (Is. Oeyondo); ***Gampsocleis sedakovi*** [!] ***hokusenensis***: Otte 1997: 301 (Orthoptera species file); ***Gampsocleis sedakovii obscura***: Storozhenko 2004: 101, Figs. 53, 222–228.

Specimens examined. **<ST>** 2♂3♀, "Corea", date unrecorded, E. Belcher (The Natural History Museum, London); **<HB>** 2♂, "Shuotsu" = Jueul Gyeongseong, 2 x 1922, Okamoto et al. (NIAST); **<RG>** 4♀, river Karim 10 km NEE from Bochonbo 1,100 m, 27 vii 1975, J. Papp and A. Vojnits, No. 295 (Hungarian Natural History Museum, Budapest); **<GW>** 1♀, Gojindong Mt. Geonbongsan, 28 viii 1990, Park (KU); 1♂, Ssangyong–ri Seo–myeon Yeongwol, 21 viii 2003, Rhee HW (SSU); 5♂1♀, Changwon–ri Ssangyong Yeongwol, 9 vii–11 viii 2000, Kim TW et al. (NIAST); 2♂1♀, Mt. Chiaksan Wonju, 2 viii 1997, Yoon (SSU); 4♂3♀, Mt. Seoraksan Inje, 16 viii 1985, Lee (SSU); 2♀, Mulgubi Jinburyong, 23–24 vii 1984, Yoon SJ (EU); 2♂2♀, Mt. Samyeongsan Chungok–ri Buksan–myeon Chuncheon, 25 vii 2003, Kim TW (SSU); 3♀, Palmi–ri Sindong–myeon Chuncheon, 1 vii 2006, Kim TW (SSU); 1♂, Hongcheon, 21 vi 1996, Lee (SSU); **<GG>** 1♂, Bangha–ri Gapyeong, 2 vii 2005, Kim TW (SSU); 1♂, Mt. Bukhansan Jangheung Goyang, 1–25 vi 2001, Rhee HW (SSU); 1♀ (macroptera), Gwangneung, 21 v 1960, Lee SM; 1♂3♀, Bogwangsa Gwangtan, 6 vii 1972, Kim (KU); 1♂1♀, Namhansanseong Seongnam, 4 viii 1968, Han et al. (EU); 1♂1♀, Bugok–ri Songchu Jangheung, 24 vii 2003, Rhee HW (SSU); 4♂2♀, Paldang, 3 x 1963, Kim et al. (KU); 4♂6♀, Mt. Cheonmasan Pyeongnae, 11 vi–25 vii 1961, Kim et al. (EU); 3♂, Jikdong–ri Soheuleup Pocheon, 16 vi 2003, Rhee HW (SSU); 1♀, Mt. Gwanaksan Seoul, 21 vii 1970, Song (KU); 1♂, Maljukgeori Seoul, 4 v 1967, Tak (EU); 2♂, Suyu–ri Seoul, 13–25 vi 1970, Lee et al. (EU); 1♂, Sinchon, 20 vii 1968, Han (EU); 1♀, Jeongneung Seoul, 21 vi 1959, Bae (EU); 1♂, Taeneung, 17 viii 1967, Kwon (EU); **<CB>** 1♂, Cheongcheon Goesan, 21 viii 1988, Yoon (SSU); 1♂, Eumseong, 24 vii 1971, Kim SJ (KU); 1♀, Mt. Gyemyeongsan Jongmin–dong Chunju, 18 vi

2003, Kim JI (SSU); **<GB>** 2♂, Hwagokji Gyeongju, 14 vii 2003, Rhee HW (SSU); 1♂, Gunwui, 11 vii 2003, Rhee HW (SSU); 3♂, Bongmu park Daegu, 12 vii 2003, Rhee HW (SSU); 1♂, Daehyeon Seokpo Bonghwa, 24 vii 1986, Jang (SSU); 1♀, Mt. Cheongryangsan Andong, 29 vii 1990, Kang (SSU); 1♀, Galsan Yeongpung, 18 viii 1986, Choi (SSU); 1♀, Dalgipokpo Mt. Taehaengsan, 24 vi 1988, Lee (SSU); **<GN>** 1♂1♀, Mt. Sanseongsan Hail Goseong, 20 viii 1998, Jeon et al. (SSU); 1♀, Masanpo, 26 viii 1959, Lee (EU); 1♂, Sancheong, 18 viii 1986, An (SSU); 1♀, Hwaeomsa Mt. Jirisan, 4 viii 1959, Kim (EU); 1♂, Geumgok Jinyang, 3 vi 1981, Jeong (SSU); 1♂, Goajoadong Jinju, 12 viii 1984, Yoon (GSU); **<JB>** 1♀, Mujugucheondong, 11−21 viii 1970, Kim KH (KU); **<JJ>** 1♂1♀, Gwaneumsa, 4 viii 1972, Kim JI (KU); 1♂1♀, Donnaeko, 4 viii 1972, Kim JI (KU); 1♂, Hamdeok−ri Jocheon−myeon Bukjeju, 8 vii 2002, Kim TW (SSU); 1♀, Seoguipo, 23 vii 1957, Anonym (EU); 1♂, Jungmun, 4 viii 1972, Kim (KU); 1♂, Pyoseon, 14 vii 1987, Yoon (EU); 2♂, Northern slope Mt. Hallasan, 4 viii 1955, Kim CW and Lee BJ (KU).

Description. **<♂>** Body coloration green or dark brown, rather variable. Head largely ovoid; fastigium of vertex wider than scape; scape as long as wide. Eye larger than antennal socket. Pronotum with truncated anterior margin and roundly convex hind margin; lateral lone of pronotum shorter than the length of pronotal disk, humeral sinus weakly present. Prothorasic spiracle elongated ovoidal, a half covered by lateral lobe of pronotum. Tegminal length rather variable, generally as long as abdominal end or macropterous, its apex sharply tapered; distinct black markings present on radial area posteriorly and median area; RS branched behind the mid of R; stridulatory area as wide as hind margin of pronotum, slightly shorter than pronotal length. Hind wings shorter than tegmina. Fore coxa with a strong basal spine anteriorly. Fore femur with 6−7 inner ventral spinules. Middle femur with 8−10 outer ventral spinules. Hind femur with 2−8 inner ventral spinules in mid. Fore tibia with six pairs of ventral spines, three outer dorsal spines and slit−shaped tympana. Middle tibia with six pairs of ventral spines and 2−4 outer, 4−5 inner dorsal spines. Hind basitarsus with largely developed ventral plantulae, the length as long as a half of basitarsus. Prosternum bispinose, mesosternal lobe triangular, longer than basal width, metasternal lone triangular as long as basal width. Last abdominal tergite with a pair of triangular lobes, and median longitudinal groove. Cercus thick and depressed, 2.5 times longer than basal width, its apex tapered; inner margin with a triangularly projected tooth, its width wider than apical part of cercus and length shorter than the distance to apex; the out margin rather diverged. Subgenital plate longer than basal width, its hind margin with

median V-shaped notch; lateral and median carinae distinct. Titillators the first ones with apical portion longer than basal one, the second one as long as apical portion of the first, with denticulation at apex. **<♀>** Cercus simply conical, three times longer than basal width. Subgenital plate shorter than basal width, its hind margin with a shallow median V-shaped notch forming a pair of round lobes. Ovipositor sword-shaped, thickly decurved, shorter than hind femur, its dorsal apex truncated.

Distribution. Korea, Northeast China, Russian Far East.

Remarks. Since Dirsh (1927), *G. obscura* has been subdued as a subspecies of *G. sedakovii*. However, as keyed in Storozhenko (1986, 2004), two are quickly recognized by the difference of body dimensions including tegminal shape. I have examined a male specimen of *G. sedakovii* collected from North China, but which was quite different from Korean *G. obscura* especially in the stridulatory apparatus that is previously not examined character. Manchuria is considered as the contact zone subdividing the two (Bey-Bienko 1930), further study needed to the subspecific consideration of both (Rentz and Miller 1970; Jin and Xia 1994).

Table 6. Measurements of *Gampsocleis* spp.

Species	BL	HTL	PL	TL	HFL	OL
G. ussuriensis	28.0-38.0	39-52	8.5-10.5	30.5-41.0	27.5-35.0	24.5-27.5
G. sedakovii obscura	30.2-36.8	32-44	9.5-11.5	23.0-30.0	29.5-32.0	20.0-23.0

Genus *Tettigonia* Linnaeus 중베짱이속

1758. Systema Naturae per Regna tria naturae (10th ed.), 1: 429. Type species: *Gryllus* (*Tettigonia*) *viridissimus* Linnaeus 1758.

Diagnosis. Body large green or light brown. Fastigium of vertex 1.05-1.6 times narrower than scape. Tegmina macropterous, 3.1-7.0 times longer than pronotum, with rounded apex. Male cercus long with large inner tooth placed shortly before the middle or near the base. Ovipositor straight, 2.7-4.3 times longer than pronotum. Subgenital plate of female with deep emargination on hind margin and with distinct lateral carinae. Titillator with long, almost straight apical portion bearing two teeth (Storozhenko 1994). 24 species are known in the Palaearctic Region, the measurements of Korean *Tettigonia* spp. compared in Table 7.

32. *Tettigonia ussuriana* Uvarov 1939 중베짱이 (Figs. 90−91, 99, 101, 110)

Tettigonia ussuriana Uvarov 1939. Annals and Magazine of Natural History, London, 11(3): 614. "Russia: near Vladivostok". Holotype ♂ in Zoological Institute of the Russian Academy of Sciences, St. Petersburg.

Gryllus cantans nec Fuessly 1775. Verz. Schweiz. Ins.: 23, No. 439, pl. 1, Fig. 5a−b. "Sweden". Type lost.

Tettigonia orientalis nec Uvarov 1923. Transactions of the Entomological Society of London, 3−4: 494, pl. 28, Figs. 1−2. "Japan". Holotype ♂ in The Natural History Museum, London.

Korean records. ***Tettigonia cantans***: Mori 1933: 52 (Korean Tettigoniidae); Cho 1959: 23 (manual); Cho 1969: 748 (illustrated encyclopedia: 만주중베짱이); Ju 1969: 19 (North Korean check list); Lee 1990: 115 (systematic notes: 북방베짱이); Moon and Yoon 1993: 58 (KEI); Kwon et al. 1996: 104 (Korean species list); ***Tettigonia orientalis***: Doi 1936: 106; Ju 1969: 19 (North Korean check list); ***Tettigonia ussuriana***: Kim and Kim 2001: 96, Figs. 1B, 6−7 (taxonomy): Ogawa and Ohbayashi 2003: 156, Figs. 5, 9, 13, 20, 21, 25; Storozhenko 2004: 95, Figs. 10, 19, 29, 200, 201, 209, 210, 211.

Specimens examined. <HB> 2♂, "Sharei" = Charyeong Musan, 21 viii 1922, Okamoto et al. (NIAST); **<GW>** 1♂, Gojindong Mt. Geonbongsan, 28 viii 1990, Park (SSU); 1♂1♀, Hyangrobong Goseong, 23 viii 1992, Moon (KU); 1♂1♀, Mt. Seoraksan, 9 x 1970, Nam et al. (EU); 1♂, ibid. 13 vii 1979, Do (EU); 1♂1♀, ibid. 30 vii 1982, Lee (SSU); 1♀, Guryongsa Mt. Chiaksan Wonseong, 30 vii 1975, Kim (SSU); 1♀, Mt. Jeombongsan Inje, 10 viii 1983, Moon (KU); 3♂, ibid. 1 x 1995, Kim et al. (SSU); 1♂1♀, Mulgubi Jinburyeong, 11 viii 1979, Yoon (EU); 2♂, ibid. 12 viii 1980, No et al. (EU); 4♂1♀, Mt. Gwangdeoksan Cheolwon, 21 ix 1997, Lee et al. 8♂4♀, Mt. Taebaeksan Taebaek, 13 viii 1999, Kim (NIAST); 1♀, Mt. Odaesan Hongcheon, 14 x 1973, Kim (EU); 1♀, ibid. 16 viii 1995, Lee SH (NIAST); 1♂, light trap, ibid. 10 viii 1997, Kim et al. (SSU); 2♂, Mt. Baegunsan Hwacheon, 7−8 viii 1984, Nam et al. (KU); 1♂1♀, ibid. 13−20 vii 1986, Park WS; **<GG>** 1♀, Eungogae Gwangju, 15 ix 1984, Cho (SSU); 1♂, Namhansanseong Seongnam, 11 ix 1995, Kim (SSU); 1♀, Mt. Chukryeongsan Sudong, 6 viii 1980, Kim (SSU); 6♂1♀, Mt. Gwanggyosan Suwon, 1−30 vii 1999, Kim et al. (NIAST); 1♂, ibid. 14 vii 2000, Lee (NIAST); 1♂, Anyang, 18 x 1970, Park (EU); 2♂1♀, Mt. Yongmunsan Yangpyeong 28 vii 2000, Kim (NIAST); 1♀, Mt. Cheondeoksan Sinseo Yeoncheon, 12 viii 1981, Kim (SSU); 1♀, Deokjeokdo Incheon, 28 vii 1955, Kim (EU); 1♀, Mt. Cheonmasan, 5 x 1974, Lee (EU); 2♂, Paldang, 3 x 1963, Kim (KU); 1♂, Mt. Cheonggyesan, 12 viii

1986, Kim (SSU); **<CB>** 1♀, Mt. Songrisan Boeun, 7 viii 1990, Lee (SSU); **<GB>** 1♂, Mt. Sudosan, Gimcheon, 16 vi 1996, Choi (NIAST); 1♀, Mt. Palgongsan Daegu, 11 ix 1998, Park WS; 1♀, Mungeongsaejae, 10 vii 1977, Lee (SSU); 2♂1♀, Mt. Sobaeksan Yeongpung, 29 vii 1983, Yoon (EU); 4♀, ibid. 2–4 viii 1994, Moon et al. (KU); 1♂1♀, Bulyeonggyegok Uljin, 1 viii 1999, Kim TW (NIAST); 1♀, Mt. Juwangsan Cheongsong, 30 vii 1983, Jang (SSU); 1♂, ibid. 16 viii 1990, Lee (SSU); **<GN>** 1♀, Mt. Bukbyeongsan Dongbu–myeon Geojedo, 5–6 viii 1995, Jeon (GSU); 1♂, ibid. 29 viii 2000, Lee et al. (NIAST); 1♀, Waryong–ri Hai–myeon Goseong, 2–3 vii 1994, Jeong (GSU); 2♂1♀, Mt. Yeohangsan Jinjeon Happo Masan, 12–13 viii 1999, Park et al. (GSU); 1♂, Sannae Milyang, 18–20 vii 1990, Sim (GSU); 1♀, Naewonsa Sangnam Sancheong, 22 ix 1987, Anonym (GSU); 2♂1♀, Sangbuk Ulsan, 6–8 vii 1992, Anonym (GSU); 1♂, Baekmudong Mt. Jirisan, 16 vii 1984, Oh (GSU); 1♂, Ssanggyesa Hwagae Hadong, 19 ix 1987, Anonym (GSU); 2♀, Hamyang, 28–30 vii 1992, Jeon (GSU); 1♀, Mt. Gayasan Hapcheon, 1 viii 1989, Han (KU); **<JB>** 1♀, Gucheondong Muju, 17 x 1971, Yim (EU); 1♂, Mt. Deokyusan Muju, 10 viii 1984, Son (SSU); 1♂1♀, Imsil, 17 x 1970, Han (EU); **<JN>** 1♀, Dapgok Gwangyang, 9 viii 1993, Jeong (SNU); 1♂, Mt. Baegunsan Gwangyang, 25 viii 1999, Kim (NIAST); 1♂, Geomundo Yeocheon, 13 vii 1984, Jang (SSU); 10♂, Mt. Sammunsan Is. Joyakdo Wando, 16 vii 2003, Kim TW (SSU); **<JJ>** 1♂2♀, Gwaneumsa, 4 viii 1955, Cho et al. (KU); 1♀, ibid. 4 viii 1972, Kim JI (KU); 1♀, Namjeju, 9 viii 1995, Lee (NIAST); 2♂, Sangumburi, 31 vii 1980, Paik (SSU); 2♂, Eorimok, 27 ix 2000, Kim TW (NIAST); 13♂3♀, Hamdeok–ri Jocheon–myeon Bukjeju, 8 vii 2002, Kim TW (SSU); 1♂, Eoseungsaeng, 29 vii 1972, Kim JI (KU); 1♀, Jeju, 18 vii 1966, Park KS (KU); 1♂3♀, ibid. 7–8 viii 1981, Anonym (GSU); 1♂2♀, ibid. 5 vii 1986, Im (NIAST); 1♀ ibid. 27 vi 1990, An (NIAST).

Description. <♂> Body coloration deep green or yellowish green. Head large and vertical; fastigium of vertex narrower than scape; scape slightly longer than wide; antennal socket slightly smaller than the greatest diameter of an eye. Pronotum with transverse anterior margin and the posterior margin rather widely round; a weak median carina only on metazona; lateral lobe of pronotum the height shorter than pronotal length, with a humeral sinus. Prothorasic spiracle largely ovoidal, weakly covered by lateral lobe of pronotum. Tegmina macropterous, surpassing hind knee, its apex rounded, gently tapered; RS divided from R at the mid; stridulatory area as long as pronotal length; stridulatory file number 79–84; speculum largely oval, narrower posteriorly. Fore coxa with a strong basal spine.

Fore femur with 9−10 inner, 3−5 outer ventral spinules, middle femur with 11−12 outer, 6−7 inner ventral spinules, hind femur with 19 outer, 14−15 inner ventral spinules. Fore tibia with six pairs of ventral spines, three outer dorsal spines and slit−shaped tympana. Middle tibia with six pairs of ventral spines, two outer, four inner dorsal spines. Pro− and mesosternum bispinose, metasternal lobe triangular, as long as basal width. Last abdominal tergite with triangular two lobes, and median V−shaped notch. Cercus four times longer than basal width, the base thick, apically tapered; spinal inner tooth located one thirds from the base, its apex downward. Subgenital plate as long as wide with lateral carinae and emargination on hind margin. Stylus long and slender, six times longer than basal width. Titillators with apical portion as long as basal one, both perpendicular; apex of apical portion divided with two teeth, subapically with numerous wrinkles. <♀> Subgenital plate interrupted in base. Ovipositor straight, slightly shorter than hind femur.

Distribution. Korea, Japan (Is. Tsushima), Northeast China, Russian Far East.

Remarks. I have examined the specimens collected around several southern islands which are relatively much larger than inland *T. ussuriana* (see scatter diagram in Kim and Kim 2001). Especially the big ones from Is. Jejudo (Figs. 92−93) are having short and wide tegmina which never surpassing hind knee and the male's number of stridulatory files is more than 105 (typical *ussuriana* with 79−84), the character is rather coincided with *T. ussuriana* recorded in Is. Tsushima of Japan (Ogawa and Ohbayashi 2003). Owing to those big size and difference of tegminal form, it could be considered as new species or subspecies at glimpse. But it is not certain that those characters are sufficiently serve to support specific or subspecific level for the southern populations of *Tettigonia* around the Korean peninsula and those acoustic signal patterns are not compared in this study, better to leave to further study.

33a. *Tettigonia dolichoptera dolichoptera* Mori 1933 긴날개중베짱이 (Figs. 94−95, 109)

Tettigonia dolichoptera Mori 1933. J. Chosen Nat. Hist. Soc. 16: 52, text−fig a. "Korea". Type lost, here the Neotype designated: 1♂, Mt. Bukhansan Eunpyeong−gu Seoul, 7 viii 1999, Kim TW (NIAST); <Measurements> BL 31.9, HTL 46.2, PL 7.5, TL 37.4, HFL 25.5.

Gryllus (*Tettigonia*) *viridissima* nec Linnaeus 1758. Systema Naturae per Regna tria naturae (10th ed.), 1: 430, No. 37. "Europe". Syntype in Linnean Society, London.

Korean records. ***Tettigonia viridissimo*** [!]: Uvarov 1923: 495 (Seoul); ***Tettigonia viridissima***:

Doi 1932: 37; Mori 1933: 51. pl. 1, Fig. 2 (Korean Tettigoniidae); Furukawa 1930: 105; Mori and Cho 1940: 19 (Mt. Geumgangsan); Cho 1947: 79 (Mt. Diamond); Cho 1959: 152, Fig. 16 (manual); Cho 1969: 747, pl. 79 (illustrated encyclopedia: 중베짱이); Storozhenko 1986: 252, Fig. 116(6); Lee 1990: 115 (systematic notes); Moon and Yoon 1993: 58 (KEI); Kwon and Huh 1994: 49 (Korean check list); Kwon et al. 1996: 104 (Korean species list); Bae 1998: 140; ***Tettigonia dolichoptera***: Cho 1959: 153 (manual); Cho 1969: 748 (illustrated encyclopedia); Rentz and Miller 1971: 266 (Mt. Palgongsan); Kwon and Huh 1994: 49 (Korean check list); Storozhenko 1994: 9; Kwon et al. 1996: 104 (Korean species list); Otte 1997: 305 (Orthoptera species file); Kim and Kim 2001: 1B, Figs. 8–9 (taxonomy): Storozhenko 2004: 90; ***Tettigohnia*** [!] ***viridissima***: Ju 1969: 19 (North Korean check list).

Specimens examined. <GW> 1♀, Mt. Sambangsan Gonggi–ri Yeongwol, 27 viii 2001, Kim SY and Kim AY (SSU); 1♂1♀, Changwon–ri Ssangyong Yeongwol, 21 vii–11 viii 2000, Kim TW (SSU); 1♂1♀, Inje, 29 vii 1986, Park (SSU); 1♂, Chugok Chunseong, 31 vii 1986, Lee (SSU); **<GG>** 1♀, Mt. Godongsan Gapyeong, 25 vii 1979, Park (KU); 1♀, Mt. Myeongjisan Gapyeong, 6 viii 1991, Kim (SSU); 1♂, Seokmodo Ganghwado, 22 vii 1992, Park HC (KU); 1♂, rearing, 1 vii–20 viii 2002, Rhee HW (SSU); 2♂, Wuldae–ri Songchu Jangheung Goyang, 30 vi 2003, Rhee HW (SSU); 8♂2♀, ibid. 19 vii 2006, Kim TW (SSU); 1♀, Gwangneung, 29 ix 1990, Yoo (SSU); 1♀, Eungogae Gwangju, 15 ix 1984, Im (SSU); 1♂2♀, Is. Pungdo Ansan, 11–12 viii 2006, Kim TW (SSU); 1♀, Bongam Yangju, 4 viii 1993, Im (SSU); 1♂, Is. Deokjeokdo Incheon, 29 vii 1955, Kim (EU); 1♀, Is. Mungapdo Incheon, 28 vii 1972, Lee (EU); 1♂1♀, Mt. Cheonmasan, 7 viii 1985, Kim (SSU); 4♂1♀, Mt. Bukhansan Eunpyeong–gu Seoul, 7 viii 1999, Kim TW (NIAST); **<CB>** 1♂, Mt. Bumosan Cheongju, 7 ix 1994, An (SSU); 1♀, Mt. Cheongdeungsan Sancheok–myeon Chungju, 5 viii 2002, Kim TW (SSU); **<CN>** 2♂, Mt. Gyeryongsan Gongju, 5 viii 2000, Kim TW (SSU); 1♂, Mt. Mansusan Boryeong, 19 vii 1999, Kim TW (SSU); 2♂, Biin Seocheon, 22 vii 1971, Jeong (EU); 1♀, rearing, Is. Gaeuido Taean, 14 v–2 vii 2005, Kim TW (SSU); 1♂, Yeongmokhang Taean, 9 vii 2005, Kim TW (SSU); **<GB>** 1♂, Mt. Daedeoksan Daegu, 14 vii 1996, Bae (SSU); 2♀, Mungyengsaejae, 9 vii 1977, Lee et al. (SSU); 1♀, Cheondonggyegok Mt. Sobaeksan, 15 viii 1997, Jeong (SSU); 1♀, Jincheon Chilgok, 25 vii 1996, Lee (SSU); **<GN>** 1♀, Namsang Geochang, 2 ix 1989, Jeong (SSU); 1♀, Dugok Changdeok Changnyeong, 27 vi 2000, Han (SSU); 1♂, Mt. Gayangsan Hapcheon, 10 vii 1999, Park (SSU); **<JB>** 1♂, Mujugucheondong, 25 vii 1990,

Seong (SSU); 1♀, Wansandong Jeonju, 17 vii 1976, Yeo (EU).

Description. **<♂>** Body coloration deep green, stridulatory area brownish. Head short and vertical, ovoid in frontal view; fastigium of vertex narrower than scape; scape as long as wide; antennal socket a little smaller than eye. Pronotum longer than wide in dorsal view, anterior and posterior margin weakly emarginated in mid; prozona 1.5 times longer than metazona; median carina distinct only in metazona finely punctated; lateral lobe of pronotum shorter than pronotal length; prothorasic spiracle largely opened laterally. Tegmina macropterous, surpassing hind knee, reaching mid of hind tibia; RS divided from R before the mid, with two or three apical branches; stridulatory file number 112−114; speculum largely oval; tegminal apex rounded, gently tapered. Hind wings transparent. Prosternum bearing paired spines. Mesosternal lobe elongated triangular, 1.5 times longer than basal width. Metasternal lobe triangular, as long as basal width. Fore coxa with a strong basal spine anteriorly. Fore femur longer than pronotum, with seven inner ventral spinules, outer one absent. Fore tibia with slit−shaped tympana in base on both sides; three dorsal outer and six pairs of ventral spines present. Middle femur slightly longer than fore one, 6−8 outer, 2−3 inner ventral spinules present. Hind femur three times longer than middle one, 13−16 outer, 12−14 inner ventral spinules present. Last abdominal tergite with triangular two lobes; cercus elongated with basal inner tooth, its apex sharply pointed spiniform downwardly. Subgenital plate longer than wide, with distinct lateral carinae, its hind margin notched as V−shape. Stylus elongated, seven times more longer than basal width. Titillators perpendicular, apical and basal portion similar in length, basal one much thickened; apex hook−shaped with two pointed teeth, subapically wrinkled. **<♀>** Subgenital plate longer than wide, forming widely separated two lobes; lateral carinae distinct, median carina only distinct posteriorly from mid to hind margin narrowly notched as V−shape; basal part weakly interrupted by constricted wrinkles. Ovipositor nearly straight, slightly longer than hind femur. Gonangulum rectangular, its apex bluntly pointed.

Distribution. Korean endemic regarded.

Remarks. In longitudinal axis of the Korean peninsula, two subspecies are considered, ie. the larger *T. dolichoptera* occurs in south centered, while the smaller *T. maritima* replaces from North Korea to Amur (Storozhenko 1994). I have observed a few specimens with short tegmina and ovipositor which collected at the middle province of Korea, which are rather corresponded with *T. maritima*. In his key, however, the difference of dentation of inner tooth on male cercus is presented that is rather unstable character because of the

asymmetry is even observed between right and left cerci in a specimen of *T. dolichoptera*. Related with this consideration, to see original description, the type localities of *T. dolichoptera* were Seoul (♂) and Sineuiju (♀). In this context, the small-sized North Korean female could be assigned to the *T. maritima*, but because of the type lost during the Korean War (per. com. with Mr. Lee Seungmo), the designation of a neotype needed by the specimen collected in Seoul.

33b. *Tettigonia dolichoptera maritima* Storozhenko 1994

Tettigonia dolichoptera maritima Storozhenko 1994. Far Eastern Entomologist, 3: 10, Figs. 5, 6, 9, 11, 20, 22, 27. "Russia: Amur". Holotype ♂ in Zoological Institute of the Russian Academy of Sciences, St. Petersburg.

Specimens examined. <GW> 1♂, Seongnam Wonseong, 31 vii 1975, Kim JI (NIAST); 1♂, Bangha-ri Namsan-myeon Chuncheon, 8 vii 2006, Kim TW (SSU); 3♂2♀, Mt. Samyeongsan Chugok-ri Buksan-myeon Chuncheon, 25 vii 2003, Kim TW (SSU); 1♂, Soppulsan Duchon-myeon Hongcheon, 25 viii 2002, Kim TW (SSU).

Diagnosis. As in the key, except for the difference of body size, lengths of tegmina and ovipositor, small number of male stridulatory files (83-96), nearly similar with nominal subspecies *dolichoptera*.

Distribution. Korea, Russian Far East.

Table 7. Measurements of *Tettigonia* spp.

Species	BL	HTL	PL	TL	HFL	OL
T. ussuriana	26.0-35.0	35-43	6.1-9.8	23.2-34.7	20.1-29.5	22.1-28.0
T. sp. in Jejudo	32.3-40.3	36.7-44.5	8.4-10.3	27.1-34.1	26.8-31.3	29.4-31.7
T. dolichoptera maritima	26.0-33.8	41.5-46.0	6.7-7.9	33.0-37.1	25.0-27.1	27.9
T. dolichoptera dolichoptera	31.2-34.0	50.2-56	8.5-9.0	40.0-47.0	25.9-31.0	30.0-35.0

Subfamily Conocephalinae 쐐쌔기아과

As known as cone-head bush-crickets, or meadow katydids. Body elongate, size moderate to large. Head typically conical or strongly pointed; fastigium of vertex projecting, forming a

cone or peg with oblique frons. Fore tibial tympana closed slit-shaped. Tegmina when developed, narrow and long, leaf blade-shaped. Ovipositor long or very long straight or slightly recurved. eyes small, spherical, protuberant. More than 1,000 species present in the world.

Key to Tribes of Conocephalinae

1. Body size smaller, less than 25 ㎜; fastigium of vertex narrower than scape ····· **Conocephalini** (p. 92)
- Body size larger, more than 30 ㎜; fastigium of vertex wider than scape ····· **Copiphorini** (p. 103)

Tribe Conocephalini 쌕쌔기족

Size smaller than Copiphorini. Fastigium of vertex narrower than scape, frons strongly inclined.

Key to Species of Genus *Conocephalus*

1. Prosternum smooth; ♂ cercus with two inner teeth (Fig. 133) ····· ***C. bambusanus*** (p. 93)
- Prosternum bispinose; ♂ cercus with an inner tooth ····· 2
2. Hind femora with ventral spines (Fig. 147) ····· ***C. japonicus*** (p. 94)
- Hind femora without ventral spines ····· 3
3. Tegmina with regular black spots on radial area (Fig. 146) ····· ***C. maculatus*** (p. 95)
- Tegmina clear, without black spots ····· 4
4. Fastigium of vertex narrower, its dorsal width nearly equal with ventral one (Fig. 132); ovipositor shorter than hind femur ····· ***C. chinensis*** (p. 98)
- Fastigium of vertex wider, its dorsal width two times more wider than ventral one (Fig. 131); ovipositor longer than hind femur ····· ***C. exemptus*** (p. 100)

Genus *Conocephalus* Thunberg 쌕쌔기속

1815. Mémoires de l'Académie Impériale des Sciences de St. Pétersbourg, 5: 214. Type species: *Gryllus* (*Tettigonia*) *conocephalus* Linnaeus 1767.

Diagnosis. Small sized and head slanting shaped. Wings well developed or reduced, hind femora slender in about apical third. Male cerci cone-shaped, straight, each with one or two inner teeth. Ovipositor very finely crenellated or smooth. More than 160 species are known throughout the world, the measurements of five Korean *Conocephalus* compared in Table 8. Subgenus *Conocephalus* recognized by smooth prosternum, hind tibiae at distal extremity with three pairs of spurs.

34. *Conocephalus* (*Conocephalus*) *bambusanus* Ingrisch 1990 대나무쌕쌔기 (Figs. 113, 133, 138)

Conocephalus bambusanus Ingrisch 1990. Senckenbergiana biologica, 70(1-3): 113, Abb. 42-43, 60-63. "Thailand". Holotype ♂ in Senkenberg Museum, Germany.

Korean records. ***Conocephalus bambusanus***: Kim and Kim 2002: 14, Figs. 1, 10, 11 (taxonomy).

Specimens examined. **<GN>** 1♀, Simcheon-ri Namhae, 29-30 viii 1998, Park (GSU); 1♀, Gajwa-dong Jinju, 16 ix 1992, Anonym (GSU); 1♀, Wari Yulgok-myeon Hapcheon, 10 ix 2000, Kim (SNU); 2♂15♀, Baechun-ri Chukdong-myeon Sacheon, 13 viii 2001, Paik (SSU); **<JB>** 1♀, Saja-dong Buan, 13 ix 1998, Ryu SM (GSU).

Description. **<♂>** Body coloration pale green, dorsally more darker. Head shortly conical, strongly inclined; fastigium of vertex compressed, narrower than scape, not protruding than scape; scape longer than wide, 2.5 times wider than fastigium of vertex; eye larger than antennal socket. Pronotum with brownish disk, as long as wide, its anterior and posterior margins rather truncated; lateral lobe of pronotum higher than the length of pronotum with humeral sinus. Prothorasic spiracle largely oval, visible behind the lateral lobe of pronotum. Prosternum unarmed. Tegmen macropterous (mesopterous type present), reaching a half of hind tibia, its apex rounded; stridulatory area slightly wider and longer than pronotal disk. Hind wings transparent, slightly longer than tegmen. Fore coxa with a basal spine. Fore and middle femora without spinules, hind femora with posterior 4-6 outer, 1-2 inner ventral spinules. Fore and middle tibiae each with 5-6 pairs of ventral spinules apically. Tympana slit-shaped. Last abdominal tergite smoothly convex with median weak concavity. Cercus thick, four times longer than basal width, with two inner teeth in mid; apical tooth more longer and slender than basal one, its apices downwardly hook-shaped; apex of cercus narrowed. Subgenital plate wide as long, not protruding than cerci, its hind margin with shallow V-shaped notch. Stylus very smaller, nipple-shaped, as long as basal width. **<♀>**

Cercus simply conical, four times longer than basal width. Subgenital plate trapezoidal, wider than long, its hind margin rather truncated without notch. Ovipositor dagger-shaped, weakly recurved, shorter than hind femur, slightly longer than a half of hind femur.

Distribution. Korea, Japan, Vietnam, Thailand.

Subgenus *Anisoptera* Latreille 짝쌔기아속

1829. In Cuvier. Regne animal, 2(5): 184. Type species: *Locusta dorsalis* Latreille 1804.

= *Xiphidion* Serville 1831. Annales des Sciences Naturelles, Paris. 22(86): 159. Type species: *Locusta fusca* Fabricius 1793. [Kirby 1906]

= *Amurocephalus* Storozhenko 2004. Long-horned orthopterans (Orthoptera: Ensifera) of the Asiatic part of Russia: 72. Type species: *Xiphidium chinense* Redtenbacher 1891. [Ichikawa 2006]

Diagnosis. Prosternum bispinose. Male subgenital plate with distal margin more or less decidedly truncated, without decided emargination or production. Styles small and slender.

35. *Conocephalus* (*Anisoptera*) *japonicus japonicus* (Redtenbacher 1891) 좀짝쌔기 (Figs. 114, 137, 140, 147)

Xiphidium japonicum Redtenbacher 1891. Verhandlungen der Kaiserlich-Königlichen Zoologisch-Botanischen Gesellschaft in Wien, 41: 525. "Japan". Syntype in The Natural History Museum, London.

Korean records. ***Xiphidium japonicum***: Doi 1932: 37; ***Xiphidion japonicum***: Kamijo 1933: 49; Mori 1933: 56 (Korean Tettigoniidae); Mori 1935: 9, 16. pl. 2, Fig. 4, text-Fig. 7; ***Conocephalus japonica***: Cho 1959: 162, Fig. 34A-B (manual); Cho 1969: 758, pl. 51, 80. text-Fig. 10 (illustrated encyclopedia); ***Conocephalus japonicum***: Ju 1969: 17 (North Korean check list); ***Conocephalus japonicus***: Storozhenko 1986: 251; Lee 1990: 111 (systematic notes); Moon and Yoon 1993: 57 (KEI); Kwon and Huh 1994: 48 (Korean check list); Kwon et al. 1996: 103 (Korean species list); Kim and Kim 2002: 14, Figs. 2, 3, 12 (taxonomy): Storozhenko 2004: 77.

Specimens examined. **<PN>** 1♀, Lake Taesongho, 13 ix 1979, H. Steinmann and T. Vasarhelyi, No. 525 (Hungarian Natural History Museum, Budapest); **<GW>** 3♂1♀, netting, Wonsan Park Songdowon, 20 ix 1980, Gy. Tapal and L. Forro, No. 729 (Hungarian Natural History Museum, Budapest); 1♂, Balsan-ri Chuncheon, 14 x 1999, Kim (NIAST); **<GG>** 1♀ (Macroptera), Jangheung, 23 ix 1998, Kim (NIAST); 1♀, Ilyeong Goyang, 22 x

1966, Park (EU); 1♂2♀, Ungogae Gwangju, 23 x 1982, Kim et al. (SSU); 1♂, Suwon, 1 xi 1955, (NIAST); 1♂1♀, ibid. 18 x 1958 (NIAST); 1♂, ibid. 3 ix 1975, Lee SM; 1♂, Mt. Yongmunsan, 16 ix 1990, Oh (SSU); 2♀, Jeongok Yeoncheon, 1 ix 1998, Park (NIAST); 1♀, Geumchon Paju, 2 x 1990, Park (SSU); 1♂4♀, Mt. Dobongsan, 19 x 1958, Lee (NIAST); 1♂, Ehwa Univ. Campus, 8 x 1966, Na (EU); 1♂1♀, Yango-ri Songhea-myeon Ganghwa Incheon, 20 x 2004, Kim TW (SSU); 7♂2♀, Ganghwado Incheon, 21 x 2006, Kim TW (SSU); **<CB>** 1♂2♀, Mt. Bumosan Cheongju, 29 x 2006, Im MS.

Description. <♂> Body coloration bright brown or green two contrastive types present. Head shortly conical, frons strongly inclined; fastigium of vertex rather dorsally blunted, as wide as a half of scape; scape longer than width. Pronotum with disk longer than wide and lateral lobe slightly shorter than pronotal length; humeral sinus indistinct. Tegmen mesopterous (macropterous type rarely present), not reaching abdominal end, its apex rather narrowly tapered; stridulatory area slightly narrower and shorter than pronotal disk. Hind wings shorter than tegmina, as the length of fore femur. Fore coxa with a strong basal spine. Fore and middle femora without ventral spinules, hind femora with 4-8 outer ventral spinules apically. Fore and middle tibiae each with six pairs of ventral spinules. Tympana slit-shaped. Prosternum with a pair of triangular lobe, the length as long as basal width. Last abdominal tergite convex, with a pair of triangular lobes, its hind margin U-shaped concave. Cercus thick, 4.5 times longer than basal width, its dorsal apex rather depressed; inner tooth located two thirds from the base, its apex sharply pointed downwardly, the length shorter than the distance to apex of cercus. Subgenital plate longer than wide, trapezoidal, not protruding than cerci, its hind margin widely concave; lateral and median carinae clear. Stylus smaller, three times longer than basal width. **<♀>** Slightly larger than male. Prosternal lobe more spiniform. Last abdominal tergite weakly undulate. Cercus simply conical, four times longer than basal width. Subgenital plate wider than long, trapezoidal, its hind margin widely concave, the lateral angles rather obtuse. Ovipositor sword-shaped, weakly recurved, as long as hind femora.

Distribution. Korea, Japan, Northeast China, Taiwan (ssp. *minutus*: Russian Far East).

36. *Conocephalus* (*Anisoptera*) *maculatus* (le Guillou 1841) 점박이쐐기 (Figs. 119-120, 136, 146)

Xiphidium maculatum le Guillou 1841. Revue et Magasin de Zoologie Pure et Appliquée, 4:

294. "Malaysia". Neotype ♂ in The Natural History Museum, London.

Korean records. ***Xiphidium maculatum***: Doi 1932: 37; ***Xiphidion maculatum***: Mori 1933: 55 (Korean Tettigoniidae); Doi 1933: 88; Haku 1937: 73 (Daegu); ***Conocephalus* (*Xiphidion*) *maculatus***: Furukawa 1942: 35, Figs. 1(1), 2(1, 7), 3(1), 4(1); ***Conocephalus maculatus***: Cho 1959: 162, Fig. 33 (manual); Cho 1969: 757, pl. 51, text-Fig. 9 (illustrated encyclopedia); Ju 1969: 17 (North Korean check list); Lee 1990: 109 (systematic notes); Moon and Yoon 1993: 57 (KEI); Kwon and Huh 1994: 48 (Korean check list); Kwon et al. 1996: 103 (Korean species list); Kim and Kim 2002: 14, Figs. 4, 5, 13 (taxonomy).

Specimens examined. **<PN>** 3♂3♀, Sagam 45 km N from Pyongyang, 12 viii 1971, S. Horvatovich and J. Papp, No. 163 (Hungarian Natural History Museum, Budapest); **<GW>** 2♂2♀, Bukpyeong Jeongseon, 17 viii 1989, Lee (SSU); 1♂, Dong-myeon Hongcheon, 24 vi 1997, Chae (SSU); **<GG>** 1♂, Mt. Pakyon 20-21 km NE from Kaesong both sides of and near to the road between Kaesong and Pakyon pokpo, 11 ix 1971, S. Horvatovich and J. Papp, No. 260 (Hungarian Natural History Museum, Budapest); 1♀, Mt. Godongsan Gapyeong, 9 ix 1980, Jang (SSU); 1♀, Ganghwa, 18 viii 1990, Oh (SSU); 1♂1♀, Byeokje Goyang, 30 ix 1993, Lee (SSU); 1♂, Wongdang Goyang, 26 vii 1990, Lee (SSU); 1♂, Ilsan Goyang, 26 ix 1998, Song (SSU); 1♂, Jangheung, 12 x 1992, Cha (SSU); 1♀, Mt. Gwanaksan, 5 ix 1996, Choi (SSU); 1♀, Mt. Cheonggyesan, 22 ix 1991, Lee (SSU); 1♀, Gwangneung, 22 ix 1990, Kim (SSU); 2♂2♀, de Haan-dong Gwangmyeong, 21 viii 1994, Kim (SSU); 1♀, Namhansanseong, 11 ix 1995, Lee (SSU); 1♀, Yongmi-ri Gwangtan, 2 x 1987, Lee (SSU); 1♀, Migeum Namyangju, 7 x 1984, Bang (SSU); 1♀, Joam Namyangju, 1 ix 1995, Ryu (SSU); 2♀, Hwajeop Jinjeop Namyangju, 5 ix 1982, Kim (SSU); 2♀, Mt. Gwanggyosan Suwon, 16 viii-20 ix 1992, Lee (SSU); 1♀, Yangsu-ri, 14 x 1978, Yoon (EU); 1♀, Bugok Yangju, 12 x 1998, Yim (SSU); 1♂2♀, Mt. Yongmunsan Yangpyeong, 27 ix 1986, Park et al. (SSU); 1♂1♀, Yongin, 5-7 viii 1972, Yoo (EU); 1♀, Juan Incheon, 10 ix 1987, Choi (SSU); 1♂, Mt. Cheonmasan, 16 vii 1980, Ku (SSU); 3♀, Paju, 3 x 1999, Yoon (EU); 3♂2♀, Mt. Gamaksan Seolma-ri Paju, 8 ix 1984, Jang et al. (SSU); 1♀, Pyeongtaek, 11 ix 1992, Kwak (SSU); 1♂, Songu-ri Pocheon, 24 vii 1996, Park (SSU); 1♀, Hwaseong, 12 ix 1992, Cho et al. (SSU); 1♂, Mt. Gaehwasan, 27 vi 1995, Kim (SSU); 1♂, Mt. Daemosan, 1 viii 1996, Lee (SSU); 1♀, Mt. Dobongsan, 18 viii 1983, Lee (SSU); 1♂, Bulgwang-dong Seoul, 26 viii 1998, Kim (SSU); 1♀, Mt. Bulamsan, 18 ix 1966, Kim (EU); 1♀, Seodaemun, 25 viii 1971, Nam (EU); 1♀, Mt. Achasan, 2 x 1971, Won (EU); 1♂, Yeonse Univ. Campus, 13 x 1974, Lee (EU); 1♀, Mt. Yongmasan, 22 ix

1971, Won (EU); 1♀, Ehwa Univ. Campus, 21 ix 1967, Hong (EU); **<CN>** 1♂, Gongju, 1 viii 1996, Jang (SSU); 2♀, Mt. Gyeryongsan, 19 viii 1993, Lee (SSU); 1♀, Sintanjin, 25 ix 1966, No (EU); 1♂1♀, Hyudae-ri Asan, 20 ix 1992, Kim (SSU); 1♂, Baramarae beach Taean, 30 ix 2006, Kim TW (SSU); **<GB>** 2♂s, Huibangsa Mt. Sobaeksan, 5 ix 2000, Kim (NIAST); **<JB>** 1♀, "RGO " = light trap, Muju, 1-5 ix 1992, (NIAST); 1♀, Munsujae Buan, 18 vii 1998, Ryu (YNU); 1♂4♀, Bongeun-ri Buan, 10 x 1981, Jang (SSU); 1♂2♀, Sannae-myeon Buan, 28 vi 1990, Shin et al. (SSU); 1♀, Taein Jeongeup, 12 viii 1995, Kim (SSU); **<JN>** 1♂, Jungri Bogildo, 21 vii 1981, Yoon (EU); 1♀, Geomunseodo Yeocheon, 12 vii 1984, Kim (SSU); 1♂, Odong Yeonggwang, 19 viii 1989, Lee (SSU); 1♂, Hoengdo Yeonggwang, 19 viii 1989, Lee (SSU); 1♂1♀, Gogeumdo Wando, 26 vii 2000, Lee (NIAST); 5♀, Wando, 6-7 vii 1982, Kim et al. (SSU); **<JJ>** 1♂, Gwaneumsa, 27 ix 2000, Kim (NIAST); 1♀, Musucheon, 26 ix 2000, Kim (NIAST); 2♂, Topyeong Seoguipo, 12 vii 1983, Jang (SSU); 3♂3♀, Seonheul, 28 ix 2000, Kim et al. (NIAST); 4♂10♀, Is. Udo, 10 x 1999, Kim (NIAST); 2♂2♀, Hyeopje, 26 ix 2000, Kim et al. (NIAST).

Description. <♂> Body coloration green or brown, two contrastive types present. Head short, conical, with inclined frons; fastigium of vertex narrower than scape, the dorsal width two times of ventral width; scape longer than basal width; antennal socket smaller than the diameter of an eye. Pronotum with brown disk, each sided brightly bordered; the brown patterns connected from fastigium of vertex along with occiput; lateral lobe of pronotum the height longer than pronotal length, humeral sinus present. Tegmina macropterous, reaching a half of hind tibia (sometimes not reaching hind knee), its apex rounded; black dots present on radial area; stridulatory area as wide as hind margin of pronotum, shorter than the length of pronotum. Hind wings longer than tegmina. Prosternum bispinose, with a pair of widely separated spines. Fore coxa with a basal spine. All femora without spinules. Fore and middle tibiae each with six pairs of ventral small spines. Tympana slit-shaped. Last abdominal tergite with a pair of small lobes, its hind margin diverged, concave. Cercus five times longer than basal width, swollen in mid, tapered apically; a short inner tooth located in mid. Subgenital plate trapezoidal, as long as wide, not protruding than cerci, its hind margin weakly concave; lateral carinae present. Stylus four times longer than basal width. **<♀>** Cercus simply conical, five times longer than basal width. Lateral gonangulums smaller than subgenital plate. Subgenital plate trapezoidal, as long as wide, its hind margin moderately concave. Ovipositor brown sword-shaped, slightly recurved, shorter than hind

femur.

Distribution. Korea, Japan, China, Taiwan, Philippines, Indonesia, Australia, Africa: the tropical regions of the Old World.

37. *Conocephalus* (*Anisoptera*) *chinensis* (Redtenbacher 1891) 쌕쌔기 (Figs. 117–118, 132, 134)

Xiphidium chinense Redtenbacher 1891. Verhandlungen der Kaiserlich–Königlichen Zoologisch–Botanischen Gesellschaft in Wien, 41: 509. "China: Amur". Holotype ♂ in The Natural History Museum, London.

Xiphidium longipennis nec de Haan 1842. In Temminck. Verhandelingen over de natuurlijke geschiedenis der Nederlandsche overzeesche bezittingen. Zoologie: 188. "Sumatra". Lectotype ♂ in Nationaal Natuurhistorische Museum, Leiden.

Korean records. ***Xiphidium longipenne***: Doi 1932: 37; ***Xiphidion longipenne***: Mori 1933: 56 (Korean Tettigoniidae); ***Conocephalus* (*Xiphidion*) *chinensis***: Furukawa 1942: 36, Figs. 1(4), 2(4, 10), 3(4), 4(4); ***Conocephalus chinensis***: Furukawa and Shiraki 1950: 39, Fig. 96; Cho 1959: 163, Fig. 35 (manual); Cho 1969: 759, pl. 80, text–Fig. 11 (illustrated encyclopedia); Ju 1969: 17 (North Korean check list); Tadauchi 1989: 53 (Japanese check list); Lee 1990: 109 (systematic notes); Moon and Yoon 1993: 57 (KEI); Kwon and Huh 1994: 48 (Korean check list); Kwon et al. 1996: 103 (Korean species list); Bae 1998: 132; Hua 2000: 48 (Chinese list); Kim and Kim 2002: 16, Figs. 6, 7, 14 (taxonomy); ***Conocephalus longipenne*** [!]: Ju 1969: 17 (North Korean check list); ***Conocephalus* (*Amurocephalus*) *chinensis***: Storozhenko 2004: 73, Figs. 105–117.

Specimens examined. **<PN>** 1♂, Sagam 45 km N from Pyongyang, 12 viii 1971, S. Horvatovich and J. Papp, No. 163 (Hungarian Natural History Museum, Budapest); **<GW>** 1♀, Gyeongpodae Gangneung, 3 viii 1997, Kim (SSU); 1♀, Jukhyeong–dong Gangneung, 29 vii 1997, Kim (SSU); 1♀, Gangchon Chuncheon, 18 x 1971, Lee (EU); 1♂, ibid. 20 ix 1996, Huh (SSU); **<GG>** 1♂, Samhoe Gapyeong, 17 x 1992, Goh (SSU); 1♂, Mt. Manisan Ganghwa, 25 vii 1995, Song (SSU); 2♂2♀, Mt. Bukhansan Goyang, 4 vii 1993, Kim (SSU); 1♂1♀, Ilsan Goyang, 26 ix 1998, Kim (SSU); 1♀, Ilyeong Goyang, 3 x 1984, Seo (SSU); 1♀, Jangheung Goyang, 23 viii 1998, Kim (SSU); 1♀, Mt. Gwanaksan Gwacheon, 5 x 1996, Choi (SSU); 1♂, Ungogae Gwangju, 15 ix 1984, Jeong (SSU); 2♀, Mt. Surisan Gunpo, 9 x 1971, Lee (EU); 1♀, Maseok Namyangju, 4 vi 1978, Oh (EU); 9♂4♀, Seodun–dong Suwon, 27 ix–20 x 1999, Kim (NIAST); 1♂1♀, Mt. Yeogisan Suwon,

26 x 1983, Yim (NIAST); 1♀, Ansan, 6 x 1994, Seol (SSU); 1♀, Anyang, 16 x 1971, Lee (EU); 1♂1♀, Yangsu-ri, 13 x 1978, Yoon (EU); 1♂, Yangpyeong, 21 ix 1995, Eom (SSU); 1♀, Myeongji Univ. Campus Yongin, 5 ix 1994, Han (SSU); 1♂, Poil-dong Uiwang, 20 ix 1993, Eom (SSU); 1♀, Is. Yeongheungdo Ongjin Incheon, 15 vii 1999, An (NIAST); 1 ♀, Paju, 3 x 1999, Yoon (EU); 1♂1♀, Mt. Cheonmasan Pyeongnae, 5 viii-30 ix 1984, Kim et al. (SSU); 1♂4♀, Misari Hanam, 13 IX-6 x 1998, Yoon et al. (SSU); 3 ♀, Mado Hwaseong, 10 ix 1984, An (SSU); 1♀, Hyangnam Hwaseong, 2 viii 1989, Shim (SSU); 2♀, Mt. Dobongsan, 8 x 1996, Lee (SSU); 2♀, Mt. Achasan, 18 ix 1971, Kang et al. (EU); 1♀, Yeonse Univ. Campus, 1 x 1971, Lee (EU); 1♂, Wonji-dong Seoul, 14 ix 1985, Lee (SSU); 1♀, Ehwa Univ. Campus, 28 x 1992, Yoon (EU); 2♂, Ilwon-dong Seoul, 20 ix 1994, Han (SSU); 2♂1♀, Mt. Cheonggyesan, 5-19 viii 1989, Kim et al. (SSU); 1♂, Taeneung, 15 ix 1973, Oh (EU); 1♂6♀, Hanggang riverbed, 24-29 viii 1997, Jeong et al. (SSU); **<CB>** 4♂11♀, Suryuji Nohyeon Boeun, 23 x 1990, Park et al. (SSU); 1♂, Mt. Songnisan, 7 viii 1990, Kim (SSU); 2♂6♀, Sojeong-ri Gunbuk-myeon Okcheon, 23 x 1990, Park et al. (SSU); 1♂, Namin-myeon Cheongwon, 25 ix 1994, Park (SSU); 1 ♀, Mipyeong Cheongju, 18 ix 1992, Park (SSU); 3♂, Mt. Namsan Chungju, 9 x 1985, Cho (SSU); **<CN>** 2♂4♀, Muryangsa Mt. Mansusan Boryeong, 19 vii 1999, Kang (NIAST); 6 ♂2♀, AB area Seosan, 4 vii 2000, Lee (NIAST); **<GB>** 1♀, Yeongnam Univ. Campus Gyeongsan, 26 vi 1996, Na (YNU); 2♂2♀, Geumdan-dong Daegu, 10 vi 1980, Han (SSU); 1♂3♀, Hahoemaeul Andong, 6 ix 2000, Kim (NIAST); 1♂, Jeongju, 1 viii 1996, Paik (NIAST); 1♂, Cheongdo, 10 vii 1998, Lee (NIAST); **<GN>** 1♂, Jinju, 15 vii 1986, An (SSU). **<JB>** 1♂, Namwon, 27 ix 1996, Lee (SSU); **<JN>** 1♂, Gwangyang Okgok, 11 vii 1999, Han (NIAST).

Description. <♂> Body coloration pale green, rather brown dorsally. Head conical, strongly slanted; fastigium of vertex compressed, very narrower, its dorsal and ventral width similar each; scape longer than wide, five times wider than fastigium of vertex; antennal socket as wide as the diameter of an eye. From fastigium of vertex along with occiput, to pronotal disk brown patterns present. Pronotum with truncated anterior and posterior margins; lateral lobe of pronotum as deep as pronotal length, humeral sinus present. Tegmina macropterous, reaching a half of hind tibia, its apex rounded; stridulatory area as wide as hind margin of pronotum, as long as pronotal length. Hing wings longer than tegmina, its anterior margin yellowish. Prothorasic spiracle almost covered by lateral lobe of pronotum. Prosternum bispinose. Fore coxa with a basal spine. All femora without ventral spinules. Fore and

middle tibiae each with six pairs of small ventral spines. Tympana slit-shaped. Last abdominal tergite with a pair of small lobes crossed by each other, its apex rounded. Cercus cylindrical, 3.5 times longer than basal width, its apex tapered and depressed; inner tooth large, incurved, located in two thirds from the base, the length as long as apical part of cercus. Subgenital plate longer than wide, its hind margin very shallowly incised. Stylus smaller, only two times longer than basal width. **<♀>** Cercus simply conical, four times longer than basal width. Subgenital plate trapezoidal, as long as basal width, its hind margin weakly concave; carina absent. Ovipositor green, dagger-shaped, gently recurved, shorter, as long as a half of hind femur.

Distribution. Korea, Japan, Northeast China, Russian Far East.

38. *Conocephalus* (*Anisoptera*) *exemptus* (Walker 1869) 긴꼬리쌕쌔기 (Figs. 115-116, 131, 135, 139, 391)

Xiphidium exemptum Walker 1869. Catalogue of the Specimens of Dermaptera Saltatoria in the Collection of the British Museum, 2: 274, No. 19. "Corea". Holotype ♀ (examined) in The Natural History Museum, London.

= *Xiphidium gladiatum* Redtenbacher 1891. Verhandlungen der Kaiserlich-Königlichen Zoologisch-Botanischen Gesellschaft in Wien, 41: 514. "Japan". Syntype in Naturhistorisches Museum Wien. **syn. nov.**

Korean records. ***Anisoptera exemptum***: Kirby 1906: 277; ***Conocephalus exemptus***: Karny 1912: 13; ***Conocephalus* (*Xiphidium*) *exemptum***: Harz 1969: 108; ***Xiphidiopsis exemptum***: Lee 1990: 111 (systematic notes); Jin and Xia 1994: 27; ***Xiphidiopsis exempta***: Paik et al. 1995: 295; Kim and Kim 2001: 160 (taxonomy); ***Xiphidiopsis exemptus***: Otte 1997: 92 (Orthoptera species file); ***Xiphidium gladiatum***: Doi 1932: 37; ***Xiphidion gladiatum***: Mori 1933: 55 (Korean Tettigoniidae); Haku 1937: 73 (Daegu); ***Conocephalus* (*Xiphidion*) *gladiatus***: Ebner 1939: 296; Furukawa 1942: 35, Figs. 1(3), 2(3, 9), 3(3), 4(3); ***Conocephalus gladiatus***: Furukawa and Shiraki 1950: 38, Fig. 95; Cho 1959: 161, Fig. 32 (manual); Cho 1969: 757, pl. 80, text-fig 8 (illustrated encyclopedia); Yu 1980: 14 (alimentary canal); Kim et al. 1987: 216 (cytotaxonomy); Tadauchi 1989: 53 (Japanese check list); Lee 1990: 110 (systematic notes); Moon and Yoon 1993: 57 (KEI); Kwon and Huh 1994: 48 (Korean check list); Kwon et al. 1996: 103 (Korean species list); Bae 1998: 134; Hua 2000: 48 (Chinese list); Kim and Kim 2002: 17, Figs. 8, 9, 15 (taxonomy); ***Conocephalus gladiatum***: Cho 1958: 32 (sexual dimorphism); Ju 1969: 17 (North Korean

check list).

Specimens examined. **<Holotype>** 1♀, "Corea", date unknown, E. Belcher (The Natural History Museum, London); **<PN>** 1♂, De-sang san 12 km NE from Pyongyan, 7 viii 1971, S. Horvatovich and J. Papp, No. 146 (Hungarian Natural History Museum, Budapest); 3♂3♀, Sagam 45 km N from Pyongyang, 12 viii 1971, S. Horvatovich and J. Papp, No. 163 (Hungarian Natural History Museum, Budapest); 3♀, Lake Taesongho, 13 ix 1979, H. Steinmann and T. Vasarhelyi, No. 525 (Hungarian Natural History Museum, Budapest); **<GW>** 1♀, Gyodong Gangneung, 7 x 1987, Lee (SSU); 1♀, Mt. Seoraksan, 9 x 1970, Byeon (EU); 1♀, 17 x 1974, Park (EU); 1♂, Changwon-ri Yeongwol, 13 viii 1998, Park (NIAST); 4♂, ibid. 30 ix 1999, Kim (NIAST); 1♀, Mt. Chiaksan Wonju, 14 viii 1987, Sohn (SSU); 2♂, ibid. 15 viii 1999, Kim (NIAST); 1♀, Deokgeori Jangpyeong, 4 ix 1988, Jeon (SSU); 2♀, Gyeonggang Chunseong, 16 ix 1984, Jang (SSU); 1♀, Chuncheon, 24 vii 1994, Kwon (NIAST); 2♂2♀, Gangchon Chuncheon, 4 ix 1982, Kim et al. (SSU); 2♀, ibid. 9 x 1994, Kwon (SSU); 1♀, ibid. 14 viii 1997, Lee (SSU); 1♂4♀, Balsan-ri Chuncheon, 28 viii-25 ix 1998, Park (NIAST); **<GG>** 1♀, Gapyeong, 11 ix 1998, Yoo (SSU); 1♂, Mt. Myeongjisan Gapyeong, 23 ix 1989, Lee (SSU); 1♀, Ganghwa, 18 viii 1969, Yoon (EU); 1♂, Byeokje Goyang, 12 ix 1982, Jeong (SSU); 1♂1♀, Wondang Goyang, 23 viii 1972, Oh (EU); 1♀, Ilyeong Goyang, 17 x 1987, Lee (SSU); 2♀, Mt. Gwanaksan Gwacheon, 1 x 1984, Sohn (SSU); 1♀, Gwangneung, 1 x 1966, Cho (EU); 1♀, Mt. Mugapsan Gwangju, 15 ix 1991, Kim (SSU); 2♀, Eommi-ri Gwangju, 15 ix 1984, Kim et al. (SSU); 3♂19♀, Ungogae Gwangju, 23-30 x 1982, Lee et al. (SSU); 1♀, Gimpo, 15 x 1969, Lee (EU); 1♀, Migeum Namyangju, 7 x 1984, Bang (SSU); 3♂, Mt. Bulamsan, 29 x 1982, Gye (SSU); 1♀, Mt. Chukryeongsan, 8 ix 1984, Song (SSU); 3♂, Mt. Soyosan Dongducheon, 19-21 x 1980, Lee et al. (SSU); 1♂1♀, Namhansanseong, 29 viii-6 ix 1997, Yoo (SSU); 1♀, Mt. Gwanggyosan Suwon, 20 ix 1992, Lee (SSU); 1♀, Bugok Yangju, 12 x 1998, Yim (SSU); 1♂, Sudong Yangju, 16 ix 1979, Dept. Bio. (SSU); 1♀, Mt. Yongmunsan, 3 x 1981, Jang (SSU); 1♂, Mt. Godaesan Sinseo-myeon Yeoncheon, 12 viii 1987, Kim (SSU); 3♂3♀, Mt. Cheonmasan Pyeongnae, 11 ix-30 x 1982, Kim et al. (SSU); 2♂, Huigok Pyeongtaek, 9 viii 1989, Lee (SSU); 1♀, Gwangneungnae Pocheon, 25 ix 1983, Oh (SSU); 2♀, Yeongjeong Yeongpyeong Pocheon, 18 viii-21 ix 1996, Kim et al. (SSU); 1♀, Idong-myeon Pocheon, 21 viii 1994, Kwon (SSU); 1♀, Maesong Hwaseong, 15 ix 1990, Lee (SSU); 1♂, Haengjusanseong Hwajeon, 1 x 1984, Chae (SSU); 2♀, Mt. Dobongsan, 5 x 1987, Ha (SSU); 1♀, Mok-dong Seoul, 4 x 1987, Park (SSU); 1♀, Mt.

Achasan, 12 ix 1981, Yoon (EU); 1♀, Ilwon-dong Seoul, 2 x 1994, Han (SSU); 1♂1♀, Mt. Cheonggyesan, 7 ix 1986, Yim et al. (SSU); **<CB>** 1♂, Jeongbang-ri Annae-myeon Okcheon, 12 x 2000, Lee (NIAST); 1♀, Onyang, 27 ix 1988, Jeon (SSU); 1♀, Deokgok Jecheon, 22 x 1995, Jeon (SSU); 1♂, Mt. Namsan Chungju, 25 viii 2000, Kim (NIAST); 1♂, Mt. Wolaksan Sangmo-myeon Chunju, 13 x 2000, Kim (NIAST); **<CN>** 1♂, Okryong-dong Gongju, 15 viii 1988, Moon (SSU); 1♀, Dosan Dangjin, 12 viii 1984, Choi (SSU); 1♀, Baramarae beach Taean, 30 ix 2006, Kim TW (SSU); **<GB>** 1♂, Yeongnam Univ. Campus Gyeongsan, 25 ix 1993, Yeo (YNU); 1♀, Sangri Seongsan Goryeong, 6 ix 1997, Ryu (YNU); 1♂, Osilnaru Goryeong, 6 ix 1997, Lee (YNU); 1♀, Daegu, 18 ix 1971, Lee (EU); 3♀, Waryong Andong, 22 ix 1991, An (SSU); 2♀, Hahoemaeul Andong, 6 ix 2000, Kim (NIAST); 1♂1♀, Hwajinpo Songna-myeon Pohang, 7 ix 2000, Kim et al. (SSU). **<JB>** 1♂, "RGO " = light trap, Muju, 1-5 ix 1992, (NIAST); 1♂, Maljae Buan, 13 ix 1998, Ryu (YNU); 1♀, Siyong-dong Jeongup, 6 x 1998, Jeong (SSU). **<JN>** 1♂, Mt. Baekwunsan Gwangyang, 25 viii 1999, Kim (NIAST); 1♀, Mt. Mudeungsan Gwangju, 10 x 1988, Lee (SSU); 2♂, Nohwa Wando, 19 viii 1982, Jang (SSU); 1♂, Piagol Mt. Jirisan, 1 viii 1984, Jang (SSU); 1♂, Hampyeong, 23 ix 2000, Kim (NIAST); **<JJ>** 1♂3♀, Gwaneumsa, 27 ix 2000, Kim (NIAST); 4♂2♀, Musucheon, 9 x 1999, Kim (NIAST); 1♂, ibid. 26 ix 2000, Kim (NIAST); 3♀, Mt. Sambangsan, 28 ix 2000, An et al. (NIAST); 1♀, Andeokgyegok, 27 ix 2000, Kim (NIAST); 5♂3♀, Hyeopje, 26 ix 2000, Kim et al. (NIAST).

Description. <♂> Body coloration green or brown combination, laterally green, dorsally brown. Head with slanted frons, fastigium of vertex the dorsal width two times wider than ventral one; scape longer than wide, two times wider than fastigium of vertex in dorsal view. Brown longitudinal marking present from fastigium of vertex to pronotum. Pronotum with lateral lobe as deep as the length of pronotal disk; humeral sinus present; prothorasic spiracle mostly covered by lateral lobe of pronotum. Tegmina macropterous, longer than abdominal end, reaching hind knee, its apex narrowly tapered; stridulatory area as wide as hind margin of pronotum, slightly longer than pronotal length. Hind wings a little longer than tegmina. Fore coxa with a basal spine. All femora without ventral spinules. Fore and middle tibiae each with six pairs of ventral spines apically. Tympana slit-shaped. Prosternum bispinose, mesosternal lobe triangular, longer than basal width. Last abdominal tergite with a pairs of roundly projected lobes, its hind margin notched in mid. Cercus cone-shaped, 4.5 times longer than basal width, thickened in mid, its tapered apical part

longer than internal tooth; inner tooth spiniform, downwardly curved. Subgenital plate trapezoidal, as wide as long, not protruding than cerci, its hind margin widely concave, truncated; lateral and median carinae present. Stylus four times longer than basal width. **<♀>** Cercus simply conical, 5.5 times longer than basal width. Subgenital plate trapezoidal, wider than long, its hind margin weakly concave, truncated. Ovipositor brown sword-shaped, almost straight, longer than body length or hind femur. reaching hind tarsus.

Distribution. Korea, Japan, Northeast China.

Remarks. The *C. exemptus* has hardly been mentioned in the past literatures since it was described. I had studied the female holotype of *C. exemptum* in The Natural History Museum, London (Fig. 391, web images also available in OSF), its position must be in the Conocephalinae (Kirby 1906: 277; Karny 1912: 13; Harz 1969: 108), although even regarded in the Meconematinae (Lee 1990: 111; Jin and Xia 1994: 27; Paik et al. 1995: 295; Otte 1997: 92; Kim and Kim 2001: 160). Its characteristics, ie. fastigium of vertex with wide dorsal width than ventral one, hind femur without ventral spinules, also the measurements including longest ovipositor are in the scope of *C. gladiatus* is generally known in Korea and Japan. Consequently, this new synonymy is proposed.

Table 8. Measurements of *Conocephalus* spp.

Species	BL (HWL)	PL	TL	HFL	OL
C. bambusanus	♂ 18.3 ♀ 17-18 (31-33)	♂ 3.1 ♀ 3.3-3.5	♂ 22.6 ♀ 21.5-23.0	♂ 12.7 ♀ 13.5-15.5	8.5-9.7
C. japonicus	♂ 14-16 ♀ 17-22	♂ 2.8-3.6 ♀ 3.4-4.2	♂ 10.5-11.0 ♀ 9.8-13.0 (21.5)	♂ 14.0-14.3 ♀ 15.0-17.0	15.0-21.0
C. maculatus	♂ 12-16 ♀ 13-17 (19-27)	♂ 2.7-3.3 ♀ 2.9-3.4	♂ 13.0-19.0 ♀ 14.5-21.4	♂ 10.0-14.5 ♀ 12.5-15.8	6.6-9.5
C. exemptus	♂ 15.1-21.7 ♀ 16.2-24.3 (24.0-31.0)	♂ 3.5-3.6 ♀ 4.0-5.0	♂ 16.5-21.0 ♀ 19.0-24.0	♂ 16.0-18.0 ♀ 19.0-21.0	26.0-30.0
C. chinensis	♂ 13.2-15.5 ♀ 15.0-18.0 (13.4-20.0)	♂ 2.9-3.0 ♀ 3.2-3.5	♂ 14.5-17.0 ♀ 14.0-15.5	♂ 10.5-11.0 ♀ 11.0-12.0	7.0-7.2

Tribe Copiphorini 매부리족

Larger than Conocephalini. Fastigium of vertex wider than antennal scape. Mouth parts well developed for eating.

Key to Species of Copiphorini

1. Hind femur longer, nearly three times of mid femur; ♂ cercus cylindrical with perpendicular bending inwardly (Fig. 148) ····· 2
− Hind femur shorter, barely two times of mid femur; ♂ cercus broaden and flattened with large basal processes (Figs. 149−150) ····· 5
2. Fastigium with conically pointed apex (Fig. 141) ····· ***Euconocephalus varius*** (p. 105)
− Fastigium with obtusely blunted apex (Fig. 142) ····· 3
3. Fore and mid tibiae dark black each sides ····· ***Ruspolia lineosa*** (p. 107)
− Fore and mid tibiae concolorous with femora ····· 4
4. Fastigium of vertex narrower, its dorsal width 1.5 times of scape; ovipositor weakly recurved ····· ***Ruspolia dubia*** (p. 110)
− Fastigium of vertex wider, its dorsal width two times of scape; ovipositor almost straight ····· ***Ruspolia*** **sp.** (p. 112)
5. Fastigium of vertex with a ventral tubercle at base; notch clearly opened between fastigia of vertex and frons (Fig. 143) ····· ***Pseudorhynchus japonicus*** (p. 114)
− Fastigium of vertex without ventral tubercle; notch closed between fastigia of vertex and frons (Fig. 144) ····· ***Xestophrys javanicus*** (p. 115)

Genus *Euconocephalus* Karny 좀매부리속

1907. Abhandlungen der K.K. Zoologisch−botanischen Gesellschaft Wien, 4(3): 39. Type species: *Locusta acuminata* Fabricius 1775.

Diagnosis. Fastigium of vertex extending beyond the base of the antennae, not pointed or elongate, fastigium separated from the frons by a notch, the tubercle at the base of the fastigium small. Eyes spherical not oval, head not pronouncedly elongate, rounded. Pronotum with side keels deep rather than long, hind invagination of the pronotum marked in most species. Fore tibiae with spines ventrally, knees armed. Wings long, not brachypterous, male stridulatory rib characteristic for each species. Hind femora with spines ventrally, knees armed. Ovipositor long and straight (Bailey 1979). Until now a reliable revision for the genus has not been provided, urgently needed of taxonomic revision. 35 species are

known in the tropical or subtropical Old World.

39. *Euconocephalus varius* (Walker 1869) 좀매부리 (Figs. 121–122, 141, 148)

Conocephalus varius Walker 1869. Catalogue of the Specimens of Dermaptera Saltatoria in the Collection of the British Museum, 2: 320. "China, Hongkong, Silhet". Syntype in The Natural History Museum, London.

= *Conocephalus thunbergi* Stål 1874. Recencio Orthopterorum, 2: 109. "Japan". Type in ? [Hebard 1922]

Conocephalus nasutus nec Thunberg 1815. Mémoires de l'Académie Impériale des Sciences de St. Pétersbourg, 5: 273. "China". Syntype in Zoological Institute of the Russian Academy of Sciences, St. Petersburg. Selected name for *Locusta acuminata* Fabricius 1793. Ent. Syst. 2: 39. [Kevan and Knipper 1955]

Korean records. ***Euconocephalus acuminatus***: Mori 1933: 55 (Busan); Cho 1959: 161, Fig. 31 (manual); Cho 1969: 756, pl. 51 (illustrated encyclopedia: 좀매붙이); Ju 1969: 17 (North Korean check list); ***Euconocephalus nasutus***: Bey-Bienko 1955: 1263; Kim and Kim 2002: 154, Fig. 1 (taxonomy); ***Euconocephalus thunbergi***: Kim and Oh 1990: 120; Kim and Oh 1991: 149; Paik et al. 1995: 294.

Specimens examined. <CN> 1♀, rearing, Baramarae beach Gonam-myeon Taean, 30 iv–30 vi 2006, Kim TW (SSU); **<GN>** 1♂, Deokho-ri Hai-myeon Goseong, 30–31 x 1996, Kang (GSU); 1♂, Mt. Sanseongsan Yongtae-ri Hail-myeon Goseong, 29–30 vi 1998, Anonym (GSU); 1♂, Sincheon Sicheon Sancheong, 12–13 x 1996, Kim (GSU); 1♀, light trap, Hansan Tongyeong, 6–7 vii 1994, Goh (GSU); **<JJ>** 1♀, Seongeup Namjeju, 3 ix 1994, Lee SM; 1♀, Jeju, 2 v 1992, LHJ (SSU); 1♀, Seonhle, 28 ix 2000, Kim TW (NIAST); 1♂, Yongsu-ri Hangyeong-myeon Hanrim, 26 ix 2000, An MK (NIAST); 3♂1♀, Jeongbang waterfall Dongheung-dong Seoguipo, 9 vii 2002, Kim (SSU); 1♀, Cheonwangsa Jeju, 10 vii 2002, Kim TW (SSU); 2♂1♀, Mt. Songaksan Daejeong-eup Namjeju, 9 iii 2007, Rhee HW (SSU).

Description. <♂> Body coloration green or brown, two contrastive types present. Head conical, strongly inclined; vertex upraised forwardly; fastigium of vertex projected than scape, the length longer than vertical diameter of an eye in dorsal view, the width two times wider than a scape; the apex not sharply pointed with a ventral basal tubercle; in lateral view notch clear between fastigia of vertex and frons; scape as long as wide, antennal socket smaller than the diameter of an eye. Around mandible reddish. Pronotum

with truncated anterior margin and roundly convex posterior margin; the integument punctated; first transverse sulcus in a quarters, V-shaped sulcus rather indistinct; the height of lateral lobe of pronotum shorter than the length of pronotal disk, the lower margin rather bright and thick; humeral sinus clear. Tegmina macropterous, reaching the half of hind tibia, its apex rather truncated dorsally; anterior margin darkish; stridulatory area narrower than hind margin of pronotum, shorter than pronotal length. Hind wing as long as tegmen. Prothorasic spiracle not visible covered by lateral lobe of pronotum. Fore coxa with a strong basal spine. Fore femur shorter than pronotal length, with 1-2 inner ventral spinules apically. Middle femur longer than fore one, with 2-3 outer ventral spinules apically. Hind femur three times longer than middle one, 7-9 outer, 9-11 inner ventral spinules apically. Fore and middle tibiae each with six pairs of small ventral spines apically. Tympana slit-shaped. Prosternum bispinose. Last abdominal tergite with widely separated two triangular lobes, its hind margin widely concave, Cercus shortly thick, three times longer than basal width, with two sharply pointed inner teeth perpendicularly; lower tooth longer than upper one. Subgenital plate trapezoidal, not protruding than cerci, two times longer than basal width, its hind margin V-shaped; median and lateral carinae distinct. Stylus four times longer than basal width. **<♀>** Cercus simply conical, six times longer than basal width. Subgenital plate trapezoidal, as long as basal width, its hind margin widely concave, lateral angles rather pointed. Ovipositor sword-shaped, shorter than hind femora, narrowed in base, slightly thickened and decurved apically. **<Measurements>** BL 33.3-40.0 (HWL 57.0-61.0); PL 8.5-9.0; TL 38.7-45.5; HFL 21.0-24.0; OL 19.0-20.5.

Distribution. Korea, China, Japan.

Remarks. The Korean specimens are preferably identified with *E. varius* based on the distinction presented in OSJ (2006), although there are confusedly referred *Euconocephalus* spp. with another synonymy. Reliable generic revision is not accomplished hitherto and urgently needed that (Willemse 2001).

Genus *Ruspolia* Schulthess-Schindler 매부리속

1898. Annali del Museo Civico di Storia Naturale 'Giacomo Doria', Genova, 19: 207. Type species: *Ruspolia pygmaea* Schulthess 1898.

= *Homorocoryphus* Karny 1907. Abhandlungen der K.K. Zoologisch-botanischen Gesellschaft Wien, 4(3): 41 (pro subgenus *Conocephalus*). Type species: *Gryllus nitidulus* Scopoli 1786. [Bailey 1975]

Diagnosis. Fastigium of vertex rounded and extending beyond the base of the antennae, notch between the fastigium of the vertex and the frons seldom open, without a pronounced tubercle at the base; pronotum narrower anteriorly, lateral lobes triangular, slightly to fully invaginated at the posterior margin; forewings generally longer than the abdomen although some brachypterous species exist; cubital area of the male right forewing always membranous, opposite area on the left forewing never so; number of teeth on the stridulatory rib between 45 and 210; fore limbs with tympanal slits on each side of the tibia; male cerci with two spines subequal; hind femur with ventral spines; ovipositor straight, slender, usually as long as the hind femur, never short (Bailey 1975). 48 species are known in the Palaearctic, Ethiopian and Oriental Regions, the measurements of three Korean *Ruspolia* compared in Table 9.

40. *Ruspolia lineosa* (Walker 1869) 매부리 (Figs. 123−124, 142)

Conocephalus lineosus Walker 1869. Catalogue of the Specimens of Dermaptera Saltatoria in the Collection of the British Museum, 2: 318, No. 50. "China". Holotype ♂ in The Natural History Museum, London.

Korean records. ***Homoeocoryphus*** [!] ***lineosus***: Doi 1932: 37; Cho 1963: 163 (Is. Jejudo); ***Homorocoryphus lineosus***: Mori 1933: 55 (Korean Tettigoniidae); Cho 1959: 160, Fig. 29 (manual); Cho 1969: 755, pl. 50 (illustrated encyclopedia: 매붙이); Ju 1969: 18 (North Korean check list); ***Ruspolia lineosa***: Moon and Yoon 1993: 57 (KEI); Kwon and Huh 1994: 49 (Korean check list); Kwon et al. 1996: 104 (Korean species list); Bae 1998: 138; Kim and Kim 2002: 154, Fig. 2 (taxonomy).

Specimens examined. **<GW>** 1♀, Jukhyeon−dong Gangneumg, 29 vii 1997, Kim (SSU); 1♂1♀, Changwon−ri Yeongwol, 7 ix 1998, Kim (NIAST); 1♀, Misan Inje, 17 viii 1960, Son (EU); 1♀, Deokgeori Jangpyeong, 10 x 1988, Jeon (SSU); 2♂1♀, Balsan−ri Chuncheon, 28 viii 1998, Park (NIAST); 1♀, Noil−myeon Hongcheon, 18 ix 1993, Kim (SSU); 1♀, Mt. Odaesan, 3 x 1996, Kim (SSU); **<GG>** 1♀, Gapyeong, 19 ix 1970, Cho (EU); 1♀, Mt. Godongsan Gapyeong, 9 ix 1980, Jang (SSU); 1♂1♀, Byeokje Goyang, 16 ix 1997, Chae (SSU); 1♂, Wondang Goyang, 11 viii 1996, Park (SSU); 1♂, Ilyeong Goyang, 23 viii 1970, Kim (EU); 1♂1♀, Jangheung Goyang, 18−28 ix 1991, Paik et al. (SSU); 1♂2♀, Gwacheon, 30 viii 1992, Choi (SSU); 1♂, Gwangneung, 22 ix 1990, Kim (SSU); 1♂, de Haan−dong Gwangmyeong, 21 viii 1994, Kim (SSU); 1♀, Ungogae Gwangju, 15 ix 1984, Kim (SSU); 1♂, Bogwangsa Gwangtan, 4 ix 1977, Kim (EU); 1♀, Yongmi−ri Gwangtan, 9

viii 1996, Park (SSU); 3♀, Dongguneung Guri, 15 ix 1968, Lee (EU); 1♂1♀, Maseok Namyangju, 9−16 ix 1972, Lee et al. (EU); 2♀, Mt. Bulamsan, 18 ix 1982, Kim (SSU); 1♂2♀, Mt. Suraksan, 9 ix 1991, Kim (SSU); 2♀, Bukhansanseong, 19 viii−26 ix 1991, Eom et al. (SSU); 1♂, Namhansanseong, 20 ix 1981, Kim (SSU); 6♀, Mt. Gwanggyosan Suwon, 1−20 ix 1992, Kim et al. (SSU); 1♂2♀, ibid. 4 ix 1996, Lee SM; 1♀, Anyang, 20 viii 1970, Lee (EU); 1♀, Yangpyeong, 9 ix 1989, Moon (SSU); 2♂, Mt. Yongmunsan Yangpyeong, 1 ix 1980, Park (SSU); 1♂1♀, ibid. 27 ix 1986, Park et al. (SSU); 1♀, Yeokgok Bucheon, 21 ix 1974, Huh (EU); 1♀, Osan, 11 ix 1992, Park (SSU); 1♀, Giheung Yongin, 13 ix 1985, Han (SSU); 1♂, Mt. Ungilsan Namyangju, 31 vii 1996, (SSU); 1♂, Ganghwado Incheon, 16 viii 1996, An (SSU); 2♀, Paju, 3 x 1999, Yoon (EU); 1♀, Paldang, 23 ix 1970, Lee (EU); 1♂, Mt. Cheonmasan Pyeongnae, 10 ix 1983, Park (SSU); 3♀, Pyeongtaek, 11 ix 1992, Kwak (SSU); 1♂, Misari Hanam, 14 vii 1991, Cho (SSU); 2♂, Mt. Gwanaksan, 20 viii−15 x 1992, Lee et al. (SSU); 1♂, Mt. Namsan, 23 viii 1992, Choi (SSU); 5♀, Namhansanseong, 31 viii−3 x 1996, Kim et al. (SSU); 2♀, Mt. Daemosan, 27 vii−20 viii 1998, Kang et al. (SSU); 1♂1♀, Mt. Dobongsan, 4−5 ix 1992, Choi et al. (SSU); 1♀, Mangu−dong Seoul, 14 viii 1987, Kim (SSU); 1♀, Sangil−dong, 3 ix 1995, Oh (SSU); 1♂, Mt. Suraksan, 20 ix 1997, Park (SSU); 2♂, Mt. Achasan, 23 viii 1981, Yoon (EU); 1♂, Mt. Yongmasan, 29 viii 1993, Park (SSU); **<CB>** 1♂, Wonpung−ri Yeonpung−myeon Goesan, 13 ix 1996, Park WS; 1♀, Hwayang−ri Cheongcheon−myeon Goesan, 15 ix 1984, Kim (SSU); 1♀, Mt. Minjujisan, 14 ix 1998, Lee SM; 1♂1♀, Onyang, 27 ix 1988, Jeon (SSU); 1♂1♀, Deokgok Jecheon, 15 ix 1996, Jeon (SSU); 1♂, Mt. Wolaksan Jecheon, 28−30 viii 1994, Sohn (SSU); 3♂, Cheongju, 5−16 viii 1960, Jeong (EU); 1♀, ibid. 18 ix 1966, Kwon (EU); 1♀, Mipyeong Cheongju, 18 x 1992, Park (SSU); 2♀, Mt. Gyemyeongsan Chungju, 24 viii 2000, Kim (NIAST); 2♂1♀, Mt. Namsan Chungju, 25 viii 2000, Kim (NIAST); 1♀, Danwol−dong Chungju, 14 ix 1996, Jeon (SSU); **<CN>** 1♂, Mt. Gyeryongsan Gongju, 15 viii 1993, Min (SSU); 1♀, Daejeon, 1 XI 1992, Nam (SSU); 1♂, Gadeok Oksan Buyeo, 19 viii 1993, Park WS; 1♀, Seosan, 30 ix 1992, Oh et al. (SSU); 1♀, Seochang, 17 ix 1997, Yeom (SSU); 2♀, Hyudae−ri Asan, 20 ix 1992, Kim (SSU); 1♂, Jiksan, 14 viii 1971, Park (EU); **<GB>** 1♀, Yeongnam Univ. Campus Gyeongsan, 14 ix 1993, Yeu (YNU); 1♀, Hyoseong Gyeongsan, 7 vii 1992, Yoon (SSU); 1♂, Ubo Gunui, 18 ix 1994, Park (SSU); 2♀, Daegu, 20 ix 1971, Lee (EU); 1♂1♀, Ehwaryeong Mungyeong, 31 viii 2000, Lee (NIAST); 1♀, Waryong Andong, 22 ix 1991, An (SSU); 1♀, Samgang Yecheon, 23 ix 1972, Jeong (EU); 1♂2♀, Samgye Unmun

Cheongdo, 25−26 viii 1990, Cho et al. (SSU); 1♀, Mt. Juwangsan Cheongsong, 6 ix 2000, Kim et al. (NIAST); 2♀, Hwajinpo Songna−myeon Pohang, 7 ix 2000, Kim et al. (NIAST); **<GN>** 1♂, Jeogu Nambu Geoje, 2 ix 1989 (SSU); 1♀, Geojedo, 4 viii 1964, Bae (EU); 1♂, Mt. Bukbyeongsan Dongbu−myeon Geoje, 29 viii 2000, Lee (NIAST); 3♂, Jangsuam Yulpo−ri Dongbu−myeon Geoje, 25−26 viii 1990, Yoon et al. (GSU); 1♂, Ungcheon Jangmok Geoje, 5 viii 1987, (GSU); 8♂2♀, Okgye Chilcheondo Geoje, 15−18 viii 1985, Oh et al. (GSU); 1♂2♀, Hacheong Geoje, 15−18 viii 1985, Ku (GSU); 1♂, "RGO " = light trap, Geochang, 1−5 vii 1992, (NIAST); 1♂, Namsang Geochang, 8 ix 1989, Jeong (GSU); 1♀, Geompo, 17 ix 1997, Ham (SSU); 1 ♂, Mt. Geumsan Sanjeon Idong Namhae, 28−29 viii 1990, Kim (GSU); 1♂, Deokgye, 18 viii 1996, Park (SSU); 1♀, Oncheon−dong Busan, 19 ix 1994, Kim (SSU); 1♀, Bujeon−dong Busan, 19 viii 1987, Anonym (SSU); 1♀, Deokhyeon−ri Sangbuk−myeon Ulsan, 8 x 1999, Park WS; 1♀, Gampo Ulju, 12 viii 1990, Shin (SSU); 1♀, Duseo Ulju, 12 ix 1992, Choi (SSU); 2♀, Mt. Jeogolsan Gapgol−ri Gaya−myeon Uiryeong, 25−26 vii 1990, Park (GSU); 1♂2♀, Burim Uiryeong, 3−11 viii 1982, Yim (GSU); 1♂1♀, Mt. Bibongsan Sangbongseo−dong Jinju, 17−18 viii 1984, Oh et al. (GSU); 2♀, Mt. Yeongchuksan Changnyeong, 7 x 1987, Yoon (GSU); 1♀, Uponeup Changnyeong, 8 viii 1992 (SSU); 2♂5♀, Donam−dong Chungmu, 11 ix 1992, Shin (SSU); 1♀, Mukgye−ri Jeongam−myeon Hadong, 15 ix 1987, (GSU); 1♀, Ssanggyesa Hwagae Hadong, 19 ix 1987, (SSU); **<JB>** 2♀, Mt. Naejangsan, 18 x 1980, Wu (SSU); 1♂, Muju, 26 vii 1973, Yoo (EU); 3♀, Bongeun−ri Buan, 10 x 1981, Jang (SSU); 1♀, Mt. Maisan Jeonju, 18 viii 1992, Kwak (SSU); 2♀, Yongdong Jeongeup, 5−6 x 1998, Jeong (SSU); 1♀, Jeongju Jeongeup, 17 viii 1989, Bae (SSU); **<JN>** 2♂, Mt. Baekunsan Gwangyang, 25 viii 1999, Kim (NIAST); 2♂, Anmado Yeonggwang, 19 viii 1989, Lee et al. (SSU); 3♀, Wolgok Yeongam, 17−19 viii 1986, Park (SSU); 1♀, "Hakuyosan" = Mt. Paekyangsan Jangseong, 9 x 1921, Hasegawa; 5♂2♀, ibid. 23 viii 1999, Kim (NIAST); 1♂, Hwangryong Jangseong, 9 viii 1996, Kim (SSU); 1♀, Jindo, 24 viii 1975, Paek (EU); 1♂ in grass, Mokpho, 6 viii 1905, S. Ichikawa (The Natural History Museum, London); **<JJ>** 1♂, Gwaneumsa, 27 ix 2000, Kim (NIAST); 1♂1♀, Jungmun Seoguipo, 11−12 viii 1984, Lee SM; 1♀, Seoguipo, 10 viii 1984, Lee (SSU); 1♀, Seonheul, 28 ix 2000, An et al. (NIAST); 1♂, Jeju, 8 viii 1964, Bae (EU); 1♂, Ara−ri, 25. IX. 1993, Lee SM; 1♀, Hanrim, 24 ix 1993, Park WS.

Description. <♂> Body coloration green or brown, two contrastive types present. Head conical, with strongly inclined frons; fastigium of vertex short and wider, 2.5 times wider

than scape in dorsal view, projected forwardly as long as longitudinal diameter of an eye; scape as long as wide; antennal socket smaller than the dimeter of an eye. Pronotum with truncated anterior margin and widely convex posterior margin; the first transverse sulcus located at a quarters of pronotal disk and small V−shaped sulcus in mid; lateral lobe of pronotum the length slightly shorter than pronotal length; humeral sinus present. Tegmina macropterous, reaching a half of hind tibia, its apex rather truncated dorsally; stridulatory area a little narrower than hind margin of pronotum, shorter than pronotal length. Hind wings as long as tegmina. Fore coxa with a basal spine. Fore femur without ventral spinules, middle femur with 1−3 outer ventral spinules, hind femur with 7−9 outer, 8−11 inner ventral spinules. Fore and mid tibiae dark brown both inner and outer sides, each with six pairs of ventral spines apically. Prosternum bispinose. Last abdominal tergite with a pair of widely separated triangular lobes, its hind margin roundly concave. Cercus cylindrical, 2.5 times longer than middle width, its apex blunted; two spiniform internal teeth perpendicularly located at apex, its apex curved downwardly; lower one longer and thicker than upper one. Subgenital plate trapezoidal, longer than basal width, its hind margin with shallow V−shaped median notch; median and lateral carinae present. Stylus 2.5 times longer than basal width. <♀> Last abdominal tergite with a pair of small triangular lobes. Cercus simply conical, 4.5 times longer than basal width. Subgenital plate trapezoidal, as long as wide, its hind margin widely concave, the lateral angles rather acute. Ovipositor sword−shaped, slightly recurved, as long as hind femur.

Distribution. Korea, Japan, China, Taiwan, India, Indonesia.

41. *Ruspolia dubia* (Redtenbacher 1891) 애매부리 (Figs. 125−126)

Conocephalus dubius Redtenbacher 1891. Verhandlungen der Kaiserlich−Königlichen Zoologisch−Botanischen Gesellschaft in Wien, 41: 385, 424. "Japan". Holotype ♀ in Naturhistorisches Museum Wien.

= *Conocephalus fuscipes* var. *jezoensis* Matsumura and Shiraki 1908. Jour. Coll. Agric. Tohoku Imp. Univ. 3(1): 47. "Japan: Sapporo". Syntype in Hokkaido University, Sapporo. [OSJ 2006]

Gryllus nitidulus nec Scopoli 1786. Delicidae forae et faunae insubricae, pars 1: 62, taf. 24B. "Italy". Type lost.

Korean records. ***Homorocoryphus nitidulus***: Mori 1933: 55 (Korean Tettigoniidae); Doi 1936: 106; Ju 1969: 18 (North Korean check list); Lee 1990: 109 (systematic notes: 좀매부리);

Paik et al. 1995: 294; ***Homorocoryphus jezoensis***: Furukawa and Shiraki 1950: 36, Fig. 89; Cho 1959: 160, Fig. 30 (manual); Cho 1969: 756, pl. 80 (illustrated encyclopedia: 애매붙이); Ju 1969: 18 (North Korean check list); Tadauchi 1989: 53 (Japanese check list); Hua 2000: 50 (Chinese list); ***Ruspolia jezoensis***: Moon and Yoon 1993: 57 (KEI); Kwon and Huh 1994: 49 (Korean check list); Kwon et al. 1996: 104 (Korean species list); Kim and Kim 2002: 158, Fig. 3 (taxonomy): Storozhenko 2004: 85, Figs. 44, 47, 175–185.

Specimens examined. **<PN>** 1♂, Mt. Lyongaksan 25 km W from Pyongyang, 10 viii 1971, S. Horvatovich and J. Papp, No. 158 (Hungarian Natural History Museum, Budapest); 1♀, Pyongyang Pyongyang Hotel garden, 17 viii 1971, S. Horvatovich and J. Papp, No. 185 (Hungarian Natural History Museum, Budapest); 1♂, Pyongyang city Mt. Daesongsan, 20 ix 1979, H. Steinmann and T. Vasarhelyi, No. 551 (Hungarian Natural History Museum, Budapest); **<GW>** 1♂, Geonbongsa Goseong, 28 viii 1990, Lee OJ (SSU); 1♀, Sinpyeong-ri Goseong, 26 viii 1998, Nam MA (SSU); 3♀, Jeungsan Nam-myeon Jeongseon, 19 ix 2004, Kim TW (SSU); 1♂, Mt. Gwangdeoksan Seo-myeon Cheolwon, 15 viii 2006, Kim TW (SSU); 2♂, Haesanryeong Hwacheon, 13 ix 2000, Kim SS (SSU); 1♀, ibid. 3 x 2006, Kim TW (SSU); **<GG>** 1♂, Yeocha-ri Ganghwado Incheon, 4 ix 1996, Han SM (KU); 1♀, Gwangneung, 29 ix 1990, Lee MS (SSU); 1♂, Wuri Maseok Namyangju, 29 viii 1986, Jang MG (SSU); 1♂, Namhansanseong, 26 viii 1990, Kim MJ (SSU); 1♂, Songnae-ri Dongducheon, 11 viii 1991, Yoon SA (SSU); 1♀, Bogwangsa Paju, 4 ix 1977, Park HK (EU); 1♀, Jeongok Yeoncheon, 22 viii 1984, Jang SH (SSU); 1♀, Mt. Cheonmasan Namyangju, 27 ix 1980, Lee JS (SSU); 1♂, Mt. Gamaksan Paju, 8 ix 1984, Kim JI (SSU); 1♀, Mt. Jugeumsan Naechon-myeon Pochen, 25 ix 2004, Kim TW (SSU); 1♂, Songwu-ri Pocheon, 24 viii 1998, Park JH (SSU); 1♀, Balsandong Gangseogu Seoul, 22 viii 1995, Lee JY (SSU); 2♀, Mt. Bukhansan Seoul, 29 viii 1982, Km HK (SSU); 1♀, Ssangmundong Seoul, 18 ix 1982, Gye SH (SSU); 1♀, Mt. Baekryeonsan Eunpyeong-gu Seoul, 22 viii 1991, Nam JH (SSU); **<CB>** 1♂, Mt. Gyemyeongsan Chungju, 24 viii 2000, Kim TW (SSU); 1♀, Mt. Namsan Chungju, 27 ix 2000, Kim AY (SSU); 1♂, Mt. Cheondeungsan Sancheok-myeon Chungju, 28 viii 2002, Kim TW (SSU); 1♂2♀, Haneuljae Mt. Wolaksan Sangmo-myeon, Chungju, 13 x 2000, Kim TW (SSU); **<GB>** 1♀, Is. Ulleungdo, 31 vii 2002, Jung JY (SSU); 1♂, Huibangsan Mt. Sobaeksan Ponggi, 5 ix 2000, Kim MA (SSU); **<GN>** 1♂, Gampo Ulju, 12 viii 1990, Shin JE (SSU).

Description. **<♂>** Body coloration green or brown, two contrastive types present. Head conical, with strongly inclined frons; fastigium of vertex narrower, two times wider than

scape in dorsal view; scape as wide as long; antennal socket smaller than the diameter of an eye. Around mouth parts yellowish. Pronotum with truncated anterior margin and roundly convex posterior margin; lateral lobe of pronotum the height shorter than pronotal length, humeral sinus present on hind margin. Tegmina macropterous, reaching a half of hind tibia, its apex roundly acute; stridulatory area as wide as hind margin of pronotum, shorter than pronotal length; RS branched the mid of R. Hind wings as long as tegmina. Fore coxa with a strong basal spine. Fore and middle femora without ventral spinules, hind femur with 4–6 outer, 6–8 inner ventral spinules apically. Fore and mid tibiae concolorous with femora, each with six pairs of ventral spines apically. Tympana slit–shaped. Prosternum bispinose. Prothorasic spiracle covered by lateral lobe of pronotum. Last abdominal tergite with a pair of widely separated triangular lobes, its hind margin roundly concave, rather truncated. Cercus cylindrical, 2.5 times longer than middle width, its apex rather truncated; two spiniform inner teeth perpendicularly present inwardly, lower one longer and slender than upper one. Subgenital plate trapezoidal, as long as wide, its hind margin shallowly incised; lateral and median carinae present. Stylus three times longer than basal width. **<♀>** Last abdominal tergite with a pair of triangular lobes and median groove at apex. Cercus simply conical, four times longer than basal width. Subgenital plate triangular, wider than long, its hind margin with distinct V–shaped median notch, the lateral angles acute. Ovipositor sword–shaped, weakly recurved in base, slightly longer than hind femur.

Distribution. Korea, Japan, Northeast China, Russian Far East.

42. *Ruspolia* sp. 왕매부리 (Figs. 127, 141)

Specimens examined. **<GG>** 1♀, Mt. Manisan Ganghwa, 3 viii 2001, Kim JK (SSU); 1♂♀, Gwangneung Pocheon, 7 ix 1985, Park MN (SSU); 1♀, Jingeon Namyangju, 31 viii 1981, Park SJ (SSU); **<CB>** 2♀, Goesan–eup Goesan, 27 vii 1996, Kim JE (SSU); 1♀, Geumseong, 8 viii 1997, Jeong HK (SSU); **<CN>** 3♂, Malipo beach Taean, 27 viii 2005, Kim TW (SSU); 8♂, Mongsanhang Taean, 26 viii 2005, Kim TW (SSU); 2♂, Hakampo beach Taean, 1 x 2006, Kim TW (SSU); **<GB>** 1♂, Yeongdeok, 9 viii 1996, Ahn EK (SSU); **<GN>** 1♀, Yeonsan–dong Busan, 21 viii 1985, Kim HS (SSU); 1♂, Sangbongseo–dong Jinju, 4 viii 1984, Oh TS (GSU); 1♂, light trap, Gemseongsa Mt. Geumosan Goryong–ri Jingyo Handong, 27–28 vii 1998, Park JS (GSU); **<JN>** 1♀, Chundong Yeongam, 30 viii 1995, Anonym (SSU).

Description. **<♂>** Body slender and compressed conical, coloration green or brown, two

contrastive types present. Head conical, frons strongly inclined; fastigium of vertex bluntly projecting forwardly between the scape, its dorsal width two times of scape; notch closed between fastigia of vertex and frons; scape as wide as long. Around mouthpart yellowish. Pronotum with disk longer than wide and lateral lobe of pronotum shorter than pronotal length; lateral sides of pronotum with rather bright colors; humeral sinus distinct. Prothorasic spiracle largely oval, concealed behind of lateral lobe of pronotum. Tegmina macropterous, surpassing hind knees, its apex roundly acute; R branched just behind the mid of R; stridulatory area as wide as hind margin of pronotum, shorter than pronotal length; stridulatory files longer, composed of about 180; the left basal margin largely protruding. Hind wings as long as tegmina. Fore coxa with a strong basal spine anteriorly. Fore and middle femora without spinules, hind femora with 3−5 outer, 7−8 inner ventral spinules. Fore and mid tibiae concolorous with femora. Prosternum bispinose. Last abdominal tergite widely truncated, its hind margin roundly concave in mid, each sides forming a pair of acute triangles. Cercus thick, cylindrical, 2.5 times longer than basal width, with two internal teeth perpendicularly; dorsal tooth 0.5 times smaller than ventral, perpendicularly located; ventral tooth more incurved. Subgenital plate longer than basal width its hind margin triangularly excised; lateral and median carinae distinct. Stylus 3.5 times longer than basal width. Titillators tick and confused in base, its surface toughly sclerotized. **<♀>** Longer than male. Tegmina reaching hind knees. Last abdominal tergite with concave hind margin, forming a pair of triangular lobes. Cercus six times longer than basal width, its apex abruptly tapered, conical. Subgenital plate trapezoidal, wider than long, its hind margin narrowly concave. Ovipositor sword−shaped, almost straight, longer than hind femur.

Distribution. Korea (new record), Japan.

Remarks. This is considered to the same with *Ruspolia* sp. in preparing to describe as a new species in Japan (per. com. with Mr. Inoue Naotake).

Table 9. Measurements of *Ruspolia* spp.

Species	BL	HWL	PL	TL	HFL	OL
R. lineosa	24.5−35.0	40.0−55.0	7.4−8.2	32.0−39.0	21.0−27.5	22.0−27.0
R. dubia	24.0−36.5	33.0−52.2	6.4−8.0	25.8−40.2	16.5−25.0	22.5−32.0
Ruspolia sp.	31.2−38.0	48.6−64.2	8.0−8.8	37.5−50.4	23.7−29.2	31.2−36.8

Genus *Pseudorhynchus* Audinet-Serville 여치베짱이속

1839. Histoire naturelle des insectes. Orthoptères: 509. Type species: *Pseudorhynchus sicarius* Audinet-Serville 1839.

Diagnosis. Fastigium of vertex separated from fastigium of frons, bearing ventral tooth or tubercle at base. Pronotum without lateral carinae. Prosternum with two well developed spines. Meso- and metasternum with paired lobes, not produced into spines. Fore coxae with well developed spine. Fore tibiae terete above, with slit-like tympanal opening on each side. Hind femora with ventral spines (Ragge 1969). 27 species are known in the Old World tropics.

43. *Pseudorhynchus japonicus* Shiraki 1930 여치베짱이 (Figs. 128, 143, 150)

Pseudorhynchus japonicus Shiraki 1930. Trans. Nat. Hist. Soc. Formosa, 20: 341. "Japan: Nakano". Syntype in Taiwan University, Taipei.

Conocephalus concisus nec Walker 1869. Catalogue of the Specimens of Dermaptera Saltatoria in the Collection of the British Museum, 2: 322, No. 58. "China". Holotype ♀ in The Natural History Museum, London.

Korean records. ***Pseudorhynchus japonicus***: Doi 1934: 124 (Busan); Doi 1935: 58; Cho 1959: 160, Fig. 28 (manual); Cho 1969: 755, pl. 50 (illustrated encyclopedia); Ju 1969: 19 (North Korean check list); Tadauchi 1989: 54 (Japanese check list); Moon and Yoon 1993: 57 (KEI); Kwon and Huh 1994: 49 (Korean check list); Kwon et al. 1996: 104 (Korean species list); Kim and Kim 2002: 159, Fig. 5 (taxonomy); ***Pseudorhynchus concisus***: Lee 1990: 109 (systematic notes); Paik et al. 1995: 294.

Specimens examined. **<GN>** 2♀, Okgye Chilcheondo Geoje, 15-18 viii 1985, Jeon et al. (GSU); 1♀, juvenile, 5 viii 1999, Park JS (GSU); 1♂, Geompo Goseong, 9 viii 1996, Kim (GSU); 1♀, Busan, 1 viii 2001, Paik YH (NIAST); **<JN>** 1♀, Yulpo-ri Gemdang-myeon Wando, 5 viii 2000, Lee HS (NIAST).

Description. **<♂>** Body coloration green or brown, two contrastive types present. Head slightly shorter than pronotum, conical, strongly slanted. Antennae black ventrally, bright ventrally; antennal socket slightly wider than horizontal diameter of an eye. Fastigium of vertex thick and conical, more protruding beyond scape. Pronotum longer than wide, its anterior margin weakly concave, posterior margin widely round; lateral lobe of pronotum longer than high with humeral sinus; pronotal disk with rather diverged lateral yellowish lines, first transverse sulcus distinct in a thirds, V-shaped sulcus weakly distinct in mid.

Prothorasic spiracle large, oval, but covered by pronotum. Fore coxa with a basal spine. Fore femur as long as pronotum, with 1−3 outer, 3−4 inner ventral spines. Fore tibia with 7−8 pairs of ventral spines; the tympana narrowly slit−shaped. Tegmina macropterous, reaching hind tarsus, its apex roundly tapered; basal stridulatory area as wide as hind margin of pronotum, occupy a fifths of tegmina. Middle femur 5−7 outer ventral spines. Middle tibia with eight pairs of ventral spines. Hind femur relatively short, two times longer than middle femur, with 11 outer, 0−3 inner ventral spines. Last abdominal tergite with widely diverged two lobes, its apex roundly triangular with longitudinal carinae, median part convex, not projected than apical lobes. Cercus very thick and conical, its apex inwardly pointed hook−shape, with a basal long spine recurved. Subgenital plate wider than long, its hind margin widely concave. Stylus conical, three times longer than basal width. **<♀>** Cercus short and conical, five times longer than basal width. Subgenital plate triangular, shorter than basal width, its hind margin narrowly emarginated at apex. Ovipositor longer than hind femora, nearly straight, rather widened apically. **<Measurements>** BL 40.0−52.0 (HWL 60.0−74.0); PL 11.0−13.6; TL 45.0−56.5; HFL 19.0−28.5; OL 39.0−43.5.

Distribution. Korea, Japan.

Genus *Xestophrys* Redtenbacher 꼬마여치베짱이속

1891. Verhandlungen der Kaiserlich−Königlichen Zoologisch−Botanischen Gesellschaft in Wien, 41: 415. Type species: *Xestophrys javanicus* Redtenbacher 1891.

Diagnosis. Fastigium of vertex protruding conical, without basal tubercle and notch. Antennae as long as body length. Prothorasic spiracle fully covered by lateral lobe of pronotum. Legs short, all femora with distinct ventral spines. Male cercus widened, depressed. Ovipositor shorter than hind femur, rather widened in mid. Only three species are known in the Oriental Region.

44. *Xestophrys javanicus javanicus* Redtenbacher 1891 꼬마여치베짱이 (Figs. 129−130, 144, 149)

Xestophrys javanicus Redtenbacher 1891. Verhandlungen der Kaiserlich−Königlichen Zoologisch−Botanischen Gesellschaft in Wien, 41: 362, Fig. 16. "Java". Syntype in Naturhistorisches Museum Wien.

Korean records. ***Xestophrys javanicus***: Kim and Kim 2002: 158, Figs. 4, 6−11 (taxonomy).

Specimens examined. **<JB>** 1♂, Byeonsanbando Buan, 23 v 2001, Kim et al. (NIAST); **<JN>** 1♀, Mt. Duryunsan Yeongam, 22 vi 1993, KBH (KU); 7♂2♀, Mt. Wolchulsan Yeongam, 14 v 2000, Kim TW (NIAST); **<JJ>** 1♀, Jeju, 27 iii 1983, Lee SM; 1♂, Yongsu-ri Hangyeong-myeon Hanrim, 1 vi 2000, Kim TW (NIAST).

Description. **<♂>** Body coloration dark brown, laterally rather bright. Head conical, strongly inclined; vertex flattened, fastigium of vertex more projected than scape, its apex blunted, not sharply pointed; frons rather convex; notch closed between fastigia of vertex and frons. Antennae black, antennal socket weakly smaller than an eye; mandibles and clypeal suture black. Pronotum longer than wide, its anterior margin truncated, posterior margin widely round; first transverse sulci clear in a quarter, V-shaped sulci in mid; paranotum longer than height; hind margin with humeral sinus. Prothorasic spiracle concealed by paranotum. Prosternum bispinose, Meso-, metasternal lobes, and lower margin of pleura dark black. Fore coxa with a basal spine. Fore femur slightly shorter than pronotum, with 2-3 outer, one inner ventral spinule distally. Fore tibia with five outer, six inner ventral spines. Tegmina macropterous, reaching hind tarsus; stridulatory area occupy a quarter of tegmina, as wide as hind margin of pronotum; tegminal apex slanted truncated. Middle femur with four outer ventral spines. Middle tibia with five pairs of spinules. Hind femur relatively shorter, as long as two times of mid femur, with eight outer ventral spines. All knees without spine. Last abdominal tergite with two triangular lobes, its hind margin deeply concave. Cercus thick and conical with inwardly curved apex; largely developed basal process present, its apex smooth, upwardly curved. Subgenital plate rather truncated with short styli, not projected than cerci. **<♀>** Subgenital plate triangular, its hind margin with narrow emargination. Ovipositor slightly shorter than hind femora, gently recurved, rather widened apically. **<Measurements>** BL 29-36 (HWL 43-50); PL 8.1-9.5; TL 32.5-37.0; HFL 14.0-15.5; OL 12.8-14.0.

Distribution. Korea, Japan, Philippines (ssp. *lombockensis*: Lombock).

Subfamily Listroscelidinae 베짱이아과

Head with a rostrum narrower than antennal scape. Movable long spines present on fore and mid tibiae. Fore tibia without dorsal spines, but very long ventral spines present as a pair. More than 50 species present in the world, only one species recognized in Korea.

Genus *Hexacentrus* Audinet-Serville 베짱이속

1831. Annales des Sciences Naturelles, Paris, 22(86): 145. Type species: *Hexacentrus unicolor* Audinet-Serville 1831.

Diagnosis. Dark green, male stridulatory region and principal veins brown. Sexes dimorphic for wing shape. Male with expanded tegmina, female with normal tegmina. Fastigium of vertex very narrow, triangular process. Dorsal surface of pronotum with a dark hourglass figure. Tympana on fore tibia slit-shaped. Thorax with all sternites with elongate, prominent paired spiniform processes. RS with 3-4 branches. 25 species are known in the tropical world.

45. *Hexacentrus japonicus japonicus* Karny 1907 베짱이 (Figs. 51, 65-67)

Hexacentrus japonicus Karny 1907. Abhandlungen der K.K. Zoologisch-botanischen Gesellschaft Wien, 4(3): 111. "Japan: Yokohama". Syntype in Naturhistorisches Museum Wien.

Hexacentrus unicolor nec Audinet-Serville 1831. Annales des Sciences Naturelles, Paris, 22: 146. "Java". Holotype ♂ in ?Museum National d'Histoire Naturelle, Paris.

Piura munda nec Walker 1869. Catalogue of the Specimens of Dermaptera Saltatoria in the Collection of the British Museum, 2: 282. "Ceram = Moluccas". Holotype ♀ in The Natural History Museum, London.

?= *Tedla sellata* Walker 1869. Catalogue of the Specimens of Dermaptera Saltatoria in the Collection of the British Museum, 2: 393. "Silhet, Corea, Philippines". Syntype ♂ (examined) in The Natural History Museum, London. [Karny 1912]

Korean records. ***Hexacentrus japonicus***: Doi 1932: 37 (Seoul); Mori 1933: 55 (Korean Tettigoniidae); Mori and Cho 1940: 20 (Mt. Geumgangsan); Cho 1969: 754, pl. 50, text-Fig. 7 (illustrated encyclopedia); Ju 1969: 18 (North Korean check list); ***Hexacentrus yaponicus*** [!]: Cho 1959: 159, Fig. 27 (manual); ***Hexacentrus unicolor***: Lee 1990: 108 (systematic notes); Moon and Yoon 1993: 56 (KEI); Kwon and Huh 1994: 48 (Korean check list); Kwon et al. 1996: 103 (Korean species list); Bae 1998: 129; Kim and Kim 2001: 162, Figs. 8-9 (taxonomy).

Specimens examined. **<JG>** 1♀, Mt. Myohyangsan Hotel Myohyang, 12 ix 1980, Gy. Tapal and L. Forro, No. 652 (Hungarian Natural History Museum, Budapest); **<GW>** 1♂, Lake Samilpo, 26 ix 1979, H. Steinmann and T. Vasarhelyi, No. 583 (Hungarian Natural History Museum, Budapest); 1♂, Gangneung, 12 viii 1995, Seong (SSU); 1♀, Changwon-ri

Nam-myeon Yeongwol, 7 ix 1998, Park (NIAST); 2♂, Malaise trap, Mt. Myeongseongsan Cheolwon, 17 viii-14 x 1999, Ku (NIAST); 1♂, Gangchon Chuncheon, 23 viii 1986, Choi (SSU); 1♂11♀, Balsan-ri Sinbuk-myeon Chuncheon, 10 viii-8 x 1998, Jang (NIAST); 1♀, Nam-myeon Hongcheon, 9 ix 1990, Lee (SSU); 1♀, Noil-ri Bukbang-myeon Hongcheon, 18 ix 1993, Kim (NIAST); 2♀, Mt. Baekunsan Hwacheon, 6-7 viii 1984, Nam et al. (KU); 1♂, ibid. 15 viii 1996, Yoo (SSU); **<GG>** 2♂, Seoul, viii 1900, 1♂, Hon. Ella Scarlett (The Natural History Museum, London); 1♂, Malaise trap, Mt. Pakyon Pakyon pokpo garden of Parkyon rest home 27 km NE from Kaesong 600 m, 9 ix 1971, S. Horvatovich and J. Papp, No. 249 (Hungarian Natural History Museum, Budapest); Mt. Myeongjisan Gapyeong, 23 ix 1989, Oh (SSU); 1♀, Mt. Unaksan Gapyeong, 29 ix-1 x 1971, Anonym (SSU); 2♂, Ganghwa, 11-18 viii 1969, Yoon (EU); 1♀, Byeokje Goyang, 16 ix 1997, Chae (SSU); 1♀, Mt. Cheongyesan Gwacheon, 12 ix 1991, Cho (SSU); 1♂, Gwangneung, 5 ix 1954, Han (EU); 2♀, Mt. Mugapsan Gwangju, 5 viii-15 ix 1991, Park (SSU); 1♂, Ungogae Gwangju, 17 ix 1981, Park (SSU); 1♂, Mt. Taehwasan Gwangju, 19 vii 1996, Choi (NIAST); 1♂, Bogwangsa Gwangtan, 17 ix 1977, Lee (EU); 1♂, Gimpo, 3 ix 1954, Choi (EU); 1♂, Mt. Suraksan Namyangju, 15 ix 1991, Kim (SSU); 3♂2♀, Mt. Chukryeongsan Namyangju, 10 viii-14 x 1999, Kang et al. (SSU); 1♂, Deokso, 3 x 1971, Lee (EU); 1♂, Mt. Soyosan Dongducheon, 18 viii 1968, So (EU); 1♀, Munsan, 9 x 1972, Kim (KU); 1♂2♀, Namhansanseong Seongnam, 12-19 ix 1981, Kim et al. (SSU); 1♂, Songchu, 8 viii 1971, Lim (EU); 1♂, "Suigen" = Suwon, 7 viii 1932, Nakayama (NIAST); 1♀, light trap, ibid. 1 vii 1997, (NIAST); 1♂, Anseong, 12-15 viii 1994, Kim (SSU); 1♂, Mt. Yongmunsan Yangpyeong, 13 viii 1987, Kim (SSU); 2♂, Mt. Yumyeongsan Yangpyeong, 3 viii 1998, Sohn (SSU); 1♀, Uijeongbu, 29 ix 1984, Ahn (SSU); 1♀, Jakyakdo Ongjin Incheon, 26 ix 1992, Oh et al. (SSU); 1♂, Jangheung Goyang, 28 ix 1991, Paik (SSU); 1♀, Gemchon Paju, 29 viii 1990, Choi (SSU); 1♂1♀, Seolma-ri Paju, 18 viii 1984, Kim (SSU); 1♂1♀, Mt. Cheonmasan Pyeongnae, 13 viii-1 x 1981, Kim et al. (SSU); 1♂, Anjung Pyeongtaek, 29 vi 1992, Moon (SSU); 1♂, Pocheon, 30 vii 1993, Choi (NIAST); 1♂, Yeongpyeong Yeongjeong Pocheon, 18 viii 1996, Kim (SSU); 1♀, Hanam, 14 viii 1997, Kim (SSU); 1♀, Hyangnam-myeon Hwaseong, 18 ix 1988, Lee (SSU); 1♀, Mt. Garibong-dong Seoul, 16 ix 1979, Yoon (EU); 1♀, Gaepo-dong Seoul, 22 x 1995, Ryu (KU); 1♂, Mt. Gaehwasan, 25 vii 1998, Kim (SSU); 1♂, Gugi-dong Seoul, 7 ix 1986, Lee (KU); 1♂, Guui-dong Seoul, 11 viii 1995, Cho (SSU); 1♂1♀, Mt. Daemosan, 17-29 viii 1996, Kang et al. (SSU); 1♀, ibid. 29 viii 1998, Kang (SSU); 1♂, Mt.

Dobongsan, 5 viii 1974, Ku (EU); 1♂, Mia-dong Seoul, 10 viii 1977, Yoo (EU); 1♂, Bongcheon-dong Seoul, 8 viii 1990, Lee (SSU); 1♀, Mt. Bukhansan, 30 ix 1971, Lee (EU); 2♀, Bulgwang-dong, 25 ix 1971, Han (EU); 1♂3♀, Mt. Bulamsan, 14 vii-13 ix 1986, Jegal et al. (SSU); 2♂1♀, Sangdo-dong Seoul, 12-16 viii 1981, Han (SSU); 1♀, Seoul Univ. Campus, 28 viii 1998, Lee (SSU); 1♂, Seokgwan-dong Seoul, 15 vii 1971, Park (EU); 2♀, Mt. Suraksan, 3 x 1980, Kim (SSU); 1♂, Sinrim-dong, 17 viii 1985, Park (SSU); 1♂, Ui-dong Seoul, 4 ix 1981, Jeon (SSU); 1♀, Wolgye-dong Seoul, 12 viii 1985, Park (SSU); 1♂, Jahamun Seoul, 28 vii 1971, Lee (KU); 1♂, Jeonnong-dong Seoul, 10 vii 1986, Lee (SSU); 1♂, Jingwan-dong Seoul, 27 vii 1990, Jeong (SSU); 1♀, ibid. 21 ix 1992, Ham (SSU); 1♀, Hangang riverbed, 5 viii 1995, Kim (SSU); 1♂, Hwagok-dong Seoul, 24 viii 1981, Song (SSU); 1♀, Hyochang Park Seoul, 11 viii 1955, Lee (EU); **<CB>** 1♂, Jichon-ri Cheongcheon-myeon Goisan, 6 viii 1987, Lee (SSU); 1♀, Hwayang-ri Cheongcheon-myeon Goisan, 15 ix 1984, Kim (SSU); 1♂, Yeongdong, 17 viii 1995, Choi (NIAST); 1♂, Yeongpung, 18 viii 1986, Min (SSU); 1♂, Okcheon, 14 viii 1969, Yuk (EU); 1♂, Mt. Wolaksan Jecheon, 4 viii 1994, Moon (KU); 1♂2♀, Cheongju, 10-27 viii 1960, Jeong (EU); **<CN>** 1♂, Mt. Gyeryongsan Gongju, 4 viii 1973, Kim (KU); 1♀, ibid. 19 viii 1976, Lee (KU); 1♂, Jakgol Gongju, 8 viii 1982, Kim (SSU); 2♀, Mt. Maninsan Geumsan, 23 viii 1997, Lim (SSU); 4♂, Dusan-ri Dangjin, 12-17 viii 1984, Choi (SSU); 3♂, Daejeon, 9-23 viii 1997, Lim (SSU); 1♀, Daecheon Boryeong, 15 viii 1997, So (SSU); 1♂, Jiksan, 14 viii 1971, Park (EU); **<GB>** 1♂, Yeongnam Univ. Campus Gyeongsan, 30 viii 1988, Kim (YNU); 1♂, Daegu, 20 viii 1971, Kim (EU); 1♂, Bongsan-ri Gongseong-myeon Sangju, 12 viii 1985, Kim (SSU); 1♂, Yeongdeok, 9 viii 1996, An (SSU); 1♀, Mt. Juwangsan Cheongsong, 7 viii 1975, Kim (EU); **<GN>** 1♂, Mt. Bukbyeongsan Dongbu Geoje, 29 viii 2000, Lee (NIAST); 1♀, Jangmok Geoje, 13 x 1993, Yoon (SSU); 1♂, Gampo Ulju, 12 viii 1990, Shin (SSU); 1♂, Hongseong, 11 viii 1961, Park (KU). **<JB>** 1♀, Jeonju, 25 x 1995, Lee (NIAST); **<JN>** 1♂, Suncheon, 4 viii 1987, (KU); 1♂, Nohwa Wando, 19 viii 1982, Jang (SSU); 1♀, "Hakuyosan" = Mt. Baegyangsan Jangseong, 9 x 1921, Hasegawa (NIAST); 1♂, Mt. Daedunsan Haenam, 14 viii 1972, Kim (KU); **<JJ>** 1♂, Andeokgyegok, 16 viii 1990, Han (KU).

Description. <♂> Body coloration bright green with remarkable brown pattern from fastigium of vertex, along with pronotal disk, to stridulatory area. Head short and vertical, the height two times of the greatest width. Antennae pale with a few annulations distally. Fastigium of vertex compressed, very narrower than scape, not protruding beyond scape; antennal

socket narrower than scape. Pronotum saddle-shaped, anterior margin weakly concave, posterior margin widely round with a weak median concavity (Fig. 65); first transverse sulcus distinct as V-shaped. Paranotum with strongly slanting hind margin. Prothorasic lateral spiracle largely opened with small anterior lobe. Fore and middle femora with small ventral spinules. Fore and mid tibiae with six pairs of movable long spines. Fore tibia with swollen base, its hearing apparatus slit-shaped. All third and fourth tarsomeres more darkish; arolium between tarsal claws indistinct. Tegmina broad leaf-shaped, macropterous, surpassing half of hind tibia; stridulatory area as wide as hind margin of pronotum; RS branched from mid of R, apically with 2-3 branches; media with 4-6 pectinated branches (Fig. 67). Hind femur with 13-16 ventral spines on each inner and outer carinae apically; hind knee with inner and outer spines. Hind tibiae with 23-29 dorsal spines and 11-13 ventral spines on each inner and outer carinae. Last abdominal tergite truncated. Epiproct triangular, as long as basal width. Paraproct outwardly curved, slightly longer than epiproct. Cercus very thick in base, apically incurved, not more projecting beyond subgenital plate. Subgenital plate longer than basal width, strongly narrower in mid, its hind margin slightly concave. Stylus elongated, tapering apically, slightly shorter than subgenital plate (Fig. 66). **<♀>** Tegmina shorter and narrower than male, reaching just hind knee. Subgenital plate triangular, as long as basal width, its hind margin roundly tapered with a weak concavity at apex. Ovipositor sword-shaped, gently recurved, shorter than hind femur. **<Measurements>** BL 17-24 (HWL 31-40); PL 5.0-7.0; TL 23.0-36.0; HFL 18.0-22.5; OL 14.0-16.0.

Distribution. Korea, Japan, China (ssp. *hareyamai*: Honshu).

Remarks. To use the name *H. japonicus* has two problems. What is that, *H. japonicus* and *H. unicolor* have been confusedly referred in the past literatures, because of both external differences are not so clear hitherto although the keys have been provided (Karny 1907; Furukawa 1938; Ebner 1939; Furukawa 1941; Wang and Shi 2005). There is an accepted opinion in which those are defined to the sibling species with main difference is the pattern of male's calling song, moreover, both are biologically same species making the hybridization of F1, F2 (Inagaki et al. 1990, 1994). On the other sides, more profound implication is found in Kirby's work (1906: 287), that was *Tedla sellata* is synonymous with *H. mundus*. I had examined the *T. sellata* collected from "Corea" (Fig. 390) and syntype series of *T. sellata* in The Natural History Museum, London, however, those were composed of two more different species (web images available from OSF). That is *T. sellata* collected "Silhet" is synonymous with *H. mundus* with wider tegmina, but the male

collected from "Corea" is possibly identified to the *H. japonicus* with relatively narrower tegmina at present. In the circumstance of absent generic revision accompanies lectotype designation, it would be better to adopt that for the stability of nomenclature.

Superfamily Grylloidea 귀뚜라미상과

Body size generally moderate or smaller, the coloration nearly dark brown, yellow, or gray, the green form rare. Except Gryllotalpids, the antennae always longer than body length. Pronotum with neither median nor lateral carinae, transverse, its posterior margin truncated, not extending behind. Tegmina variable, when present, with stridulation right ventrally over left dorsally. All tarsi 3-segmented. Cerci long, flexible, not segmented. Subgenital plate without styli. More than 2,500 species present worldwide.

Key to Families of Grylloidea

1. Fore legs modified for digging; ovipositor aborted ····· **Gryllotalpidae** (p. 121)
- Fore legs simple; ovipositor distinctly needle-shaped ····· 2
2. Body without fine scales ····· **Gryllidae** (p. 125)
- Body entirely pubescent, covered with fine scales ····· 3
3. Eyes well developed; hind coxae widely separated ventrally ····· **Mogoplistidae** (p. 195)
- Eyes vestigial; hind coxae nearly touching ventrally ····· **Myrmecophilidae** (p. 198)

Family Gryllotalpidae 땅강아지과

As known as mole crickets. Relatively larger, body always covered with short and soft hairs, the coloration yellowish or dark brown. Head smaller and rather conical, much narrower than the pronotum. Antennae very short rarely in Ensifera. Only two ocelli present. Pronotum longer than wide, strongly convex dorsally. Fore legs modified for digging; femur with large apophyses ventrally, the spines of tibia and tarsus modified to dactylar. Hind legs short, unmodified for jumping rarely in Orthoptera. Male tegmina with stridulatory apparatus. Ovipositor obsolete rarely in Ensifera too. More than 82 species are known worldwide.

Subfamily Gryllotalpinae 땅강아지아과

Characters samely given in the family.

Genus *Gryllotalpa* Latreille 땅강아지속

1802. Histoire Naturelle generale et partculiere des Crustaces et des Insectes, 3(12): 275. Type species: *Gryllus* (*Acheta*) *gryllotalpa* Linnaeus 1758.

Diagnosis. Fore tibiae with four dactyls. Tympana covered, opening in the form of a slit. Basal spur of fore leg arising from the femur. Fore and hind wings present. Veins of lateral field of fore wings all pointing towards wing-tips (Townsend 1983). 57 species are known in the tropical and warmer temperate regions of the Old World, only one species is recorded in Korea.

46. *Gryllotalpa orientalis* Burmeister 1839 땅강아지 (Figs. 200, 228)

Gryllotalpa orientalis Burmeister 1839. Handbuch der Entomologie, Berlin, 2(2): 739. "Philippines: Manila". Lectotype ♂ in Museum für Naturkunde der Humbolt Universitat, Berlin.

Gryllotalpa africana nec Palisot de Beauvois 1805. Ins. rec. Afr. Amer. Orthopt.: 229. "Africa: Namibia". Neotype ♂ in Academy of Natural Sciences, Philadelphia.

Korean records. ***Gryllotalpa africana***: Shiraki 1911: 7; Okamoto 1924: 57 ("Quelpart"); Doi 1932: 39; Cho 1959: 151, Fig. 14 (manual); Kang and Son 1959: 23 (chromosome); Cho 1963: 163 (Is. Jejudo); Cho 1969: 768, pl. 52 (illustrated encyclopedia); Ju 1969: 21 (North Korean check list); Seok 1970: 175 (Is. Jejudo); Ju 1993: 286 (Mt. Baekdusan); Kim 1993: 76 (phonotaxis); ***Gryllotalpa orientalis***: Kwon and Huh 1994: 50 (Korean check list); Moon and Yoon 1994: 106 (KEI); Kwon et al. 1996: 104 (Korean species list); Bae 1998: 163; Storozhenko 2004: 233, Figs. 12, 593, 594.

Specimens examined. **<GW>** 1♀, Mt. Seokbyeongsan Sangye-ri Okgye-myeon Gangneung, 27-28 viii 2002, Kim TW (SSU); 1♀, Myeongryun-dong Wonju, 3 vii 1998, Kim SA (SSU); 1♀, Mt. Chiaksan Wonju, 14 viii 1987, Lee YM (SSU); 1♀, Dongsong Cheolwon, 8 ix 1998, Park JY (SSU); 1♀, Mt. Gyebangsan Pyeongchang, 18 vi 1993, Kim SY (SSU); 1♀, Nam-myeon Hongcheon, 13 viii 1990, Lee EJ (SSU); **<GG>** 1♀, Goyang-dong Goyang, 6 ix 1998, Kim JH (SSU); 1ex (immature maturation), Jeongbalsan Goyang, 1 vi 1997, Lee JY (SSU); 1♀, Seoul grand park Gwacheon, 15 v 1988, Kim HJ (SSU); 1♀, Mt. Cheonggyesan Gwacheon, 20 x 1983, Kim KJ (SSU); 1♂, Gwangneung, 10 ix 1988,

Kim HY (SSU); 2♀, Gwangmyeong, 24 v 1986, Kim HM (SSU); 1♂2♀, Eungogae Gwangju, 15 ix 1984, Kim MH et al. (SSU); 1♀, Inchang-dong Guri, 29 viii 1993, Seo EJ (SSU); 1♂, Jangneung Gimpo, 18 v 2004, Kim TW (SSU); 2♀, Naegok-2ri Jinjeop Namyangju, 19 v 2006, Moon GS (SSU); 3♂, Maseok, 17 ix 1988, Lee HJ et al. (SSU); 2♀, Yeokgok Bucheon, 20 vii-2 ix 1984, Kang MJ (SSU); 1♂1♀, Changgok Seongnam, 15-30 v 1992, Choi SM and Kim YH (SSU); 1♀, Yuljeon-dong Suwon, 7 x 1995, Paik YJ (SSU); 1♀, Sihwaho Is. Daebudo Ansan, 27 viii 2004, Kim TW (SSU); 4♀, Jeongok Yeoncheon, 22 viii-24 ix 1984, Jang SH (SSU); 1♂, Yongin, 20 viii 1989, Choi YJ (SSU); 1♂1♀, Gosan-dong Euijeongbu, 26 iv-7 viii 1992, Choi EA (SSU); 2♀, Dobongri Icheon, 17 v 2000, Kim SY (SSU); 1♀, Geumchon Paju, 30 viii 1991, Choi SY (SSU); 1♂, Mt. Cheonmasan Pyeongnae, 26 viii 1984, Lee SH (SSU); 2♂2♀, Hyangnam-myeon Hwaseong, 20 v-25 ix 1988, Lee MO and Kim JH (SSU); 2♂1♀, light trap, Sando-ri Songhae Ganghwa Incheon, 26 viii 2004, Lyu SM (SSU); **<CB>** 1♀, Mt. Songnisan Goesan, 3 x 1997, Park HJ (SSU); 1♀, Hwayang-ri Cheongcheon Goesan, 15 ix 1984, Kim YS (SSU); 1♂, Sojeong-ri Gunbuk Okcheon, 23 x 1996, Kim JI (SSU); 1♂1♀, Mt. Wolaksan Jecheon, 11 vii-11 viii 1991, Ko KM and Kim EK (SSU); 3♀, Miwon-myeon Cheongwon, 15 vii 1990, Lee EJ (SSU); 1♀, Mt. Cheongdeungsan Sancheok Chunju, 28 viii 2002, Kim TW (SSU); 1♀, Yongdu-dong Chungju, 27 iv 2003, Kim YJ (SSU); **<CN>** 1♀, Unsan Dangjin, 13 viii 1984, Choi HS (SSU); 1♂, Sapsido Boryeong, 26 vii 1995, Lee HY (SSU); 1♂2♀, Jangjon-dong Asan, 28 v 2006, Min Y (SSU); 1♂, Yesan, 24 viii 1986, Kim SM (SSU); 1♀, Hyudae-ri Asan, 20 ix 1992, Kim HJ (SSU); 1♀, Cheonan, 7 x 1996, Jeong JY (SSU); 1♀, Guryepo beach Taean, 12 vi 2005, Kim TW (SSU); 1♀, Anmyeon-eup Taean, 26 vii 1994, Kim RR (SSU); 1♂2♀, Gwangcheon-eup Hongseong, 19 viii-19 ix 1998, Yoo JS and Oh SK (SSU); **<GB>** 1♀, light trap, Mt. Geumosan Gumi, 19 vii 2001, Kim SY (SSU); 1♂, Bongsan-3ri Gongseong Sangju, 12 viii 1985, Kim OH (SSU); 1♂2♀, Baegwu-dong Sangju, 17-21 v 2006, Jeong MI and Cho HJ (SSU); 2♀, Galsan-ri Yeongpung, 18-30 viii 1986, Choi EY and Jeong EO (SSU); 1♀, Jeodong Is. Ulleungdo, 4 vii 1986, Kim YS (SSU); 1♂, Kaebatgol Yaeum Ulsan, 22 ix 1991, Sim SJ (SSU); 1♀, Mt. Baegamsan Uljin, 29 v 1999, Kim MH (SSU); 2♀, Secheon-ri Dasa-eup Dalseong-gul Daegu, 20 v 2006, Cho HJ (SSU); 1♀, Duseo-myeon Ulju, 11 ix 1992, Choi HJ (SSU); **<GN>** 1♂, Namsang Geochang, 3 ix 1989, Jeong KD (SSU); 1♂1♀, Geompo, 17 ix 1997, No JY and Ham MS (SSU); 1♂3♀, Hoehwa Goseong, 10 ix-3 x 1978, Jeong JS and Hwang MS (SSU); 1♀, Gyeseong Changnyeong, 30 v 1985, Kim YS (SSU); 1♀,

Bongjeon-ri Hamyang, 21 v 2000, Park JW (SSU); 1♂, Hapcheon, 12 ix 1992, Park HH (SSU); **<JB>** 1♂, Buan Gochang, 11 ix 1992, Choi HJ; 1♀, Mt. Seonwunsan Gochang, 25 vi 1991, Cho HJ (SSU); 1♂, Mt. Deogyusan Seolcheon Muju, 22 viii 2003, Lee JG (SSU); 7♀, light trap, Byeonsanbando Buan, 24 vi 1991, Ku HJ et al. (SSU); 1♀, Yongdeok Wanju, 26 vii 1996, Lee CH (SSU); 1♂, Sanoe-myeon Jeongeup, 1 ix 1998, Park HY (SSU); 1♂, Jinan, 13 v 2001, Kim EJ (SSU); **<JN>** 1♀, Jeumsimsa Dong-gu Gwangju, 31 vii 1988, Im WS (SSU); 1ex (immature maturation), Piagol Mt. Jirisan, 23 vi 1987, Yoo HJ (SSU); 1♂, Deokheung-dong Seo-gu Gwangju, 5 x 1998, Oh KO (SSU); 1♀, Hwaeomsa Gurye, 21 vi 1987, Lee HK (SSU); 2♂, Daedo-ri Munpyeong-myeon Naju, 13 v 2006, Kim YJ (SSU); 1♂, Samhakdo Sanjeong-dong Mokpo, 16 x 2004, Kim TW (SSU); 1♀, Soho-dong Yeosu, 23 ix 1991, Sim SJ (SSU); 1♀, Baeksu Yeonggwang, 13 viii 1985, Cho SR (SSU); 1♀, light trap, Nohwa-eup Wando, 19 viii 1982, Kim JI (SSU); **<JJ>** 1♀, Gwaneumsa, 12 viii 1994, Moon HJ (SSU); 1ex (immature maturation), Seongsan-eup Namjeju, 5 v 1997, Kim YE (SSU); 1♀, Seonheul-ri Bukjeju, 4 viii 1994, Moon HJ (SSU); 1♀, Jeongbangpokpo Dongheung-dong Seoguipo, 9 vii 2002, Kim TW (SSU); 1♂1♀, Ora-dong Jeju, 28 ix 1996, Jeong HJ (SSU).

Description. **<♂>** Body elongated cylindrical, the coloration dark brown dorsally, more yellowish brown ventrally. Head conical, shorter and narrower than pronotum; antennae slender filiform as long as head and pronotum combined length; scape slightly longer than wide; antennal socket with raised outer margin touching with inner lower margin of eye; two white elliptical ocelli present between upper margin of eyes. Neck with a pair of small tubercles. Pronotum roundly cylindrical and pubescence with yellowish hairs, its anterior margin roundly concave, posterior margin roundly convex; pronotal disk mesally with a pair of longitudinal depressions; paranotum shorter than pronotal length, with roundly upraised lower margin. Front legs short and very thick, modified for digging; coxae widely separated and thick, wider than long, with three blunted inner lobes; femoral base with a large ventral process, its length 1.5 times longer than basal width, its apex triangularly acute towards up; tibia widened apically, with four ventral dactyls, among which anterior two with basal sockets, modified from spines; only slit-shaped inner tympanum present; second and third tarsomeres modified to blades, first tarsomere with two small claws not curved spiniform. Tegmina largely oval-shaped, mesopterous, covering more half of abdomen, slightly longer than pronotal length; stridulatory files and mirror area well spaced as elongated triangular-shape. Hind wings macropterous, in folding state fully surpassing abdominal end,

tail-shaped. Mesonotum with a large longitudinal median projection. Middle leg with bilobed coxa; tibia shorter than femur, with four apical spurs; basitarsus and second tarsomere each with a ventro-apical spine. Hind leg with arch-form femur, longer than tibia; tibia with four inner dorso-apical spines, one outer dorso-apical spur, four inner ventro-apical spurs and three ventro-apical spines; basitarsus as long as two remaining tarsomere combined length, with a large ventro-apical and a small outer-apical spines. Cercus as long as hind femur. **<♀>** Tegmen without dorsal mirror area as like to male's elongated triangular-shape. **<Measurements>** BL 23.0-33.6; PL 6.8-9.0; TL 7.5-14.6; HFL 7.3-10.0.

Distribution. Korea, Japan, China, Taiwan, Philippines, Indonesia, Hawaii (introduced).

Remarks. I found out three small-sized specimens with abnormally short tegmina and degenerated hind wings from three different localities. At glimpse which were similar to the nymphs, but judging from the tegminal condition and venation those are absolutely adults. It is suspected that the case of immature maturation induced by physiological fails in those long life-span (semivoltinism) rather than another distinct species.

Family Gryllidae 귀뚜라미과

Typical family of the Grylloidea. Body size variable 4.5-50 ㎜, nearly dark black, brown, or yellowish brown. Head globular, but sometime peculiarly modified especially in the male. Male tegmina with well developed stridulatory apparatus. Hind tibia with well developed dorsal spurs or spines. More than 800 species present worldwide.

Key to Subfamilies of Gryllidae

1. Head prognathous; tarsal claws bifurcate ····· **Oecanthinae** (p. 126)
- Head hypognathous; tarsal claws simple ····· 2
2. Head and pronotum with numerous punctures; pronotum longer than wide ····· **Sclerogryllinae** (p. 130)
- Head and pronotum without punctures; pronotum wider than long ····· 3
3. Genae under eyes with large areas covered by furrows; hind tibia with basal small spinules and distal large spines on dorsal both sides ····· **Landrevinae** (p. 132)
- Genae under eyes smooth; hind tibia with distal large spines only, without basal small

spinules on dorsal both sides ····· 4

4. Hind tibia with only large movable dorsal spines on distal both sides, without small spines ····· 5

– Hind tibia with large movable dorsal spines and small spines between them together on distal both sides ····· 7

5. Size larger, more than 10 ㎜; hind basitarsus with dorsal spinules ····· **Gryllinae** (p. 133)

– Size smaller, less than 10 ㎜; hind basitarsus without dorsal spinules ····· 6

6. Hind tibia distinctly shorter than hind femur; second tarsomere compressed without ventral pubescence ····· **Nemobiinae** (p. 164)

– Hind tibia as long as hind femur; second tarsomere depressed with ventral pubescence ····· **Trigonidiinae** (p. 182)

7. Second tarsomere minute, compressed ····· **Cachoplistinae** (p. 188)

– Second tarsomere roundly depressed ····· 8

8. Fore tibia without tympana; tegmina micropterous, reaching less than half of abdomen, without stridulatory apparatus; tarsal claws ventrally toothed ····· **Euscyrtinae** (p. 190)

– Fore tibia with distinct tympana; tegmina macropterous, covering all abdomen; male with well developed stridulatory apparatus; tarsal claws simple ····· 9

9. Fore and mid femora longer than pronotum; fore tibia with straight inner base ····· **Eneopterinae** (p. 192)

– Fore and mid femora shorter than or as long as pronotum; fore tibia with swollen inner base ····· **Podoscirtinae** (p. 194)

Sufamily Oecanthinae 긴꼬리아과

Body shape very slender and delicate. Head strongly prognathus. Pronotum much longer than wide. Tarsal claws cleft or bilobate. Male tegmina with very large mirror area which is about a half as long as entire tegmina and has two dividing veins; harp with 2–5 veins. Fore tibia with large inner and outer tympana. Male metanotum with glandular pore. Hind femur hardly thickened. Hind tibia either with spurs and spines. More than 70 species widespread in temperate and tropical parts.

Genus *Oecanthus* Audinet-Serville 긴꼬리속

1831. Annales des Sciences Naturelles, Paris, 22(86): 38. Type species: *Gryllus pellucens*

Scopoli 1763.

Diagnosis. Coloration pale white, body depressed, anteriorly narrower. Cercus straight and as long or longer than mid tibia. Hind tibiae with 2−5 inner and outer subapical spurs and with small immovable spines above and between spurs. Cu1 vein straight. 62 species are known worldwide, the measurements of two Korean *Oecanthus* compared in Table 10.

Key to Species of *Oecanthus*

1. Ventral sternums pale, unicolorous with body; ♂ tegmina with wide mirror area, as wide as long (Fig. 215); ovipositor shorter, less than 8.5 ㎜ ····· ***O. euryelytra*** (p. 127)
− Ventral sternums dark black; ♂ tegmina with narrow mirror area, longer than wide (Fig. 214); ovipositor longer, more than 9.5 ㎜ ····· ***O. longicauda*** (p. 128)

47. *Oecanthus euryelytra* Ichikawa 2001a 흰배긴꼬리 (Figs. 215, 234)

Oecanthus euryelytra Ichikawa 2001a. Tettigonia, 3: 49, Figs. 26, 29, 33, 34. "Japan". Holotype ♂ in Osaka Museum of Natural History.

Korean records. ***Oecanthus euryelytra***: Ichikawa et al. 2000: 281, Figs. 13e, f, 41, pl. 50 (Korea); Ichikawa 2001a: 49.

Specimens examined. **<CN>** 4♂3♀, Hagampo beach Wonbuk−myeon Taean, 8 ix 2005, Kim TW (SSU); **<JN>** 1♂, Mt. Daedaesan Nam−myeon Yeocheon, 3 viii 1993, Gho BR (GSU); 1♀, Dumo−ri Nam−myeon Yeocheon, 19−21 vii 1993, Park JS (GSU); 1♂, Simpo Nam−myeon Yeocheon, 19 vii 1993, Jeon JS (GSU); 8♂6♀, Is. Ando Nam−myeon Yeocheon, 21 vii−4 viii 1993, Ku DS et al. (GSU); 2♂2♀, Is. Yeondo Nam−myeon Yeocheon, 21 vii 1993, Ku DS et al. (GSU); 3♂3♀, Uhak−ri to Jangji−ri Nam−myeon Yeocheon, 19 vii−4 viii 1993, Ku DS et al. (GSU); 1♂1♀, Myeongsasimni beach Sin−ri Is. Sinji−do Wando, 16 vii 2003, Kim TW (SSU); **<JJ>** 1♀, Hamdeok−ri Jocheon−myeon Bukjeju, 8 vii 2002, Kim TW (SSU); 6♂1♀, Hallim Bukjeju, 10 x 1999, Kim TW (SSU).

Description. **<♂>** Body depressed, the coloration pale bright green or rarely brown. thorax and abdominal sternites concolorous with body. Head as wide as anterior margin of pronotum, with anteriorly projected mouth parts, prognathus; vertex flattened, interocular distance 1.7 times wider than horizontal diameter of an eye; scape longer than wide; distance between antennal sockets narrower than horizontal diameter of an antennal socket. Pronotum elongated, 1.2 times longer than wide in dorsal view; anterior margin weakly

convex, posterior margin weakly sinuated; lateral lobe of pronotum shorter than pronotal length. Tegmina macropterous, wider than hind margin of pronotum, its apex widely rounded; two harp veins present; mirror area wider, divided, as long as wide; apical area vestigial; lateral filed largely covering abdominal sides. Hind wings transparent, in folding state tail-shaped, just surpassing tegminal end. Fore tibia swollen in basal half, with largely elliptical tympana on both sides. Tarsal arolium undeveloped, claws bifurcated. Hind femur 2.2 times longer than middle femur. Hind tibia with numerous small dorsal spines on both sides and four inner, three outer large spines apically. Hind basitarsus two times longer than remaining two tarsomeres combined length, with a pair of small dorso-apical spines. Cercus as long as middle femur. **<♀>** Tegmina with narrower postcubital area than male. Cercus surpassing three quarters of ovipositor. Ovipositor as long as hind femur, its apex rather swollen and strongly toothed.

Distribution. Korea, Japan.

48. *Oecanthus longicauda* Matsumura 1904 긴꼬리 (Figs. 214, 235)

Oecanthus longicauda Matsumura 1904. Thousand Insects of Japan, 1: 136, pl. 6, Fig. 10. "Japan: Sapporo". Lectotype ♂ in Hokkaido University, Sapporo.

Oecanthus indicus nec Saussure 1878. Mémoires de la Société de Physique et d'Histoire Naturelle de Genève, 25: 454. "India: Bombay". Syntype in Museum d'Histoire Naturelle, Geneva.

Korean records. ***Oecanthus longicauda***: Shiraki 1930: 221 ("Gesseiji" = Woljeonsa); Doi 1932: 39; Wu 1935: 72 (Catalogus Insectorum Sinensium); Cho 1959: 148, Fig. 9 (manual); Cho 1969: 772, pl. 53 (illustrated encyclopedia); Ju 1969: 20 (North Korean check list); Ichikawa et al. 2000: 280, Figs. 13a-c, pl. 47, 48; Hua 2000: 55 (Chinese list); Storozhenko 2004: 229, Figs. 499, 589-591; ***Oecanthus longicaudus*** [!]: Storozhenko 1986: 265, Fig. 127(7), 129(2); Kwon et al. 1996: 104 (Korean species list); ***Oecanthus indicus***: Tadauchi 1989: 50 (Japanese check list); Kwon and Huh 1994: 49 (Korean check list); Moon and Yoon 1994: 105 (KEI); Bae 1998: 152; Hua 2000: 55 (Chinese list).

Specimens examined. <GW> 3♂2♀, Buyeongyegok Samsan-ri Gangneung, 18-20 viii 2001, Kim JI (SSU); 4♂5♀, Mt. Seokbyeongsan Sangye-ri Okgye-myeon Gangneung, 27-28 viii 2002, Kim TW (SSU); 10♂17♀, Gojindong Mt. Geonbongsan Goseong, 28 viii 1990, Kim JI et al. (SSU); 3♂3♀, Heul-ri Jinburyeong Goseong, 31 viii 1984, Chang KS and Kim YS (SSU); 1♀, Gilgokcheon Nogok-3ri Wondeok-myeon Samcheok, 24 ix 2005, Kim TW

(SSU); 2♂1♀, Baekdamsa Mt. Seoraksan, 24 ix 2000, Yeo JD and Kim WM (KU); 1♀, Mt. Seoraksan Seorakdong Sokcho, 26 viii 2002, Kim TW (SSU); 1♀, Mt. Dusolsan Yanggu, 28 viii 2003, Kim JK (SSU); 2♂8♀, Sadanggol Yanggu, 27 ix 2002, Jeong MP (SSU); 3♀, Mt. Sambangsan Gonggi-ri Yeongwol, 27 viii 2001, Kim SY and Kim AY (SSU); 2♂7♀, Ssangyong Yeongwol, 13 viii-7 ix 1998, Jang SJ et al. (NIAST); 1♀, Mt. Taehwasan Gunggol Heungwol-ri Yeongwol, 28 viii 2001, Kim SY and Kim AY (SSU); 1♀, Mt. Chiaksan Wonju, 28 vii 1994, Shin YJ (SSU); 3♂9♀, Seohwa Inje, 29 viii 1990, Park HC (SSU); 1♀, Seokda-dong Cheolwon, 11 ix 1990, Kim JI (SSU); 1♀, Gangchon Chungseong, 26 viii 1989, Jeong GD (SSU); 2♂7♀, Balsan-ri Chuncheon, 25-28 viii 1998, Anonym (NIAST); 1♂, Mt. Taebaeksan Taebaek, 19 ix 2001, Kim TW (SSU); 2♂4♀, Mt. Soppulsan Duchon Hongcheon, 25 viii 2002, Kim TW (SSU); 1♀, Haesanryeong Hwacheon, 13 ix 2000, Kim SS (SSU); **<GG>** 1♀, Mt. Chukryeongsan Naebang Gapyeong, 10 viii 1999, Kim TW (SSU); 2♂1♀, Seungcheonsa Mt. Myeongjisan Gapyeong, 15 viii-8 ix 2001, Kim SY and Kim AY (SSU); 8♂9♀, Mt. Hwayasan Gapyeong, 20 viii 2002, Jeong MP (SNU); 1♂, Mt. Daegeumsan Dumil-ri Ha-myeon Gapyeong, 2 ix 2006, Kim TW (SSU); 2♂2♀, Yeocha-ri Ganghwa, 21 viii-4 ix 1996, Han SM (KU); 3♂1♀, Namhansanseong Gwangju, 11 ix 1995, Min Y and Cho SE (SSU); 1♂5♀, Mt. Mugapsan Gwangju, 5 viii-15 ix 1991, Kim JI and Park HC (SSU); 1♂, Inchang-dong Guri, 29 viii 1993, Seo EJ (SSU); 1♂2♀, Baekhak reservoir Misan Yeoncheon, 28 viii 2002, Jeong MP (SNU); 1♀, Mt. Cheondeoksan Sinseo Yeoncheon, 12 viii 1987, Yoo HJ (SSU); 9♂5♀, Mt. Gamaksan Paju, 8 ix 1984, Kim JI and Chang KS (SSU); **<CB>** 1♂, Hwajangam Mt. Taehwasan Osa-ri Danyang, 27 viii 2001, Kim SY and Kim AY (SSU); 7♂, Guinsa Mt. Sobaeksan Danyang, 3 viii 1994, Yeongnam Univ. (YNU); 1♂, Daemok-ri Mt. Songnisan, 9 viii 1990, Kim JI (SSU); 2♀, Mt. Wolaksan Jecheon, 29 viii 1994, Kim JH (SSU); 1♂, Deokgok-ri Jecheon, 28 viii 1998, Oh KO (SSU); 1♂1♀, Mt. Namsan Chungju, 24 viii-27 ix 2000, Kim SY and Kim AY (SSU); 27♂15♀, sweeping, Mt. Cheongdeungsan Sancheok-myeon Chungju, 28 viii 2002, Kim TW (SSU); **<CN>** 1♂, Mt. Seodaesan Sundang-ri Chubu-myeon Geumsan, 28 ix 2002, Kim AY (SSU); **<GB>** 1♀, Mt. Sobaeksan Ponggi Yeongju, 13 viii 1999, Kim TW (SSU); **<GN>** 1♀, Geumsan Sinjeon-ri Idong-myeon Namhae, 24 viii 1990, Ku DS (GSU); 1♂, Mt. Bulmosan Changwon, 20 viii 1996, Jeon JH (SSU); 1♂, Ineomijae Seokgye-dong Jukjeon-ri Gaya-myeon Hapcheon, 21 viii 1997, Anonym (GSU); **<JN>** 1♂, Is. Anmado Yeonggwang, 18 viii 1989, Kim JI (SSU).

Description. **<♂>** Body depressed, the coloration pale bright green or white, ventral aspects of thorax and abdominal sternites darkish black. Head as wide as anterior margin of pronotum, with anteriorly projected mouth parts, prognathus; vertex flattened, interocular distance 1.2 times wider than horizontal diameter of an eye; scape longer than wide; distance between antennal sockets narrower than horizontal diameter of an antennal socket. Pronotum elongated, 1.5 times longer than wide in dorsal view; anterior margin weakly convex, posterior margin weakly sinuated; lateral lobe of pronotum shorter than pronotal length. Tegmina macropterous, wider than hind margin of pronotum, its apex widely rounded; three harp veins present; mirror area narrower, divided, longer than wide; apical area vestigial; lateral filed largely covering abdominal sides. Hind wings transparent, in folding state tail-shaped, surpassing tegminal end. Fore tibia swollen in basal half, with largely elliptical tympana on both sides. Tarsal arolium undeveloped, claws bifurcated. Hind femur 2.2 times longer than middle femur. Hind tibia with numerous small dorsal spines on both sides and three inner, 2-3 outer large spines apically. Hind basitarsus 2.2 times longer than remaining two tarsomeres combined length, with a pair of small dorso-apical spines. Cercus as long as middle femur. **<♀>** Tegmina with narrower postcubital area than male. Cercus reaching a half of ovipositor. Ovipositor slightly longer than hind femora, its apex rather swollen and strongly toothed.

Distribution. Korea, Japan, Northest China, Russian Far East.

Table 10. Measurements of *Oecanthus* spp.

Species	BL	HWL	PL	TL	HFL	OL
O. euryelytra	11.9-13.5	13.7-19.3	2.0-2.5	10.7-12.3	7.3-8.7	7.5-8.5
O. longicauda	10.2-14.5	13.6-20.5	2.3-2.6	9.9-12.4	7.5-9.2	9.9-10.5

Subfamily Sclerogryllinae 곰방울벌레아과

Body shining, the tegmina thick and hard Coleopteroid-shaped. Frons wide, nearly flattened. Male tegmina with well developed stridulatory apparatus. Ovipositor needle-shaped. Only two genera *Sclerogryllus* and *Rhabdotogryllus* are known in South Asia and Africa.

Genus *Sclerogryllus* Gorochov 곰방울벌레속

1985. The fauna and ecology of insects of Vietnam: 15. Type species: *Gryllus* (*Scleropterus*)

coriaceus de Haan 1842.

Diagnosis. Body smaller, dark black. Head globular, punctated. Antennae white in middle segments. Pronotum longer than wide, punctated. Male tegmina with well developed stridulatory apparatus. Fore tibia with oval-shaped tympana. Five species are known in the Oriental Region, one species known in Korea.

49. *Sclerogryllus punctatus* (Brunner von Wattenwyl 1893) 곰방울벌레 (Figs. 196-197)

Scleropterus punctatus Brunner von Wattenwyl 1893. Annali del Museo Civico di Storia Naturale 'Giacomo Doria', Genova, (2)13: 204, pl. 6, Fig. 73b. "Burma = Myanmar". Holotype ♀ in Museo Civico di Storia Naturale, Genova.

Korean records. *Sclerogryllus punctatus*: Kim et al. 2006: 177 (Taean).

Specimens examined. **<CN>** 1♂, Baramarae beach Is. Anmyeondo Taean, 30 ix 2006, Yoo IS (SSU); **<JJ>** 1♂1♀, Seonheul-ri Jocheon Bukjeju, 10 x 1999, Kim TW (NIAST); 1♂4♀, ibid. 28 ix 2000, An MK (NIAST); 1♀, Musucheon Aewol Bukjeju, 9 x 1999, Kim TW (NIAST); 1♂1♀, rearing from nymphs, Andeokgyegok Andeok-myeon Namjeju, 13 viii-13 ix 2004, Kim TW (SSU).

Description. <♂> Body coloration dark shining black, appendages more brighter than body apically. Head small, globular, shorter than pronotum, narrower than hind margin of pronotum; integument finely punctated as with pronotum; eyes widely separated, interocular distance 2.5 times wider than horizontal diameter of an eye in dorsal view; median ocellus transverse elliptical, smaller than lateral ocelli, just located below of between lateral ocelli; antennae blackish filiform, with whitish middle antennomeres composed of seven; scape as long as wide; interspace of antennal sockets two times wider than horizontal diameter of an antennal socket situated inner lower margin of eye. Pronotum slightly longer than middle femur, 1.2 times longer than wide in dorsal view; front margin weakly concave, narrower than widened hind margin truncated; lateral lobe of pronotum shorter than pronotal length. Tegmina dark black, macropterous, wider than hind margin of pronotum, two times longer than pronotum, its apex reaching hind knee; six harp veins present; mirror area divided, 1.5 times wider than long; apical area very short and vestigial, with two rows of cells; lateral field as deep as lateral lobe of pronotum, mostly covering lateral sides of abdomen. Hind wings vestigial. Fore tibia with oval-shape tympana, outer one larger than inner one, the base not swollen. Hind femur two times longer than middle femur. Hind tibiae only with numerous small dorsal spines, without large spines; inner largest apical spur as long as a

thirds of basitarsus. Hind basitarsus two times longer than remaining two tarsomeres combined length, with dorsal spinules on both sides; inner apical spur as long as a half of last tarsomere. Middle tarsomere minute, compressed. Subgenital plate as long as basal width, its hind margin narrowly rounded. **<♀>** Middle five antennomeres whitish. Tegmina just reaching abdominal end, its apex narrowly rounded; integument corneous, space between the longitudinal veins filled by very irregular transverse veinlets, forming small impressed areolae; lateral field with apical stratum meet with dorsal apex. Subgenital plate triangularly rounded, wider than long, its hind margin narrowly concave. Ovipositor gently recurved, with apical valves presenting ten teeth. **<Measurements>** BL 9−10, PL 2.5−3.0, TL ♂ 6.0; ♀ 4.5, HFL 5.0−5.5, OL 5.0−5.5.

Distribution. Korea, Japan, Taiwan, Vietnam, India, Myanmar, Indonesia.

Subfamily Landrevinae 뚱보귀뚜라미아과

Body large and flattened. Upper lobe of clypeus not swollen. Tegmina micropterous, covering less than half the abdomen; harp usually with at least five veins. Genae under eyes with large areas covered by furrows. Hind tibia with two rows of basal small spinules and distal large spines on dorsal both sides.

Genus *Duolandrevus* Kirby 뚱보귀뚜라미속

1906. Synonymic Catalogue of Orthoptera, 2(1): 50. Type species: *Gryllus brachypterus* de Haan 1842.

Diagnosis. Tegmian shortened, hind wings absent. Fore tibia with inner and outer tympana. Body strongly chitinized. Head broader than pronotum, conspicuously broadened blew the eyes. Epiphallus with a pair of large hind lateral processes and usually bifurcated small hind medial process. About 50 species are known in the world, one species known in Korea.

50. *Duolandrevus ivani* (Gorochov 1988) 뚱보귀뚜라미 (신칭) (Figs. 169, 198−199)

Eulandrevus ivani Gorochov 1988. The fauna and ecology of insects of Vietnam: 8, Fig. 10. "Japan: Nagasaki". Holotype ♂ in Zoological Institute of the Russian Academy of Sciences, St. Petersburg.

Landrevus coulonianus nec Saussure 1877. Mémoires de la Société de Physique et d'Histoire Naturelle de Genève, 25: 273, pl. 14, Fig. 1. "Java". Holotype ♂ in Neuchatel.

Korean records. *Duolandrevus coulonianus*: Kim and Oh 1991: 149 (Is. Jejudo).

Specimens examined. <JJ> 1♂1♀, Andeokgyegok Andeok-myeon Namjeju, 11 x 1999, Kim TW (NIAST); 1♂4♀, ibid. 26 ix 2000, Kim TW and Kim MA (NIAST).

Description. <♂> Body depressed, the coloration dark shining brown. Head globular, wider and longer than pronotum; vertex dark brown without strips; interocular distance three times wider than horizontal diameter of an eye; fastigium of vertex shorter than basal width, as wide as an eye, wider than a scape; scape wider than long; genae under eyes with a large area covered by furrows; head in frontal view wider than height; palpi dark brown. Pronotum shorter than fore femur, two times wider than long; anterior margin weakly concave, posterior margin truncated, pilose; V-shape sulci present posteriorly in mid of disk; lateral lobe of pronotum shorter than pronotal length. Tegmina micropterous, just covering the half of abdomen, posterior margin truncated; five harp, three cord veins present; mirror area not divided, but densely netted, 1.5 times wider than long; apical area vestigial; lateral field deeper than lateral lobe of pronotum, its lower margin round and bright. Hind wings absent. Fore tibia with a pair of small round inner and outer tympana, inner one slightly larger than outer one. Hind femur 2.5 times longer than middle femur. Hind tibia with small spinules in basal part and four inner, five outer large movable spines apically; the largest inner apical spur shorter than a half of basitarsus. Hind basitarsus with dorsal spinules, two times longer than remaining two tarsomeres combined length; inner apical spur shorter than last tarsomere. Cercus longer than hind tibia, but shorter than hind femur. **<♀>** Tegmina shorter than male, not reaching the half of abdomen; as long as pronotal length; hind margins obliquely truncated to insides. Cercus slightly shorter than ovipositor. Subgenital plate triangular, shorter than basal width, its hind margin V-shape notched. Ovipositor straight, needle-shaped, as long as hind femur. **<Measurements>** BL 23.5-25.5; PL 3.6-3.8; TL ♂ 8.5, ♀ 4.5; HFL 14.5-15.5; OL 14.0-15.2.

Distribution. Korea (Is Jejudo: new record), Japan.

Subfamily Gryllinae 귀뚜라미아과

As known as field-, house-, or ground crickets. Nearly dark black, brown, yellowish gray. Head generally round, antennae inserted top of the head. Hind tibia with strong dorsal spines, small spinules absent between them. Second tarsomere compressed. Tegmina well developed, sometime reduced. Male tegmina possessed well developed stridulatory apparatus. More than

800 species are known in the world.

Key to Species of Gryllinae

1. Body yellowish bright brown; fastigium of vertex narrower, as wide as horizontal diameter of an antennal socket (Fig. 167) ····· ***Gryllodes supplicans*** (p. 136)

− Body dark brown to black; fastigium of vertex wider, as wide as 1.5−3.2 times of horizontal diameter of an antennal socket ····· 2

2. Size larger, more than 17 ㎜; head globular and similar in both sexes ····· 3

− Size smaller, less than 16 ㎜; head largely modified to peculiar shapes in ♂, different with simple one of ♀ ····· 6

3. Head wholly black without bright areas between eyes and lateral ocelli ····· 4

− Head rather dark brownish, with bright areas between eyes and lateral ocelli ····· 5

4. Tegmina macropterous, with a pair of bright yellowish markings in base (Fig. 154) ····· ····· ***Gryllus bimaculatus*** (p. 138)

− Tegminal mesopterous, without bright color markings (Fig. 153) ····· ····· ***Gryllus sibiricus*** (p. 139)

5. Head with rather bright frons, superior margins of eyes brightly rimed and linked (Fig. 171) ····· ***Teleogryllus emma*** (p. 141)

− Head almost black, with a pair of small bright areas between eyes to lateral ocelli (Fig. 170) ····· ***Teleogryllus infernalis*** (p. 144)

6. Size smaller, less than 9 ㎜; hind basitarsus with a few dorsal setae on both sides ····· ····· ***Comidogryllus nipponensis*** (p. 146)

− Size larger, more than 10 ㎜; hind basitarsus with a lot of dorsal spinules on both sides ····· 7

7. Head almost black, without distinct transverse stripe between lateral ocelli (Fig. 173); legs yellowish bright brown ····· ***Mitius minor*** (p. 147)

− Head with a transverse stripe between lateral ocelli; legs mottled or speckled ····· 8

8. Head nearly round, as wide as anterior margin of pronotum in dorsal view of both sexes, the height as same with width in anterior view (Fig. 172) ····· ····· ***Modicogryllus siamensis*** (p. 149)

− Head much flattened or roundly inclined, wider than anterior margin of pronotum in ♂, weakly inclined in ♀, the height higher than width in anterior view ····· 9

9. Fastigium of vertex between lateral ocelli largely protruding, frons strongly flattened and oblique in ♂ (Figs. 174−177); ♀ tegmina nearly reaching abdominal end ····· 10

− Vertex and frons roundly merging, with prolonged mandible in ♂ (Figs. 178−180); ♀ tegmina covering two thirds of abdomen, not reaching abdominal end ····· 13

10. ♂ frontal shield under eyes broadening upwardly, on sides forming horizontally directed projections (Fig. 174) ····· ***Loxoblemmus doenitzi*** (p. 151)

− ♂ frontal shield under eyes broadening downwardly or with nearly parallel side margins, without projections ····· 11

11. ♂ scape without distinct process; maxillary palpi composed of almost bright segments; hind femur longer, more than 9 ㎜ ····· ***Loxoblemmus magnatus*** (p. 153)

− ♂ scape with distinct outer process; maxillary palpi composed of greyish segments, apical segment more darkish; hind femur shorter, less than 9 ㎜ ····· 12

12. ♂ tegmina with broad dorsal field, mirror area as long as wide, apical area shorter than mirror area (Fig. 208); ovipositor slightly shorter than hind femur ····· ····· ***Loxoblemmus campestris*** (p. 154)

− ♂ tegmina with narrow dorsal field, mirror area longer than wide, apical area as long as mirror area (Fig. 209); ovipositor equal to or slightly longer than hind femur ····· ····· ***Loxoblemmus equestris*** (p. 157)

13. ♂ with elongated mandibles, clypeal suture transverse upper than mid in head (Fig. 178); ovipositor shorter than hind femur ····· ***Velarifictorus aspersus*** (p. 159)

− ♂ with moderate mandibles, clypeal suture transverse lower than mid in head; ovipositor as long as or longer than hind femur ····· 13

14. Head with distinct transverse stripe ㅅ−shaped between lateral ocelli (Fig. 179); ovipositor longer than hind femur ····· ***Velarifictorus micado*** (p. 161)

− Head without distinct transverse stripe between lateral ocelli which reduced ecdysial line (Fig. 180); ovipositor as long as hind femur ····· ***Velarifictorus ornatus*** (p. 163)

Genus *Gryllodes* Saussure 희시무루귀뚜라미속

1874. Mission scientifique au Mexique et dans l'Amerique centrale, 6: 409. Type species: *Gryllus sigillatus* Walker 1869 by monotypy.

Diagnosis. Fore tibia only with outer tympanum, inner tympanum absent. Tegmina with mirror area divided by single vein; harp with two veins; apical area short and vestigial. Posterior quarter pronotum dark. Spermatophore with large spermatophylax. Mesal lobes wit their

apices lying between the bases of the ectoparameres.

51. *Gryllodes supplicans* (Walker 1859) 희시무루귀뚜라미 (Figs. 151–152, 167, 201)

Acheta supplicans Walker 1859. Annals and Magazine of Natural History, London, (3)4: 221. "Ceylon = Sri Lanka". Holotype ♀ in The Natural History Museum, London.

= *Gryllus sigillatus* Walker 1869. Catalogue of the Specimens of Dermaptera Saltatoria in the Collection of the British Museum, 1: 46, No. 90. "Australia: Swan river". Holotype ♀ in The Natural History Museum, London. [Kevan 1980]

Korean records. ***Gryllodes sigillatus***: Shiraki 1930: 217 ("Keijo" = Seoul); Doi 1932: 38; Bey-Bienko 1933: 325; Wu 1935: 65 (Catalogus Insectorum Sinensium); Cho 1959: 145, Fig. 3 (manual); Cho 1969: 769, pl. 52 (illustrated encyclopedia); Hua 2000: 54 (Chinese list); ***Gryllodinus sigillatus***: Ju 1969: 19 (North Korean check list: 부엌귀뚜라미); ***Gryllodes supplicans***: Storozhenko 1986: 266, Fig. 128(1); Kwon and Huh 1994: 49 (Korean check list); Moon and Yoon 1994: 105 (KEI); Kwon et al. 1996: 104 (Korean species list); Bae 1998: 158; Storozhenko 2004: 195, Figs. 501, 522–524; ***Grylodes*** [!] ***sigillatus***: Tadauchi 1989: 48 (Japanese check list).

Specimens examined. **<GW>** 1♂, Madal-ri Goseong, 16 ix 1978, Bae KH (KU); **<GG>** 1♀, Daeseong-ri Gapyeong, 7 x 1984, Seo YM (SSU); 1♀, Gwacheon, 2 vi 1978, Park JH (KU); 1♂, Musulgogae Gwangju, 8 v 1983, Kim KJ (SSU); 1♀, Maseok, 17 ix 1988, Jeon SJ (KU); 1♂, Saeter, 23 v 1987, Ban SJ (SSU); 1♀, Siheung, 13 x 1980, Yoon SB (SSU); 1♂, Bisan Anyang, 30 x 1981, Shin GH (SSU); 1♂, Cheonhyeon Paju, 2 viii 1981, Park GM (SSU); 1♂, Mt. Cheonmasan Pyeongnae, 11 ix 1982, Kim SS (SSU); 1♀, Mt. Gwanaksan Seoul, 13 xi 1982, Kim HS (SSU); 1♂, Gongjuneung Beon-dong Dobong-gu Seoul, 16 ix 1984, Kim GH (SSU); 3♂, Mapo Seoul, 17 xi 1980, Park OH (SSU); 2♂1♀, Myeonmok-dong Seoul, 19 iv–14 x 1982, Yoo YS and Yoo HK (SSU); 1♀, Mia-dong Seoul, 24 ix 1977, Yoon OH (KU); 1♀, Sadang-dong Seoul, 8 x 1981, Kim SH (SSU); 1♀, Eungam-dong Seoul, 23 vi 1977, Won HS (KU); 1♀, Jeongneung Seoul, 10 x 1980, Eom MY (SSU); 1♀, Hyehwa-dong Seoul, 12 v 1985, Kwon HJ (SSU); **<GB>** 1♀, Gwaneum-ri Mungyeong, 18 vii 1986, Jeong MS (KU); **<GN>** 1♂, Hoehwa Goseong, 6 ix 1978, Lee YL (KU); 1♀, ibid. 28 vi 1979, Jeong YH (KU); **<JN>** 1♀ (macroptera), Seonamsa Mt. Jogyesan, 7 viii 1976, Kim CW (KU).

Description. <♂> Body coloration yellowish brown with various dark spots. Head depressed, with short and vertical frons; interocular distance wider, three times wider than horizontal

diameter of an eye; fastigium of vertex darkish, narrower, as wide as horizontal diameter of an antennal socket; scape wider than long; vertex transversely dark brown. Pronotum as long as head, a little shorter than fore femur; anterior margin weakly concave, with numerous short hairs; posterior margin truncated, with transverse dark brown band; pronotal disk with a pair of dark maculae crescent-shaped; lateral lobe of pronotum shorter than pronotal length. Tegmina mesopterous, longer than the half of abdomen, but not exceeding abdominal end, its hind margin truncated; two harp veins present; mirror area divided, 1.5 times wider than long; apical area vestigial, weakly netted; lateral field darker, as deep as lateral lobe of pronotum. Hind wings vestigial. Fore tibia with only outer tympanum oval-shaped. Mesosternal lobe rectangular, 1,7 times wider than long, its hind margin weakly emarginated. Metasternal lobe hexagonal, two times wider than long, its hind margin narrowly emarginated. Hind femur 2.2 times longer than middle femur. Hind tibia with five pairs of dorsal spines, the largest inner apical spur as long as a half of basitarsus. Hind basitarsus with small dorsal spinules on both sides, inner apical spur slightly shorter than last tarsomere. Cercus longer than hind femur. Subgenital plate roundly triangular, shorter than basal width, its hind margin narrowly truncated. **<♀>** Tegmina micropterous, small scale-shaped, widely separated (sometime macropterous form present nearly reaching abdominal end, in the form hind wings also much longer, reaching apex of cercus). Ovipositor needle-shaped, straight, longer than hind femur; apex rather swollen, without serration. **<Measurements>** BL 12.6-18.6; PL 2.3-3.4; TL ♂ 6.0-9.0, ♀ 0.9-10.5; HFL 8.2-10.3; OL 10.6-13.0.

Distribution. Korea, Japan, China, Russia, Taiwan, Philippines, India, Europe, Australia, Africa, North and South America: Cosmopolitan.

Remarks. Today, this species is not so common cricket in Korea as Bey-Bienko (1933) reported earlier. Examined materials were beings mostly collected between 1970-80 in urban houses, but the recent data is wanting. Rapid changes of the housing culture might be induce the decrease of this crickets in Korea.

Genus *Gryllus* Linnaeus 먹귀뚜라미속

1758. Systema Naturae per Regna tria naturae (10th ed.), 1: 425. Type species: *Gryllus* (*Acheta*) *campestris* Linnaeus 1758.

= *Nigrogryllus* Gorochov 1983. Systematics and ecological-faunistic review of the various orders of Insecta of the Far East: 39. Type species: *Gryllodes sibiricus* Chopard 1925.

[Ichikawa 2006]

Diagnosis. Strongly built and compact species. Three ocelli arranged nearly in a straight line. Pronotum wider before than behind. Endoparameres without a transverse parameral muscle apodeme, the apex of the ectoparamere digitiform. 82 species are known worldwide.

52. *Gryllus bimaculatus* de Geer 1773 쌍별귀뚜라미 (Figs. 154)

Gryllus bimaculatus de Geer 1773. Mémoires pour servir à l' histoire des insectes, 3: 521, pl. 43, Fig. 4. "Africa: Mali". Neotype ♂ in Academy of Natural Sciences, Philadelphia.

Specimens examined. More than 30♂30♀, reared (NIAST).

Description. **<♂>** Body coloration dark shining black with a pair of yellowish basal spots on tegmina. Head slightly larger than pronotum, with broad vertex and weakly inclined frons; interocular distance four times wider than horizontal diameter of an eye; fastigium of vertex two times wider than horizontal diameter of an antennal socket; scape shorter than wide; median ocellus transversely elliptical, located in lower area between lateral ocelli; clypeal suture transverse three fifths of head in anterior view. Pronotum as long as fore femur, two times wider than long, its anterior margin weakly concave, posterior margin weakly convex; dorsal surface with luster, without pubescence; lateral lobe of pronotum shorter than pronotal length. Tegmina as wide as hind margin of pronotum, macropterous, reaching abdominal end; five harp veins present; mirror area oval-shaped, divided, 1.7 times wider than long; apical area two times longer than mirror area, well netted; lateral filed deeper than lateral lobe of pronotum. Hind wings macropterous, in folding state surpassing cercal end. Fore tibia with distinct outer tympanum oval-shaped, 2.5 times longer than wide and smaller inner tympanum 1.5 times longer than wide. All tarsomeres with numerous ventral bristles. Hind femur 2.2 times longer than middle femur. Hind tibia shorter than femur, with five outer, four inner dorsal spines, its largest inner apical spur as long as a half of basitarsus. Hind basitarsus two times longer than remaining two tarsomeres combined length, with small dorsal spinules on both sides, its inner apical spur slightly shorter than last tarsomere. Cercus as long as a half of hind femur. Subgenital plate shortly conical. **<♀>** Cercus a little shorter than hind tibia. Subgenital plate trapezoidal, shorter than basal width, its apex narrowly truncated. Ovipositor straightly needle-shaped, slightly longer than hind femora, its apex sharply pointed, without serration, subapically swollen. **<Measurements>** BL 24.0-29.0; PL 4.3-4.9; TL 16.0-19.5; HFL 12.5-13.8; OL 14.3-15.0.

Distribution. Korea, Japan, China, Taiwan, India, Indonesia, Hawaii (introduced), Europe, Africa: the Old World.

Remarks. Commercially introduced crickets from Japan since 1999. This has only been reared in the laboratory or insectarium, but does not appear to have been established in outdoor as the exotic insect in Korea (per. com. with Kim Namjeong in NIAST).

53. *Gryllus sibiricus* (Chopard 1925) 먹귀뚜라미 (신칭) (Figs. 153, 168, 202)

Gryllodes sibiricus Chopard 1925. Annales de la Société Entomologique de France (nouvelle série), 94: 293. "Russia: Ussuri". Holotype ♀ in Museum National d'Histoire Naturelle, Paris.

= *Gryllus nigrohirsutus* Alexander 1991. Great Lakes Entomologist, 24(2): 80, Fig. 1-2. "Korea: Central National Forest". Holotype ♂ in University of Michigan Museum of Zoology, Ann Arbor, Michigan. [Ichikawa 2006]

Liogryllus ritsemae nec Saussure 1877. Mémoires de la Société de Physique et d'Histoire Naturelle de Genève, 25: 136. "Japan". Holotype ♂ in Nationaal Natuurhistorische Museum, Leiden.

Korean records. ***Tartarogryllus ritsemae***: Kwon and Huh 1994: 49 (Korean check list: 검은귀뚜라미); Moon and Yoon 1994: 106 (KEI); Kwon et al. 1996: 104 (Korean species list); ***Gryllus nigrohirsutus***: Kwon and Huh 1994: 49 (Korean check list: 우리귀뚜라미); Otte 1994: 3 (Orthoptera species file); Kwon et al. 1996: 104 (Korean species list); ***Gryllus sibiricus***: Ichikawa 2006: 23.

Specimens examined. <GW> 1♀, Baekildong Daehwa Pyeongchang, 1 vii 1985, Kang HJ (SSU); 1♂2♀, Yongsan-ri Doam Pyeongchang, 29 vi 1985, Lee OK and Kim OH (SSU); 1♂, Donggang Mitan-myeon Pyeongchang, 10 vii 1999, Kim TW (SSU); 3♂1♀, Geomun-ri Jinbu Pyeongchang, 30 vi 1985, Kim OH et al. (SSU); 1♀, Sanmachari Hongseong, 26 vii 1989, Jeong JH (SSU); 1♀, Haesanryeong Hwacheon, 8 vii 2006, Kim TW (SSU); 1♀, Baekdamsa Naeseorak, 28 vi 1979, An DJ (KU); **<GG>** 1♀, Mt. Yumyeongsan Seorak-myeon Gapyeong, 25 v 2006, Park SS (SSU); 1♀, Mt. Cheonggyesan Gapyeong, 27 vi 1991, Kim JI (SSU); 1♂, Manisan Ganghwado, 21 v 1989, Chang EJ (SSU); 1♀, Bogwangsa Goyang, 13 vi 1981, Jeon MS (SSU); 1♀, Mt. Paekwunsan Gwangmyeong, 21 vii 2003, Kim TW (SSU); 1♀, Mt. Ungilsan Jogok Namyangju, 18 vi 1998, Kim TW (SSU); 1♂, Songdae-ri Dongducheon, 12 v 1991, Yoon SA (SSU); 1♀, Namhansanseong Seongnam, 30 v 1999, Bae MH (SSU); 1♀, Mt. Godaesan Sinseo-myeon Yeoncheon, 5 viii

2006, Kim TW (SSU); 1♀, Mt. Hyangsusan Yongin Everland, 9 vi 2004, Kim TW (SSU); 1♂, Eungogae Gwangju, 6 vi 1981, Park OH (SSU); 1♂, Mt. Cheonmasan, 22 v 1976, Kim HS (SSU); 1♂, Pocheon, 17 vii 1992, Sohn HR (SSU); 1♂, Wonji-dong Gangnam-gu Seoul, 1 vi 1985, Kim YH (SSU); 2♀, Mt. Cheonggyesan, Gangnam-gu Seoul, 11 vi 1987, Oh EJ; 1♀, Mt. Dobongsan Dobong-gu Seoul, 29 vi 2006, Kim TW (SSU); **<CB>** 1♀, Mt. Cheondeungsan Sancheok-myeon Chungju, 5 viii 2002, Kim TW (SSU); 1♂, Mt. Wolaksan, 30 v 1982, Jeong SW (KU); 1♂, Mt. Songnisan, 6 vi 1970, Choi SN (KU); **<GB>** 2♂1♀, Mungyeong, 22 vi 1989, Ku HK et al. (SSU); 1♀, Daehyeon Bonghwa, 25 vii 1986, Kim JI (SSU); 1♂, Mt. Cheongryangsan Bonghwa, 14 vi 1996, Kim DS (KU); 5♂, Mt. Palgongsan Daegu, 11 vi 2000, Kim MA (NIAST); 1♂, Mt. Juwangsan Cheongsong, 4 vi 1989, OYH (KU); **<JB>** 1♀, Baemsagol Mt. Jirisan Sannae Namwon, 11 vi 2001, Jeon JB (SSU); 3♂, Mt. Deogyusan Muju, 24-25 v 1993, Kim HJ et al. (SSU); 1♀, Namwon, 10 viii 1975, Jeong BK (KU); **<JN>** 1♂, Gwangyang, 19 v 1991, JCY (KU).

Description. **<♂>** Body coloration wholly dark black nearly without luster, slightly brownish in tegmina and dorsal spines on hind tibiae. Head short and rounded, as wide as pronotum; interocular distance wider, fore times wider than horizontal diameter of an eye in dorsal view; fastigium of vertex two times wider than horizontal diameter of an antennal socket; scape shorter than wide; median ocellus transversely elliptical, located in lower area between lateral ocelli; clypeal suture transverse two thirds of head in anterior view, weakly upraised in mid. Pronotum as long as middle femur, 1.5 times wider than long, its anterior margin weakly concave, posterior margin weakly convex; dorsal surface pubescent, without luster; lateral lobe of pronotum shorter than pronotal length. Tegmina as wide as hind margin of pronotum, mesopterous, not reaching abdominal end; three harp veins present; mirror area smaller, not divided, two times wider than long; apical area as long as mirror area, well netted; lateral filed darker than postcubital area, deeper than lateral lobe of pronotum. Hind wings vestigial. Fore tibia with distinct outer tympanum oval-shaped, 3.5 times longer than wide, but inner tympanum unperceptibly small, vestigial. All tarsomeres with numerous ventral bristles. Hind femur 2.7 times longer than middle femur. Hind tibia shorter than femur, with five pairs of dorsal spines, its largest inner apical spur as long as two thirds of basitarsus. Hind basitarsus two times longer than remaining two tarsomeres combined length, with small dorsal spinules on both sides, its inner apical spur slightly shorter than last tarsomere. Cercus slightly shorter than hind tibia. Subgenital plate shortly conical. **<♀>** Larger than male. Tegmina micropterous, just covering half of abdomen,

slightly overlapped in dorsum each other, its apex widely rounded; basis of radial and medial areas weakly bright longitudinally. Cercus as long as hind tibia. Subgenital plate trapezoidal, shorter than basal width, its apex narrowly truncated. Ovipositor straightly needle-shaped, as long as or slightly longer than hind femora, its apex sharply pointed, without serration, subapically swollen. **<Measurements>** BL ♂ 14.4-18.3, ♀ 16.0-20.9; PL ♂ 3.1-3.8, ♀ 3.3-4.2; TL ♂ 6.4-8.0, ♀ 4.6-6.4; HFL ♂ 9.1-10.8, ♀ 10.1-11.4; OL 10.9-13.8

Distribution. Korea, Northeast China, Russian Far East.

Genus *Teleogryllus* Chopard 왕귀뚜라미속

1961. Eos, Revista española de Entomologia, 37(3): 277. Type species: *Gryllus posticus* Walker 1868.

Diagnosis. Large blackish and dark brown crickets. Head without pale stripe connecting lateral ocelli. Fore tibia with tympana on inner and outer sides; inner one small and roundish, outer one very large and elongated. Wings extending well beyond ends of tegmina and end of abdomen. Tegmina always with well developed apical area; mirror divided by one vein; harp with three or four veins. Hind tibia with six pairs of inner and outer subapical spurs. Female ovipositor 1.25-1.62 times as long as find femur. Mesal lobes with their apices between the apices of the ectoparameres, endoparameres C-shaped. 53 species are known in the world, the measurements of two Korean *Teleogryllus* compared in Table 11.

54. *Teleogryllus emma* (Ohmachi and Matsuura 1951) 왕귀뚜라미 (Figs. 156, 171, 205)

Gryllulus emma Ohmachi and Matsuura 1951. Bull. Fac. Agr. Mie Univ.: 68, Fig. 1. "Japan: Tokyo". Syntype in Matsusaka Univ.

Gryllus mitratus nec Burmeister 1838. Handbuch der Entomologie, 2: 734. "Java". Lectotype ♂ in Museum für Naturkunde der Humbolt Universitat, Berlin.

Korean records. ***Gryllus mitratus***: Burr 1898: 29 ("Port Hamilton"); Haku 1937: 73 (Daegu); Cho 1959: 145, Fig. 4 (manual); Cho 1969: 770, pl. 52 (illustrated encyclopedia); Ju 1969: 19 (North Korean check list); Bae and Lee 1990a: 59 (stridulatory apparatus); Bae and Lee 1990b: 67 (stridulatory file); ***Gryllus mitrata***: Doi 1932: 38; ***Teleogryllus emma***: Choo and Choi 1983: 49 (geographic adaptatin); Song 1988: 357 (photoperiodical effect); Song 1989: 283 (geographic variation); Kwon and Huh 1994: 49 (Korean check list); Moon and Yoon 1994: 106 (KEI); Kwon et al. 1996: 104 (Korean species list); Ichikawa et al. 2000:

270, Figs. 8f, f', g, 36, pl. 23 24; ***Teleogryllus yemma*** [!]: Lee et al. 1985: 355; Bae 1998: 154.

Specimens examined. <GW> 1♀, Gyeongpodae Gangneung, 3 viii 1997, Kim HJ (SSU); 1♀, Gangchon, 4 ix 1982, Lee EK (SSU); 1♂, Dogye-eup Samcheok, 15 viii 1998, Kang JH (SSU); 1♂, Sokcho, 22 ix 1996, Kim NI (SSU); 1♂, light trap, Mt. Baekdeoksan Yeongwol, 26 viii 2001, Kim SY and Kim AY (SSU); 1♀, Maeji-ri Heungeop Wonju, 26 vii 2003, Kim JI (SSU); 1♀, light trap, Jogyeong-dong Mt. Bangtaesan Inje, 16-17 viii 1995, Kim JI (SSU); 1♂3♀, Noil-ri Hongcheon, 19 ix 1993, Kim SJ (SSU); 1♀, Hoengseong, 2 viii 1995, Kim MS (SSU); **<GG>** 2♀, Seungcheonsa Mt. Myeongjisan Gapyeong, 8 ix 2001, Kim SY and Kim AY (SSU); 2♀, light trap, Jeondeungsa Ganghwa, 10 viii 1991, Kim JI (SSU); 2♂1♀, Gwangneung, 10 ix 1988, Lee HJ and Ban SJ (SSU); 1♀, de Haan-dong Gwangmyeong, 21 viii 1994, Kim SH (SSU); 3♂4♀, Eungogae Gwangju, 15 ix-9 x 1984, Cho EM et al. (SSU); 2♀, Joam Namyangju, 1 ix 1995, Ryu YM (SSU); 1♂2♀, Hwajeong-dong Deokyang-gu Goyang, 15 ix 1996, Jeon YH (SSU); 3♀, Songnae-ri Dongducheon, 18 viii 1991, Yoon SA (SSU); 2♂, Gumi-dong Bundang Seongnam, 15 viii 1998, Kim MK (SSU); 2♂1♀, Gwanggyo Suwon, 6-29 ix 1992, Lee HA and Oh SH (SSU); 2♀, Mt. Gwanaksan Seoul, 8 ix 1996, Kim JY and Lee JH (SSU); **<CB>** 1♀, Hwayang-ri Cheongcheon Goesan, 15 ix 1984, Kim YS (SSU); 1♀, light trap, Mt. Songnisan Boeun, 8 viii 1990, Lee OJ (SSU); 1♂, Dongi-myeon Okcheon, 28 ix 1993, Lee KA (SSU); 2♀, Mt. Wolaksan Jecheon, 26 x 1996, Kim NI (SSU); 1♀, Geumga-myeon Jungwon, 12 viii 1987, Min KH (SSU); 4♀, Mt. Cheondeungsan Sancheok-myeon Chungju, 28 viii 2002, Kim TW (SSU); **<CN>** 2♂, Mt. Gyeryongsan Gongju, 19 viii 1993, Lee KA (SSU); 1♀, Mt. Seodaesan Sundang-ri Chubu-myeon Geumsan, 28 x 2002, Kim AY (SSU); 1♂, Dusan-ri Dangjin, 18 viii 1984, Choi HS (SSU); 2♀, Hoedeok-dong Daedeok-gu Daejeon, 26 viii 1997, Kim EY (SSU); 1♀, Ungcheon Boryeong, 15 viii 1989, Jang EJ (SSU); 1♀, Muryangsa Mt. Mansusan Buyeom 19 vii 1999, Kim TW (SSU); 1♂, Onseok-dong Seosan, 16 viii 1997, Choi KJ (SSU); 1♂4♀, Yesan, 24 viii 1986, Kim SM (SSU); 1♂, Mt. Baekhwasan Taean, 4 viii 2001, Jeon JB (SSU); **<GB>** 1♂2♀, Yeongnam Univ. Campus Gyeongsan, 19 viii 1992, Yoon HK (SSU); 1♂, Hyoseong Women's Univ. Campus Gyeongsan, 7 vii 1992, Yoon HK (SSU); 1♀, Cheonbuk Gyeongju, 15 ix 1997, Jang JY (SSU); 1♀, Eomo-myeon Geumneung-gun, 20 viii 1992, Park JK (SSU); 1♀, Dowon-dong Dalseo-gu Daegu, 26 viii 1998, Choi JS (SSU); 1♀, Seobu-dong Dong-gu Ulsan, 20 vii 1998, Lee JK (SSU); 6♂7♀, Kaebatgol Yaeum Ulsan, 22 ix 1991, Sim SJ

(SSU); **<GN>** 5♀, Geompo, 17 ix 1997, Ham MS and No JY (SSU); 2♀, Hoehwa Goseong, 20 vii 1994, Kim YJ (SSU); 1♂, light trap, Seoksan Gunho Deokho-ri Hail-myeon Goseong, 20-21 viii 1998, Jeon JS (GSU); 1♀, Jinyeong Gimhae, 26 ix 1996, An EK (SSU); 1♂, Naeseo Masan, 15 viii 1994, Cho SJ (SSU); 1♀, Noksan Busan, 29 ix 1996, Kim MI (SSU); 1♂1♀, Oncheon-dong Dongnae Busan, 19 ix 1994, Kim HE (SSU); 2♂1♀, Donam-dong Chungmu, 11 ix 1992, Shin MJ (SSU); **<JB>** 1♀, Buan Gochang, 25 x 1992, Choi HJ (SSU); 2♂2♀, Buyong Gimje, 28 vii 1984, Chang KS (SSU); 1♀, Gwangannu Namwon, 29 vii 1990, Choi SY (SSU); 1♀, Byeonsanbando Buan, 5 viii 1992, Park JM (SSU); 2♀, pitfall, Haechang-ri Haseo Buan, 24 ix 2001, Jeong MP (SNU); 1♂, Yongdeok-eup Wanju, 26 vii 1996, Lee CH (SSU); 3♀, Iri, 22 ix 1991, Oh JS (SSU); 1♀, Mt. Maisan Jeonju, 18 viii 1992, Kwak YG (SSU); 1♀, Sampyeong-dong Jeongeup, 2 ix 1998, Jeong MU (SSU); **<JN>** 1♀, Duwon Goheung, 7 x 1987, Lee YM (SSU); 2♀, Toji Gurye, 27 ix 1996, Huh R (SSU); 1♀, Cheonggye-myeon Muan, 24 vii 1995, Moon HS (SSU); 1♀, Sohodong Yeosu, 23 ix 1991, Sim SJ (SSU); 1♀, Is. Odongdo Yeosu, 9 viii 1994, Paik YH (SSU); 1♀, light trap, Is. Anmado Yeonggwang, 9 viii 1989, Lee OJ (SSU); 1♂3♀, Wolgok-ri Yeongam, 17 viii 1986, Park SY (SSU); 1♀, Namhyang-ri Wando, 23 viii 1998, Woo SH (SSU); 2♂, light trap, Nohwa-eup Wando, 21 viii 1982, Kim JI and Chang KS (SSU); 1♂, Is. Bogildo Wando, 23 viii 1982, Chang KS (SSU); **<JJ>** 1♂, Andeokgyegok Gamsan-ri Andeok-myeon Namjeju, 13 viii 2004, Kim JK and Kim TW (SSU); 2♀, Mt. Sanbangsan Sagye-ri Andeok-myeon Namjeju, 14 viii 2004, Kim JK and Kim TW (SSU); 2♀, Seongsan Ilchulbong, 24 viii 1996, Kim SY (SSU); 2♀, Bonggae Jeju, 17 viii 1994, Moon HJ (SSU).

Description. <♂> Body coloration brownish black. Head with round vertex and vertical frons, as wide as pronotum; vertex triangularly shining black to median ocellus, remaining lower part rather bright brown; interocular distance four times wider than horizontal diameter of an eye; scape wider than long; fastigium of vertex two times wider than horizontal diameter of an antennal socket; inner upper margins of eyes brightly linked, rarely indistinct; clypeal suture transverse three fifths of head. Pronotum pubescent without luster, as long as fore femur, two times wider than long in dorsal view; anterior margin weakly concave, posterior margin weakly convex; lateral lobe of pronotum slightly deeper than pronotal length. Tegmina as wide as hind margin of pronotum, macropterous, surpassing abdominal end; four harp veins present; four chord veins present; mirror area divided, as long as wide; apical area well netted, as long as mirror area; lateral field deeper than

lateral lobe of pronotum in base, the veins more bright. Hind wings macropterous, in folding state reaching apex of hind tibia, tail-shaped. Fore tibia with a largely oval-shaped outer tympanum four times longer than wide and a small rounded inner tympanum 1.2 times longer than wide. Fore tibia with three, middle tibia with two pairs of apical spurs. All tarsomeres with numerous ventral bristles. Hind femur 2.2 times longer than middle femur. Hind tibia with six pairs of dorsal movable spines apically, the largest inner apical spur as long as a half of basitarsus. Hind basitarsus two times longer than remaining two tarsomeres combined length, with dorsal spinules on both sides, the inner apical spur as long as a half of last tarsomere. Cercus as long as hind tibia. Subgenital plate shortly conical. **<♀>** Subgenital plate trapezoidal, as long as basal width, its hind margin narrowly truncated. Ovipositor straightly needle-shaped, 1.5 times longer than hind femur, its apex shraply pointed, subapically widened.

Distribution. Korea, Japan, North China.

55. *Teleogryllus infernalis* (Saussure 1877) 새왕귀뚜라미 (Figs. 155, 170, 206)

Gryllus infernalis Saussure 1877. Mémoires de la Société de Physique et d'Histoire Naturelle de Genève, 25(1): 156. "China: Tschifu". Syntype in Naturhistorisches Museum Wien.

= *Gryllulus yesoemma* Ohmachi and Matsuura 1951. Bull. Fac. Agr. Mie Univ.: 69, Fig. 2. "Japan". Syntype in Matsusaka Univ. [Gorochov 1985]

Korean records. ***Teleogryllus yesoemma***: Choo and Choi 1983: 49 (geographic adaptation); ***Teleogryllus infernalis***: Gorochov 1985: 89; Storozhenko 1986: 266, Figs. 115(2), 126(1), 127(2), 128(3, 4); Kwon and Huh 1994: 49 (Korean check list); Kwon et al. 1996: 104 (Korean species list); ***Teleogryllus* (*Macroteleogryllus*) *infernalis***: Storozhenko 2004: 203, Figs. 14, 15, 502, 505, 506, 533-535.

Specimens examined. <GW> 1♀, Mt. Sambangsan, Pyeongchang, 4 viii 2001, Kim SY (SSU); 2♂, Omi-ri Yanggu, 6 x 1972, Kim JI (SSU); 1♂1♀, Noil-ri Hongcheon, 19 ix 1993, Kim SJ (SSU); 1♀, Baekdamsa Mt. Seoraksan, 29 viii 1984, Byon CH (KU); 1♀, Mt. Seoraksan, 16-21 viii 1971, Anonym (KU); **<GG>** 1♂8♀, Sihwaho Is. Daebudo Ansan, 27 viii-24 ix 2004, Kim TW (SSU); 3♂1♀, Hantangang riverbed Jeongok Yeoncheon, 10 x 2006, Kim TW (SSU); 3♂3♀, Is. Yeongjongdo Incheon, 5 x 2003, Kim TW (SSU).

Description. <♂> Body coloration brownish black. Head with round vertex and vertical frons, as wide as pronotum, the coloration almost black with rather pale mouth parts, only bright areas present on inner margins of eyes to lateral ocelli; interocular distance four times

wider than horizontal diameter of an eye; scape wider than long; fastigium of vertex 1.7 times wider than horizontal diameter of an antennal socket; clypeal suture transverse three fifths of head. Pronotum barely pubescent with indistinct luster, as long as fore femur, two times wider than long in dorsal view; anterior margin weakly concave, posterior margin weakly convex; lateral lobe of pronotum slightly as deep as pronotal length. Tegmina brownish, as wide as hind margin of pronotum, macropterous, reaching abdominal end; four harp veins present; three chord veins present; mirror area divided, as long as wide; apical area well netted, as long as mirror area; lateral field deeper than lateral lobe of pronotum in base, the veins more bright. Hind wings macropterous, in folding state reaching apex of hind tibia, tail-shaped. Fore tibia with a largely oval-shaped outer tympanum four times longer than wide and a small rounded inner tympanum 1.2 times longer than wide. Fore tibia with three, middle tibia with two pairs of apical spurs. All tarsomeres with numerous ventral bristles. Hind femur 2.7 times longer than middle femur. Hind tibia a little shorter than femur, with six outer, five inner dorsal movable spines apically, the largest inner apical spur as long as a half of basitarsus. Hind basitarsus two times longer than remaining two tarsomeres combined length, with dorsal spinules on both sides, the inner apical spur longer than a half of last tarsomere. Cercus as long as hind femur. Subgenital plate shortly conical. **<♀>** Subgenital plate trapezoidal, shorter than basal width, its hind margin weakly emarginated. Ovipositor straightly needle-shaped, 1.5 times longer than hind femur, its apex sharply pointed, subapically widened.

Distribution. Korea, Japan, North China, Inner Mongolia, Russian Far East.

Table 11. Measurements of *Teleogryllus* spp.

Species	BL	PL	TL	HFL	OL
T. emma	16.4-24.3	3.5-4.8	11.8-16.3	11.4-14.6	18.8-21.7
T. infernalis	15.6-20.2	3.3-4.2	10.5-13.5	10.3-13.3	13.3-16.2

Genus *Comidogryllus* Otte and Alexander 루루곱귀뚜라미속

1983. Monographs of the Academy of Natural Sciences of Philadelphia, 22: 90. Type species: *Comidogryllus adina* Otte and Alexander 1983.

Diagnosis. Fore tibia with small round inner tympanum and large oval outer one. Disk of pronotum mottled. Lateral lobes dark at top and at least partly pale along bottom. Legs speckled with dark markings and spots on pale background. Tegmina with 2-4 harp veins,

mirror complete and undivided. Gorochov (2001) regarded this as a synonym of *Loxoblemmus*, however, the head shape and singing pattern are appreciated characters of the genus (OSJ 2006).

56. *Comidogryllus nipponensis* (Shiraki 1911) 루루곰귀뚜라미 (Figs. 166, 181, 213)

Gryllus nipponensis Shiraki 1911. Monographie der Grylliden Formosa: 46, pl. 1, Fig. 6A–B. "Japan: Gifu". Syntype in Taiwan University, Taipei.

Korean records. ***Modicogryllus nipponensis***: Kwon and Huh 1994: 49 (Korean check list); Kwon et al. 1996: 104 (Korean species list).

Specimens examined. <GW> 4♂, Mt. Sambangsan Saeteo Gonggi-ri Yeongwol, 18 ix 2001, Kim MA (NIASyntype); **<GG>** 1♀, Mt. Cheonggyesan Gapyeong Namyangju, 28 ix 2002, Jeong MP (SNU); 1♀, Mt. Yongmasan Seoul, 12 ix 1971, Kim SJ (KU); **<CB>** 1♂, Mt. Namsan Chungju, 25 viii 2000, Kim TW (NIAST).

Description. <♂> Body coloration darkish gray. Head with round vertex, as long as pronotum, slightly wider than anterior margin of pronotum; vertex transversely shining black, occiput more bright gray; a distinctly bright transverse band present between lateral ocelli, weakly upraised in mid; interocular distance 2.2 times wider than horizontal diameter of an eye; scape as long as wide; narrowest distance between antennal sockets 1.5 times wider than horizontal diameter of an antennal socket; frons and subocular areas darker, mouth parts and lower areas of antennal sockets brighter; clypeal suture transverse two thirds of head. Pronotum marmorated, a little shorter than fore femur, two times wider than long in dorsal view; anterior and posterior margins truncated; lateral lobe of pronotum as deep as pronotal length. Tegmina slightly wider than hind margin of pronotum, macropterous just reaching abdominal end; four harp, three chord veins present; mirror area large, not divided, 1.2 times wider than long; apical area very shortly netted, rather vestigial; lateral field slightly deeper than lateral lobe of pronotum. Fore tibia with largely oval-shaped outer tympanum four times longer than wide, but inner tympanum vestigial, barely discernable, rounded. Hind femur 2.7 times longer than middle femur. Hind tibia distinctly shorter than femur, with four pairs of dorsal spines on both sides, largest inner apical spur as long as a half of basitarsus. Hind basitarsus with small number of dorsal setae on both sides, two times longer than remaining two tarsomeres combined length, its inner apical spur as long as a half of last tarsomere. Subgenital plate shortly conical. **<♀>** Tegmina mesopterous, not exceeding abdominal end. Cercus as long as ovipositor. Ovipositor shorter than hind femur.

<Measurements> BL ♂ 7.4, ♀ 8.5; PL ♂ 1.4, ♀ 1.5; TL ♂ 4.2, ♀ 2.8; HFL ♂ 4.1, ♀ 4.7; OL 3.4.

Distribution. Korea, Japan.

Genus *Mitius* Gorochov 곰귀뚜라미속

1985. Entomologicheskoe Obozrenie, 64(1): 94. Type species: *Gryllus flavipes* Chopard 1928.

Diagnosis. Small crickets with almost cylindrical body; usually of dark coloration. Head round; ocelli in triangle; color of head uniformly dark, with pale ocelli. Prothorax approximately 2/3 as long as wide; color of pronotum uniformly dark. Fore tibial tympana large oval on outer, almost indistinguishable on inner. Hind tibia with five spines on both sides. Male tegmen shining, almost regular oval shape, not quite reaching tip of abdomen. Genitalia of male with three processes on hind margin of epiphallus, mesal one small and rounded, lateral ones of distinctive shape. Ovipositor not much shorter than hind femur (Gorochov 1985). Seven species are known in the Oriental Region.

57. *Mitius minor* (Shiraki 1911) 곰귀뚜라미 (Figs. 158, 173, 203)

Gryllus minor Shiraki 1911. Monographie der Grylliden Formosa: 54, pl. 1, Fig. 5A–B. "Japan: Gifu". Syntype in Taiwan University, Taipei.

Korean records. ***Gryllulus*** [!] ***minor***: Yang and Yoon 1962: 12 (Is. Geomundo); ***Modicogryllus minor***: Kwon and Huh 1994: 49 (Korean check list); Kwon et al. 1996: 104 (Korean species list).

Specimens examined. **<GW>** 1♀, Yeonse Univ. Campus Maeji-ri Heungeop Wonju, 29 ix 2005, Jang EK (NIAST); **<GG>** 4♀, Mt. Cheonmasan Hopyeong-dong Namyangju, 3 ix 2006, Kim TW (SSU); 2♀, Gildong Eco-park Gangdong-gu Seoul, 26 ix 2002, Kim TW (SSU); 1♂, Olympic Park Gandong-gu Seoul, 31 viii 2005, Kim TW (SSU); 1♀, Seocho-dong Seocho-gu Seoul, 29 viii 1990, Jang HY (SSU); 1♂, Donam-dong Seoul, 26 ix 1986, Park SY (SSU); 1♂, Sinjeom-ri Yongmun-myeon Yangpyeong, 27 ix 1986, Lee EJ (SSU); 1♂, Gapyeong, 19 x 1995, Kim JH (NIAST); **<GN>** 1♀, light trap, Baechun-ri Chukdong-myeon Sacheon, 11 ix 2002, Paik YH (SSU); **<JJ>** 2♀, Seonheul-ri Jocheon Bukjeju, 28 ix 2000, An MK (NIAST).

Description. **<♂>** Body coloration dark shining black with bright brownish legs. Head slightly wider than anterior margin of pronotum, with round vertex, without a bright transverse stripe between lateral ocelli; interocular distance five times wider than horizontal diameter

of an eye; fastigium of vertex anteriorly truncated, two times wider than scape in dorsal view; median ocellus located below of fastigium of vertex, frons inclined, rather longitudinally depressed as X-shaped; clypeal suture transverse two thirds of head; scape wider than long; palpi bright white. Pronotum slightly longer than head, as long as fore femur, 1.5 times wider than long in dorsal view; anterior and posterior margins truncated, pilose; lateral lobe of pronotum as deep as pronotal length. Tegmina as wide as anterior margin of pronotum, mesopterous, not reaching abdominal end; two harp veins present; three cord veins present; mirror area divided, 1.2 times wider than long; apical area very shortly vestigial, barely netted; lateral filed as deep as lateral lobe of pronotum. Hind wings vestigial. Fore tibia with oval-shaped outer tympanum three times longer than wide, but inner one hardly perceptible, or absent. All tarsomeres with numerous ventral bristles. Hind femur 2.7 times longer than middle femur. Hind tibia with five pairs of large dorsal spines apically, largest inner apical spur as long as a half of basitarsus. Hind basitarsus with dorsal spinules on both sides, inner apical spur as long as a half of last tarsomere. Cercus as long as hind femur. Subgenital plate shortly conical. **<♀>** Tegmina shorter than male, covering just half of abdomen, its apex truncated, weakly oblique towards insides. Cercus as long as hind tibia, shorter than ovipositor. Subgenital plate convex trapezoidal, shorter than basal width, its hind margin narrowly truncated. Ovipositor gently recurved, slightly longer than hind femora; apex sharply pointed, subapically dilated, without serration. **<Measurements>** BL ♂ 10.9, ♀ 10.5-11.4; PL ♂ 2.2, ♀ 2.2-2.6; TL ♂ 5.2, ♀ 2.5-3.6; HFL ♂ 6.7, ♀ 7.2-7.7; OL 8.1-9.4.

Distribution. Korea, Japan.

Genus *Modicogryllus* Chopard 남쪽귀뚜라미속

1961. Eos, Revista española de Entomologia, 37(3): 272. Type species: *Gryllus conspersus* Schaum 1853.

Diagnosis. Head globose in both sexes with frontal rostrum slightly projecting. Mandibles normal. Anterior tibia with a large external and a small internal tympanum, the latter sometimes individually lacking. Usually fully winged but tegmen not completely covering abdomen; hind wings largely surpassing tegmina, sometimes absent. Phallus: very similar to the situation in *Velarifictorus*. Epiphallus bridge-shaped with the often conical median lobes embracing a narrow or wider space (Ingrisch 1998). 86 species are known in Africa, Asia and Europe.

58. *Modicogryllus siamensis* Chopard 1961 남쪽귀뚜라미 (Figs. 157, 172, 204)

Modicogryllus siamensis Chopard 1961. Eos, Revista española de Entomologia, 37(3): 280, pl. 7. "Siam = Thailand". Holotype ♂ in The Natural History Museum, London.

Scapsipedus parvus nec Chopard 1928. Rec. Ind. Mus. 30: 18. "India: West Bengal". Syntype in Calcutta.

Korean records. ***Scapsipedus parves*** [!]: Choo and Choi 1983: 49 (geographic adaptation); ***Velarifictorus parvus***: Kwon and Huh 1994: 50 (Korean check list); Kwon et al. 1996: 104 (Korean species list); ***Modicogryllus siamensis***: OSJ 2006: 461.

Specimens examined. **<CB>** 1♀, light trap, Danyang, 14−15 vi 1993, Anonym (NIAST); **<GB>** 1♀, Sogwangri Uljin, 1 viii 1999, Ku DS (NIAST); **<GN>** 1♀, Baechun−ri Chukdong−myeon Sacheon, 13 ix 2001, Paik YH (SSU); 1♂, light trap, Mt. Waryongsan Cheongryongsa Waryong−dong Sacheon, 11−12 viii 1999, Sohn JH (GSU); 3♂1♀, light trap, Wolyasan Gajin−ri Jinseong−myeon Jinju, 13−14 viii 1999, Park JS et al. (GSU); 1♀, light trap, Hyangnobong Dongsan−ri Sanri−myeon Goseong, 17−18 viii 1998, Park JS (GSU); 2♀, light trap, Mt. Odusan Osan−ri Sangri−myeon, 19−20 viii 1998, Park JS and Ju HK (GSU); 2♀, ibid. 6−7 viii 1999, Lee SY and Park JS (GSU); 2♀, Seoksan Gunho Deokho−ri Hail−myeon Goseong, 20−21 viii 1998, Jeon JS and Kim SY (GSU); 4♀, light trap, Mt. Sanseongsan Samtae Yongtae−ri Hail−myeon Goseong, 18−19 viii 1998, Park JS (GSU); 2♀, ibid. 11−12 viii 1999, Lee SY (GSU); 2♂2♀, light trap, Mt. Yeohangsan Osilgol Yeoyang−ri Jinjeon−myeon Happo−gu Masan, 11−12 ix 1999, Park JS and Kim SY (GSU); 2♀, Hwacheoncheon Bonghwa−ri Namhae, 27−28 viii 1998, An DH and Sohn JH (GSU); 2♂2♀, light trap, Mt. Gayasan Jukjeon−ri Gaya−myeon Hapcheon, 19−20 viii 1999, Park JS and Han KR (GSU); 1♀, light trap, Galsa−ri Geumseo−myeon Hadong, 6−7 viii 1997, Jeon JS (GSU); 1♀, light trap, Mt. Mangilsan Bonggye−ri Bongsan−myeon Hapcheon, 22−23 viii 1998, An TH (GSU); 1♀, light trap, Jinyang, 26−30 viii 1992, Anonym (NIAST); **<JB>** 1♀, light trap, Muju, 21−25 viii 1992, Anonym (NIAST); 1♀, light trap, Byeonsanbando Buan, 25 vi 1991, Ku HJ (NIAST); **<JN>** 2♂, Dongcheon Pungdeok−dong Suncheon, 3 ix 2005, Kim TW (SSU); 1♀, Mt. Baekwunsan Gwangyang, 12 viii 1994, Choi HS (SSU); 1♀, ibid. 5 viii 1990, An SB (NIAST); 1♀, Mt. Mudeungsan Gwangju, 21 v 1998, Oh GS (SSU); 1♀, Gigak−ri Hampyeong, 2 ix 2000, Park WS; 1♀, light trap, Yeongam, 21−25 vi 1991, Anonym (NIAST); 1♀, Mt. Yudalsan Mokpo, 14 viii 1992, Oh SH (NIAST); 1♂3♀, light trap, Is. Anmado Yeonggwang, 19 viii 1989, Kim JI

and Lee OJ (SSU); **<JJ>** 2♂, Jeongbangpokpo Dongheung-dong Seoguipo, 9 vii 2002, Kim TW (SSU); 1♀, Andeokgyegok Gamsan-ri Andeok-myeon Namjeju, 13 viii 2004, Kim JK and Kim TW (SSU).

Description. **<♂>** Body coloration brownish dark black, marmorated. Head shining black with a bright transverse band between lateral ocelli, frons vertical; occiput with six longitudinal pale strips posteriorly; interocular distance three times wider than horizontal diameter of an eye in dorsal view; narrowest distance between antennal sockets 1.7 times wider than horizontal diameter of an antennal socket; scape as long as wide; median ocellus transversely elliptical, located in dorsum of fastigium of vertex with a linked pale longitudinal line below to clypeal suture; clypeal suture transverse three fifths of head, weakly upraised in mid; palpi bright. Pronotum as long as head, two times wider than long in dorsal view; anterior and posterior margins pilose, truncated; dorsal surface brownish, mottled; lateral lobe of pronotum a little deeper than pronotal length, anterior lower margin more bright. Tegmina as wide as hind margin of pronotum, mesopterous, not reaching abdominal end; three harp and cord veins present; mirror arear divided, 1.2 times longer than wide; apical area 1.2 times longer than mirror area, well netted; lateral field a little deeper than pronotal length, veins more bright. Legs rather brighter than body, mottled with speckles. Fore tibia with largely oval-shaped outer tympanum three times longer than wide and small rounded inner tympanum, 1.2 times longer than wide. Hind femur 2.7 times longer than middle femur. Hind tibia with 5-6 pairs of dorsal movable spines on both sides, the largest inner apical spur as long as a half of basitarsus. Hind basitarsus with dorsal spinules on both sides, 1.7 times longer than remaining two tarsomeres combined length, its inner apical spur as long as a half of last tarsomere. Subgenital plate shortly conical, its hind margin truncated. **<♀>** Frons more rounded, mouth parts shorter than male. interocular distance four times wider than horizontal diameter of an eye. Cercus slightly shorter than ovipositor. Subegenital plate roundly triangular, its hind margin weakly notched. Ovipositor straightly needle-shaped, as long as hind femur, its apex sharply pointed, subapically dilated, without serration. **<Measurements>** BL 13.3-17.5; PL 2.5-2.8; TL 7.2-9.8; HFL 8.4-9.1; OL 6.5-8.5.

Distribution. Korea, Japan, Taiwan, Thailand, Hawaii (introduced).

Genus *Loxoblemmus* Saussure 알락귀뚜라미속

1877. Mémoires de la Société de Physique et d'Histoire Naturelle de Genève, 25(1): 249.

Type species: *Loxoblemmus equestris* Saussure 1877.

Diagnosis. Head with distinct white transverse strip between lateral ocelli. Frons of male very flattened and strongly slanted, but one of female slightly slanted. Occiput with horizontal pale streaks. Pronotal disk mottled. Legs pale with dark markings, spots, and streaks. Ovipositor as long as or slightly shorter than hind femur. Parameral muscle insertion on the endoparamere not expanded, transverse parameral muscle crest at virga base absent, spermatophore sac large. 62 species are known in the world, the measurements of four Korean *Loxoblemmus* compared in Table 12.

59. *Loxoblemmus doenitzi* Stein 1881 모대가리귀뚜라미 (Figs. 159, 174, 207)

Loxoblemmus dönitzi Stein 1881. Berliner Entomologische Zeitschrift, 25: 95, Figs. 1–3. "Japan". Lectotype ♂ in Museum für Naturkunde der Humbolt Universitat, Berlin.

Korean records. *Loxoblemmus doenitzi*: Haku 1937: 73 (Daegu); Cho 1959: 146, Fig. 6 (manual); Cho 1969: 771, pl. 52 (illustrated encyclopedia); Ju 1969: 20 (North Korean check list); Choo and Choi 1983: 49 (geographic adaptation); Bae and Lee 1990a: 59 (stridulatory apparatus); Bae and Lee 1990b: 67 (stridulatory file); Gorochov and Kostia 1993: 432; Kwon and Huh 1994: 49 (Korean check list); Moon and Yoon 1994: 106 (KEI); Kwon et al. 1996: 104 (Korean species list); Storozhenko 2004: 211, Fig. 544.

Specimens examined. <GW> 1♂, Mt. Seokbyeongsan Sangye-ri Okgye-myeon Gangneung, 27–28 viii 2002, Kim TW (SSU); 2♀, Mt. Sambangsan Saeteo Gonggi-ri Yeongwol, 18 ix 2001, Kim TW and Kim MA (SSU); 3♀, Mt. Sambangsan Noron-ri Pyeongchang, 17 ix 2001, Kim TW (SSU); **<GG>** 1♂, Gwangneung Pocheon, 3 ix 2006, Kim TW (SSU); 1♂, Suwon, 20 viii 2004, Kim TW (SSU); 1♂2♀, Sihwaho Is. Daebudo Ansan, 27 viii 2004, Kim TW (SSU); 1♀, Sudong Yangju, 16 ix 1979, Dept. Bio. (SSU); 1♂, Mt. Cheonmasan Namyangju, 9 ix 1973, Oh JS (SSU); 1♀, Mokdong Seoul, 21 xi 1980, Lee HS (SSU); 2♂, Mt. Bukhansan Eunpyeong-gu Seoul, 5 ix 2004, Kim TW (SSU); **<CB>** 1♀, Euirimji Jecheon, 17 viii 1984, Park GJ (SSU); 1♂, Mt. Gyemyeongsan Jongmin-dong Chungju, 29 viii 2002, Kim TW (SSU); 6♂, Mt. Namsan Chungju, 25 viii 2000, Kim TW (NIAST); 1♀, Yulryangcheon Cheongju, 15 viii 2006, Im MS (SSU); 1♀, Jugam Cheongwon, 23 ix 2000, Kim TW (NIAST); **<CN>** 2♂, Baeksajang beach Is. Anmyeondo Taean, 10 ix 2005, Kim TW (SSU); 2♂, Baramarae beach Taean, 30 ix 2006, Kim TW (SSU); **<GB>** 1♀, Mt. Tohamsan Gyeongju, 8 ix 2000, Kim TW (NIAST); **<GN>** 2♂2♀, light trap, Mt. Sambangsan Sambang-ri Dundeok-myeon Geoje, 17–18 ix 1995, Anonym (GSU); 1♂, light

trap, Mt. Yeonhwasan Bukpyeong-ri Gaecheon-myeon Goseong, 11-12 ix 1999, An TH (GSU); 1♀, light trap, Mt. Osan-ri Osan-ri Sangri-myeon Goseong, 6-7 viii 1999, Lee SY (GSU); 1♀, light trap, Seoksan Gunho Deokho-ri Hail-myeon Goseong, 20-21 viii 1998, Kim SY (GSU); 4♀, light trap, Mt. Sanseongsan Samtae Yongtae-ri Hail-myeon Goseong, 18-19 viii 1998, Park JS and Jeon JS (GSU); 1♀, Jungri Masan, 3 viii 1994, Cho SJ (SSU); 1♀, light trap, Mt. Songeuisan Songduam Ojeon-ri Obu-myeon Sancheong, 31 vii-1 viii 1998, Jeon JS (GSU); 1♂, light trap, Sukhosan Ihyeon-dong Jinju, 23-24 ix 1998, Byeon JH (GSU); 2♂, light trap, Nabuli Yugok-dong Jinju, 25-26 ix 1998, Jeon JS and Byeon JH (GSU); 1♂, light trap, Imyeongsan Jikjeon-ri Bukcheon-myeon Hadong, 18-19 ix 1998, Sohn JH (GSU); **<JB>** 1♀, pitfall, Haechang-ri Haseo Buan, 12 xi 2001, Jeong MP (SNU); 1♀, Bongeun-ri Buan, 10 x 1981, Chang KS (SSU); **<JN>** 1♂2♀, Mt. Naejangsan Baekyangsa Bukha-myeon Jangseong, 11-12 ix 2004, Kim TW (SSU); 1♂, ibid. (= Hakuyosan), 9 x 1921, Hasegawa Y (NIAST); **<JJ>** 1♂, Is. Jejudo, 14 viii 1969, Lee HS (KU); 1♂, ibid. 12 ix 1995, Lee SH (NIAST); 1♀, Jocheon, 4 ix 1995, Lee GS (NIAST); 2♂, Andeokgyegok Gamsan-ri Andeok-myeon Namjeju, 13 viii 2004, Kim JK and Kim TW (SSU); 1♂, Seonheul-ri Jocheon, 28 ix 2000, Kim MA (NIAST); 1♂, Is. Udo, 10 x 1999, Kim TW (NIAST); 1♀, Hyeopjae, 26 ix 2000, An MK (NIAST); 1♀, Mt. Sanbangsan Sagye-ri Andeok-myeon Namjeju, 14 viii 2004, Kim JK and Kim TW (SSU).

Description. <♂> Body coloration dark black, appendages gray mottled. Head much wider, slightly longer than pronotum; vertex dark black, interocular distance three times wider than horizontal diameter of an eye; occiput with a few pale longitudinal strips posteriorly; fastigium of vertex anteriorly projected, obtusely triangular with a distinct dorsal transverse strip between lateral ocelli; frons greatly flattened and inclined, rather depressed, frontal shield laterally broadened forming triangular process, its length longer than fastigium of vertex; scape as long as wide, without outer projection; palpi bright. Pronotum a little shorter than fore femur, two times wider than long in dorsal view, with a pair of dorsal crescent-shaped markings; anterior and posterior margin truncated, pilose; lateral lobe of pronotum slightly deeper than pronotal length, its lower anterior area bright. Tegmina as wide as posterior margin of pronotum, mesopterous, just reaching abdominal end; two harp and three chord veins present; mirror area not divided, as long as wide; apical area well netted, as long as mirror area; lateral field deeper than lateral lobe of pronotum, upper two thirds darkish, lower one thirds bright. Fore tibia with largely oval-shaped outer tympanum three times longer than wide and small rounded inner tympanum 1.2 times longer than

wide; three ventral apical spurs present. All tarsomeres with numerous ventral bristles. Middle tibia with two pairs of apical spurs. Hind femur three times longer than middle femur. Hind tibia with five pairs of dorsal large spines on both sides, the largest inner apical spur as long as two thirds of basitarsus. Hind basitarsus with dorsal spinules on both sides, as long as a half of remaining two tarsomeres combined length, its inner apical spur as long as last tarsomere. Cercus as long as hind femur. Subgenital plate shortly conical. **<♀>** Head with round vertex and moderately inclined frons; transverse strip between lateral ocelli distinct, three times longer than horizontal diameter of an antennal socket. Ovipositor shorter than hind femur, as long as hind tibia.

Distribution. Korea, Japan, China.

Remarks. The lectotypes of *L. doenitzi* were designated by Gorochov (1996) based on the 2♂ 1♀ specimens collected from Japan. I had a chance to observe the type materials when I visited to Museum für Naturkunde der Humbolt Universitat, Berlin, but in there one was quite suspicious that the female paralecotype was not *Loxoblemmus*, rather possibly *Velarifictorus micado* (web images also available from the linking site of OSF).

60. *Loxoblemmus magnatus* Matsuura 1985 큰알락귀뚜라미 (신칭) (Figs. 160, 175)

Loxoblemmus magnatus Matsuura 1985. New Entomologist, 34(1-2): 11, Figs. 1-3. "Japan". Holotype in Osaka Museum of Natural History.

= *Loxoblemmus coreanus* Gorochov and Kostia 1993. Acta Zoologica Cracoviensia, 35(3): 427, Figs. 1 2, 5. "North Korea: Huichon". Holotype ♂ in Institute of Systematics and Evolution of Animals, Polish Academy of Sciences, Kraców. **syn. nov.**

Korean records. ***Loxoblemmus coreanus***: Kwon and Huh 1994: 49 (Korean check list); Kwon et al. 1996: 104 (Korean species list: 조선알락귀뚜라미).

Specimens examined. <GG> 1♂, Yeonsu-ri Yangpyeong, 31 viii 1980, Park HK (SSU); **<CB>** 1♂, Mt. Gyemyeongsan Chungju, 24 viii 2000, Kim TW (NIAST); 2♀, Mt. Namsan Chungju, 25 viii 2000, Kim TW (NIAST).

Description. <♂> Body coloration dark black, appendages mottled. Head distinctly wider than anterior margin of pronotum, slightly longer than pronotum; vertex dark shining black with a few pale longitudinal strips posteriorly; interocular distance five times wider than horizontal diameter of an eye; fastigium of vertex anteriorly projected, widely truncated with a distinct dorsal white transverse strip between lateral ocelli; frons greatly flattened and inclined, rather depressed downwardly lower areas of antennal sockets; facial carinae

present from connected with fastigium of vertex; scape slightly longer than wide, without outer projection; clypeal suture transverse in mid of head; palpi nearly bright. Pronotum shorter than fore femur, two times wider than long in dorsal view, with a pair of dorsal crescent-shaped markings; anterior margin slightly wider than posterior one, both truncated, pilose; lateral lobe of pronotum slightly deeper than pronotal length, its lower anterior angles bright. Tegmina as wide as posterior margin of pronotum, mesopterous, just reaching abdominal end; two harp and four chord veins present; mirror area not divided, as long as wide; apical area well netted, slightly shorter than mirror area; lateral field deeper than lateral lobe of pronotum, upwardly darkish, downwardly bright. Hind wings vestigial. Fore tibia with largely oval-shaped outer tympanum three times longer than wide and small rounded inner tympanum 1.2 times longer than wide; three ventral apical spurs present. All tarsomeres with numerous ventral bristles. Middle tibia with two pairs of apical spurs. Hind femur 2.5 times longer than middle femur. Hind tibia with five pairs of dorsal large spines on both sides, the largest inner apical spur as long as a half of basitarsus. Hind basitarsus with dorsal spinules on both sides, two times longer than remaining two tarsomeres combined length, its inner apical spur slightly shorter than last tarsomere. Meso- and metanotums bright. Cercus as long as hind tibia. Subgenital plate shortly conical. <♀> Head with round vertex and moderately inclined frons; a white transverse strip between lateral ocelli distinct, four times longer than horizontal diameter of an antennal socket. Cercus as long as hind femur, shorter than ovipositor. Ovipositor weakly recurved needle-shape, longer than hind femur.

Distribution. Korea, Japan.

Remarks. Storozhenko (2004) proposed that *L. coreanus* is the junior synonym of *L. sylvestris*, but it is quite erroneous. The *L. sylvestris* is in the *L. equestris* species group (sensu Matsuura 1985), whereas the *L. coreanus* belonging in the *L. doenitzi* species group as like to *L. magnatus* (sensu Matsuura 1978) by those large size and modified male's head, must be regarded with the synonym of *L. magnatus* (per. com. with Mr. Ichikawa).

61. *Loxoblemmus campestris* Matsuura 1988 알락귀뚜라미 (Figs. 161, 176, 208)

Loxoblemmus campestris Matsuura 1988. New Entomologist, 37(1/4): 18, Figs. 3A, 4, 6A, 7A. "Japan: Tokyo". Holotype ♂ in Osaka Museum of Natural History.

Loxoblemmus arietulus nec Saussure 1877. Mémoires de la Société de Physique et d'Histoire Naturelle de Genève, 25: 253. "Java, Sumatra, Japan". Syntype ♀ in Nationaal

Natuurhistorische Museum, Leiden.

Korean records. ***Loxoblemmus arietulus***: Doi 1933: 89; Cho 1959: 146, Fig. 5 (manual); Cho 1969: 770, pl. 52 (illustrated encyclopedia); Ju 1969: 20 (North Korean check list); Choo and Choi 1983: 49 (geographic adaptation); Song 1988: 357 (photoperiodical effect); Song 1989: 283 (geographic variation); Bae and Lee 1990a: 59 (stridulatory apparatus); Bae and Lee 1990b: 67 (stridulatory file); Gorochov and Kostia 1993: 431, Figs. 9–10; Kwon and Huh 1994: 49 (Korean check list); Moon and Yoon 1994: 105 (KEI); Kwon et al. 1996: 104 (Korean species list); Bae 1998: 156; Storozhenko 2004: 208, Figs. 511, 512, 543, 550–553; ***Loxoblemmus campestris***: Ichikawa and Tominaga 2002: 49 (Chuncheon).

Specimens examined. **<GW>** 2♂, Mt. Seokbyeongsan Sangye-ri Okgye-myeon Gangneung, 27–28 viii 2002, Kim TW (SSU); 2♂, Mt. Sambangsan Gonggi-ri Yeongwol, 18 ix 2001, Kim MA (NIAST); 1♂, Jinburyung, 2 viii 1991, Cho HJ (SSU); 1♂, Gangcheon Chunseong, 23 viii 1986, Choi SR (SSU); 2♂, Mt. Sambangsan Noron-ri Pyeongchang, 17 ix 2001, Kim TW (SSU); **<GG>** 3♂, light trap, Jeondeungsa Ganghwa, 10 viii 1991, Kim JI and Park HC (SSU); 1♂, Madu Goyang, 10 viii 1997, Lee JY (SSU); 1♂, Byeokje Goyang, 30 ix 1993, Lee HJ (SSU); 1♂, Maseok Namyangju, 12 ix 1987, Oh EJ (SSU); 1♂, Joam Namyangju, 1 ix 1995, Ryu JM (SSU); 1♂, Toegyewon Namyangju, 26 viii 1989, Cho HS (SSU); 1♂, Munjeong-dong Seongnam, 14 ix 1987, Lee YR (SSU); 1♂, Migeum-dong Bundang Seongnam, 6 viii 1998, Kim MK (SSU); 1♂, Songchu, 25 viii 1990, Oh SJ (SSU); 1♂, Mt. Chukryeongsan Sudong, 6 ix 1980, Chang KS (SSU); 1♂, Gaepo-dong Gangnam-gu Seoul, 20 vii 1998, Cho SH (SSU); 1♂, Daeyadong Siheung, 20 viii 1995, Jeong HY (SSU); 3♂, Sihwaho Daebudo Ansan, 27 viii 2004, Kim TW (SSU); 1♂, pitfall, Singilcheon Ansan, 19 x 2002, Jeong MP (SNU); 1♂, Mt. Surisan Anyang, 27 ix 1992, Kim HJ (SSU); 2♂, Sajanggol Dori Jeomdong-myeon Yeoju, 29 viii 2003, Yeo JD (KU); 1♂, pitfall, Ansancheon Guseong-eup Yongin, 19 ix 2002, Jeong MP (SNU); 1♂, Sannam-ri Gyoha Paju, 25 viii 2004, Park YK (SSU); 1♂, pitfall, Misadong Hanam, 28 ix 2002, Jeong MP (SNU); 2♂, pitfall, Gicheon-ri Paltan Hwaseong, 24 ix–8 x 2001, Jeong MP (SNU); 3♂, Is. Mueuido Incheon, 4 x 2006, Kim TW (SSU); **<CN>** 1♂, Baeksajang beach Is. Anmyeondo Taean, 10 ix 2005, Kim TW (SSU); **<GB>** 1♂, Gyeongju, 15 viii 1989, An EM (SSU); **<GN>** 1♂, light trap, Mt. Sanseongsan Samtae Yongtae-ri Hail-myeon Goseong, 18–19 viii 1998, Park JS (GSU); 1♂, Deokgye, 26 viii 1996, Park BK (SSU); 1♂, Busan, 29 ix 1996, Kim NM (SSU); 1♂, Banrim-dong Changwon, 22 viii 1994, Kim AR (SSU); **<JB>** 1♂, Mt. Naejangsan, 18 x 1980, Woo KS (SNU); 2♂, pitfall,

Haechang-ri Haseo Buan, 8 x 2001, Jeong MP (SNU); 1♂, Unju-myeon Wanju, 10 viii 1995, Ku TH (SSU); **<JN>** 2♂, light trap, Is. Anmado Yeonggwang, 19 viii 1989, Kim JI (SSU); **<JJ>** 1♂, Andeokgyegok Gamsan-ri Andeok-myeon Namjeju, 13 viii 2004, Kim JK and Kim TW (SSU).

Description. <♂> Body coloration dark black, appendages mottled. Head distinctly wider than anterior margin of pronotum, as long as pronotum; vertex dark shining black, interocular distance four times wider than horizontal diameter of an eye; occiput with a few pale longitudinal strips posteriorly; fastigium of vertex anteriorly projected, widely round with a distinct dorsal transverse strip between lateral ocelli; frons greatly flattened and inclined, rather depressed in areas of median ocellus and downwardly lower of antennal sockets; facial carinae present from connected with fastigium of vertex; scape as long as wide, with distinct outer projection (in small sized-specimens which is not distinct); palpi weakly darker. Pronotum as long as fore femur, two times wider than long in dorsal view, with a pair of dorsal crescent-shaped markings; anterior margin slightly wider than posterior one, both truncated, pilose; lateral lobe of pronotum slightly deeper than pronotal length, its lower anterior and posterior angles bright. Tegmina as wide as posterior margin of pronotum, mesopterous, just reaching abdominal end; two harp and three chord veins present; mirror area bias divided, as long as wide; apical area well netted, but short, at most as long as half of mirror area; lateral field deeper than lateral lobe of pronotum, upwardly darkish, downwardly bright. Hind wings macropterous, but frequently autotomy happened. Fore tibia with largely oval-shaped outer tympanum three times longer than wide and small rounded inner tympanum 1.2 times longer than wide; three ventral apical spurs present. All tarsomeres with numerous ventral bristles. Middle tibia with two pairs of apical spurs. Hind femur three times longer than middle femur. Hind tibia with five pairs of dorsal large spines on both sides, the largest inner apical spur as long as two thirds of basitarsus. Hind basitarsus with dorsal spinules on both sides, as long as a half of remaining two tarsomeres combined length, its inner apical spur slightly shorter than last tarsomere. Meso- and metanotums bright. Cercus as long as hind femur. Subgenital plate shortly conical. <♀> Head with round vertex and moderately inclined frons; transverse strip between lateral ocelli distinct, three times longer than horizontal diameter of an antennal socket. Ovipositor straightly needle-shaped, shorter than hind femur, as long as hind tibia.

Distribution. Korea, Japan.

Remarks. Previously known *L. arietulus* is substituted by the name of *L. campestris* since

Matsuura (1988) owing to the ambiguity caused the syntypes of *L. arietulus* are all females without differentiated characters, thus *L. campestris* newly described. It has been, however, still remain to argue what is the real male of *L. arietulus*.

62. ***Loxoblemmus equestris*** **Saussure 1877** 야산알락귀뚜라미 (Figs. 162, 177, 209)

Loxoblemmus equestris Saussure 1877. Mémoires de la Société de Physique et d'Histoire Naturelle de Genève, 25(1): 252. "Celebes". Lectotype ♂ in Naturhistorisches Museum Wien.

Korean records. ***Loxoblemmus equestris***: Shiraki 1930: 204 ("Keijo" = Seoul); Wu 1935: 69 (Catalogus Insectorum Sinensium); Gorochov and Kostia 1993: 430, Figs. 7–8; Kwon and Huh 1994: 49 (Korean check list); Kwon et al. 1996: 104 (Korean species list: 남쪽알락귀뚜라미); Hua 2000: 55 (Chinese list); Storozhenko 2004: 210, Fig. 549.

Specimens examined. **<GW>** 1♂, Deokgeori Jangpyeong, 10 x 1988, Jeon NY (SSU); 1♂, Gangchon Chunseong, 30 vii 1984, Min YK (SSU); 1♂, Haesanryeong Hwacheon, 3 x 2006, Kim TW (SSU); **<GG>** 1♂, Ganghwa-eup Ganghwa, 19 viii 1994, Seo JY (SSU); 1♂, Bukhansanseong Goyang, 30 ix 1971, Lee BM (KU); 2♂, Mt. Gwanaksan Gwacheon, 10 x 1996, Choi HS (SSU); 3♂, Mt. Surisan Gunpo, 13 x 2002, Kim TW (SSU); 4♂, Mt. Wolrongsan Paju, 2 x 2002, Jeong MP (SNU); 3♂, Mt. Damosan Gangnam-gu Seoul, 27 ix 2004, Kim TW (SSU); 7♂, light trap, Mt. Dobongsan Dobong-gu Seoul, 4–16 ix 1982, Kim JI et al. (SSU); 20♂, Mt. Bukhansan Eunpyeong-gu Seoul, 1–2 x 2001, Kim TW (SSU); **<CB>** 1♂, Mt. Cheondeungsan Sancheok-myeon Chungju, 28 viii 2002, Kim TW (SSU); **<CN>** 1♂, light trap, Mt. Baekhwasan Taean, 4 viii 2001, Jeon JB (SSU); **<GN>** 1♂, light trap, Mt. Yeonhwasan Bukpyeong-ri Gaecheon-myeon Goseong, 11–12 ix 1999, Sohn JH (GSU); 2♂, light trap, Mt. Sanseongsan Samtae Yongtae-ri Hail-myeon Goseong, 18–19 viii 1998, Park JS and Park JY (GSU); 1♂, light trap, Mt. Yeohangsan Osilgol Yeoyang-ri Jinjeon Happo Masan, 11–12 ix 1999, Kim SY (GSU); 1♂, Yeonsan-dong Dongnae Busan, 21 viii 1985, Kim HS (SSU); 1♂, Donam-dong Chungmu, 11 ix 1972, Shin MJ (KU); 1♂, light trap, Mt. Gayasan Jukjeon-ri Gaya-myeon Hapcheon, 19–20 viii 1999, Han KR (SSU); **<JB>** 4♂, pitfall, Haechang-ri Haseo Buan, 24 ix–12 xi 2001, Jeong MP (SNU); **<JN>** 2♂, Samhakdo Sanjeong-dong Mokpo, 16 x 2004, Kim TW (SSU); 1♂, Baekpo-ri Yeocheon, 19 viii 1998, Lee HH (SSU); 3♂, Mt. Naejangsan Baekyangsa Bukha-myeon Jangseong, 11–12 ix 2004, Kim TW (SSU).

Description. **<♂>** Almost similar with *campestris*. Body coloration dark black, appendages

mottled. Head distinctly wider than anterior margin of pronotum, as long as pronotum; vertex dark shining black, interocular distance four times wider than horizontal diameter of an eye; occiput with a few pale longitudinal strips posteriorly; fastigium of vertex anteriorly projected, widely round with a distinct dorsal transverse strip between lateral ocelli; frons greatly flattened and inclined, rather depressed in areas of median ocellus and downwardly lower of antennal sockets; facial carinae present from connected with fastigium of vertex; scape as long as wide, with distinct outer projection (in small sized-specimens which is not distinct); palpi weakly darker. Pronotum as long as fore femur, two times wider than long in dorsal view, with a pair of dorsal crescent-shaped markings; anterior margin slightly wider than posterior one, both truncated, pilose; lateral lobe of pronotum slightly deeper than pronotal length, its lower anterior and posterior angles bright. Tegmina as wide as posterior margin of pronotum, mesopterous, just reaching abdominal end; two harp and three chord veins present; mirror area not divided, 1.2 times longer than wide; apical area well netted, as long as mirror area; lateral field deeper than lateral lobe of pronotum, upwardly darkish, downwardly bright. Hind wings macropterous, but frequently autotomy happened. Fore tibia with largely oval-shaped outer tympanum three times longer than wide and small rounded inner tympanum 1.2 times longer than wide; three ventral apical spurs present. All tarsomeres with numerous ventral bristles. Middle tibia with two pairs of apical spurs. Hind femur 2.7 times longer than middle femur. Hind tibia with five pairs of dorsal large spines on both sides, the largest inner apical spur as long as two thirds of basitarsus. Hind basitarsus with dorsal spinules on both sides, as long as a half of remaining two tarsomeres combined length, its inner apical spur slightly shorter than last tarsomere. Meso- and metanotums bright. Cercus as long as hind femur. Subgenital plate shortly conical. **<♀>** Head with round vertex and moderately inclined frons; transverse strip between lateral ocelli distinct, three times longer than horizontal diameter of an antennal socket. Ovipositor straightly needle-shaped, as long as hind femur.

Distribution. Korea, Japan, China, Taiwan, India, Sri Lanka, Myanmar, Malaysia, Indonesia.

Remarks. The *L. equestris* is hardly distinguished from *L. campestris* by the male's characters as in the key, the females of both are not distinguished practically (Gorochov and Kostia 1993).

Table 12. Measurements of *Loxoblemmus* spp.

Species	BL	PL	TL	HFL	OL
L. doenitzi	♂ 14.0−18.0 ♀ 13.0−16.8	♂ 2.1−2.6 ♀ 2.7−3.1	♂ 7.5−9.5 ♀ 8.3−9.6	♂ 8.4−10.8 ♀ 9.2−10.9	8.0−8.4
L. magnatus	♂ 16.7−18.8 ♀ 17.4−18.2	♂ 3.1−3.3 ♀ 3.3−3.4	♂ 9.6−10.3 ♀ 9.9−10.8	♂ 10.6−11.2 ♀ 11.4−11.8	13.1−13.8
L. campestris	♂ 12.0−14.0 ♀ 13.5−14.0	♂ 2.2−2.3 ♀ 2.6−2.7	♂ 7.0−8.0 ♀ 7.5−9.0	♂ 7.0−8.3 ♀ 9.0−10.0	8.1−8.7
L. equestris	♂ 11.5−13.8 ♀ 12.7−13.8	♂ 1.9−2.3 ♀ 2.2−2.5	♂ 7.2−8.8 ♀ 7.0−8.0	♂ 7.8−8.8 ♀ 6.6−9.2	8.5−9.0

Genus *Velarifictorus* Randell 귀뚜라미속

1964. Canadian Entomologist, 96: 1586. Type species: *Scapsipedus micado* Saussure 1877.

Diagnosis. Crickets with swollen frons and long, narrowed mandibles. In the shape of epiphallus, bridge of epiphallus longer, internal anterior apodemes of the epiphallus shorter, apical external corners of the ectoparameres produced into medially curved and slightly hooked processes, internal anterior process of the ectoparameres narrower than the external anterior process. Median line of the bridge of the epiphallus with a small V−shaped emargination. Apices of the mesal lobes lying between the bases of the ectoparameres. 98 species are known in the Africa and tropical Asia, the measurements of three Korean *Velarifictorus* compared in Table 13.

63. *Velarifictorus aspersus aspersus* (Walker 1869) 탈귀뚜라미 (개칭) (Figs. 163, 178, 210)

Gryllus aspersus Walker 1869. Catalogue of the Specimens of Dermaptera Saltatoria in the Collection of the British Museum, 1: 39, No. 72. "Hongkong". Holotype ♀ in The Natural History Museum, London.

= *Gryllodes berthellus* Saussure 1877. Mémoires de la Société de Physique et d'Histoire Naturelle de Genève, 25(1): 205. "Japan". Holotype ♀ in Nationaal Natuurhistorische Museum, Leiden. [Chopard 1967]

= *Scapsipedus mandibularis* Saussure 1877. Mémoires de la Société de Physique et d'Histoire Naturelle de Genève, 25(1): 246. "India: Bombay". Type lost. [Chopard 1967]

Korean records. ***Gryllodes berthellus***: Shiraki 1930: 218 ("Keijo" = Seoul); Doi 1932: 38; Ju 1993: 286 (Mt. Baekdusan); ***Scapsipedus mandibularis***: Doi 1932: 38; Cho 1959: 145, Fig. 2 (manual); Cho 1969: 769, pl. 52 (illustrated encyclopedia: 애귀뚜라미); Bae and Lee 1990a: 59 (stridulatory apparatus); Bae and Lee 1990b: 67 (stridulatory file); Kwon and Huh 1994: 49 (Korean check list); Moon and Yoon 1994: 106 (KEI); Kwon et al. 1996:

104 (Korean species list); ***Scapsipedus aspersus***: Wu 1935: 70 (Catalogus Insectorum Sinensium); Cho 1959: 144, Fig. 1 (manual); Cho 1969: 769, pl. 52 (illustrated encyclopedia: 귀뚜라미); Choo and Choi 1983: 49 (geographic adaptation); Song 1988: 357 (photoperiodical effect); Song 1989: 283 (geographic variation); Lee and Ko 1988: 204 (Is. Oeyondo); Bae and Lee 1990a: 59 (stridulatory apparatus); Bae and Lee 1990b: 67 (stridulatory file); ***Gryllodinus berthelles*** [!]: Ju 1969: 19 (North Korean check list); ***Scapsipedlus*** [!] ***mandibularis***: Ju 1969: 21 (North Korean check list); ***Velarifictorus aspersus***: Kwon and Huh 1994: 49 (Korean check list); Moon and Yoon 1994: 106 (KEI); Kwon et al. 1996: 104 (Korean species list); Hua 2000: 56 (Chinese list); ***Gryllodes berhellus*** [!]: Hua 2000: 54 (Chinese list); ***Velarifictorus mandibularis***: Hua 2000: 57 (Chinese list).

Specimens examined. <GN> 1♂, light trap, Nabuli Yugok-dong Jinju, 25-26 ix 1998, Byeon JH (GSU); 2♂, Tongyeong, 23 viii 2006, Jang EK (NIAST).

Description. <♂> Body coloration yellowish brown, appendages more brightly mottled. Head globular with elongated mandibles, much wider than anterior margin of pronotum; vertex transversely dark brown, occiput with a few longitudinal pale strips posteriorly; a distinctly transverse strip present between lateral ocelli, the length two times wider than horizontal diameter of an antennal socket; scape as long as wide; median ocellus located in the mid between inner upper margins of antennal socket, with a linked short bright line downwardly; subocular area weakly depressed, coarsely furrowed; clypeal suture transverse higher than mid in head, thickened in upper margin, diminished in mid; palpi bright. Pronotum a little shorter than fore femur, two times wider than long in dorsal view; anterior margin slightly wider than posterior one, both truncated, pilose; lateral lobe of pronotum slightly deeper than pronotal length, lower area bright. Tegmina slightly wider than posterior margin of pronotum, mesopterous, just reaching abdominal end; two harp and three chord veins present; mirror area divided, 1.2 times wider than long; apical area well netted, as long as mirror area; lateral field deeper than lateral lobe of pronotum, folding areas more darker than lower areas. Fore tibia with largely oval-shaped outer tympanum 3.5 times longer than wide, but inner one vestigial, not discernable. Hind femur 2.7 times longer than middle femur. Hind tibia with five pairs of dorsal large spines on both sides, the largest inner apical spur as long as a half of basitarsus. Hind barsitarsus two times longer than remaining two tarsomeres combined length, with dorsal spinules on both sides, inner apical spur as long as two thirds of last tarsomere. Cercus as long as hind femur.

Distribution. Korea, Japan, China, Taiwan, India, Thailand, Indonesia (ssp. *borealis*: Peking = Beijing).

Remarks. There are so many referring of the *V. aspersus* in Korea, however, most are truly misidentifications of the below *V. micado* is widely distributes in Far East Asia. In this study, only three male specimens of *V. aspersus* are confirmed, its distribution seemed to restrict in far southern end in the Korean peninsula.

64. *Velarifictorus micado* (Saussure 1877) 극동귀뚜라미 (Figs. 164, 179, 211)

Scapsipedus micado Saussure 1877. Mémoires de la Société de Physique et d'Histoire Naturelle de Genève, 25(1): 247. "Japan". Holotype ♂ in Naturhistorisches Museum Wien.

Korean records. ***Velarifictorus micado***: Kwon and Huh 1994: 50 (Korean check list); Kwon et al. 1996: 104 (Korean species list).

Specimens examined. **<GW>** 1♂3♀, light trap, Buyeongyegok Samsan-ri Gangneung, 18-19 viii 2001, Kim JI and Kim SY (SSU); 1♂5♀, Mt. Seokbyeongsan Sangye-ri Okgye-myeon Gangneung, 27-28 viii 2002, Kim TW (SSU); 1♂3♀, Mt. Sambangsan Gonggi-ri Yeongwol, 18 ix 2001, Kim TW and Kim MA (NIAST); 1♀, light trap, Gwaneumsa Mt. Baekdeoksan Yeongwol, 26 viii 2001, Kim SY and Kim AY (SSU); 1♀, Jeungsan Nam-myeon Jeongseon, 19 ix 2004, Kim TW (SSU); 3♀, Gangchon Chuncheon, 20 ix 1996, Huh R (SSU); 1♂, Haesanryeong Hwacheon, 3 x 2006, Kim TW (SSU); **<GG>** 5♂6♀, pitfall, Mt. Cheonggyesan Gapyeong, 27 ix 2002, Jeong MP (SNU); 1♂, Madu Goyang, 14 viii 1994, Park SK (SSU); 1♂, Gwangneung, 12 ix 1991, Jeong SM (SSU); 1♀, Eommi-ri Gwangju, 15 ix 1984, Kim JI (SSU); 1♂, Mt. Surisan Gunpo, 7 x 2001, Kim TW (SSU); 1♀, Mt. Cheonmasan Namyangju, 21 ix 1987, Kim MS (SSU); 1♀, Cheongcheon-dong Suwon, 9 x 1987, Lee JH (SSU); 2♀, Sihwaho Daebudo Ansan, 27 viii 2004, Kim TW (SSU); 2♂3♀, pitfall, Singilcheon Ansan, 19 x 2002, Jeong MP (SNU); 6♂7♀, pitfall, Misadong Hanam, 28 ix 2002, Jeong MP (SNU); 2♂1♀, Mt. Bukhansan Eunpyeong-gu Seoul, 1 x 2001, Kim TW (SSU); 1♀, Junghwa-dong Jungryang-gu Seoul, 12 ix 1988, Sim HJ (SSU); **<CB>** 1♀, light trap, Mt. Wolaksan Munsubong Dogi-ri Deoksan-myeon Jecheon, 14-15 ix 1996, Jeon JS (GSU); 3♀, Mt. Cheondeungsan Sancheok-myeon Chungju, 28 viii 2002, Kim TW (SSU); 2♀, Mt. Gyemyeongsan Jongmin-dong Chungju, 29 viii 2002, Kim TW (SSU); **<CN>** 1♀, Jakgol Gongju, 8 viii 1982, Kim HK (SSU); 1♀, Mt. Seodaesan Sundang-ri Chubu-myeon Geumsan, 28 ix 2002, Kim AY (SSU); 1♂, Gwangcheon-eup Hongseong, 19 ix 1998, Yoo JS (SSU);

<GB> 1♀, Daemyeong-dong Nam-gu Daegu, 18 viii 1995, Park EM (SSU); **<GN>** 1♀, light trap, Mt. Muisan Munsuam Sangri-myeon Goseong, 14-15 x 1999, An TH (GSU); 1♂, light trap, Simcheoncheon Simcheon-ri Namhae, 29-30 viii 1998, Jeon JS (GSU); 2♂1♀, Baechun-ri Chukdong-myeon Sacheon, 13 ix 2001, Paik YH (SSU); 1♂, light trap, Mt. Waryongsan Cheongryongsa Waryong-dong Sacheon, 5-6 x 1996, An TH (GSU); 1♀, light trap, Sinyul-ri Naedong-myeon Jinju, 22-23 ix 1998, Seol JH (GSU); 1♂, light trap, Mt. Sukhosan Ihyeon-dong Jinju, 23-24 ix 1998, Jeon JS (GSU); 1♀, Ssanggyesa Hwagae-myeon Hadong, 1 ix 2001, Kim TW (SSU); **<JB>** 3♂1♀, pitfall, Haechang-ri Haseo Buan, 24 ix 2001, Jeong MP (SNU); **<JN>** 1♀, Samhakdo Sanjeong-dong Mokpo, 16 x 2004, Kim TW (SSU); **<JJ>** 1♂, Mt. Sanbangsan Sagye-ri Andeok-myeon Namjeju, 14 viii 2004, Kim JK and Kim TW (SSU).

Description. <♂> Body coloration darkish brown, legs more brightly mottled. Head globular with roundly merging vertex and frons, mandibles vertical, slightly wider than anterior margin of pronotum; occiput with pale longitudinal strips posteriorly; a distinctly transverse strip present between lateral ocelli, merging ecdysial line weakly ∧-shaped, the length two times wider than horizontal diameter of an antennal socket; scape as long as wide; median ocellus located in the mid between inner upper margins of antennal socket, with a linked bright line downwardly; subocular area weakly depressed, coarsely punctured; clypeal suture transverse lower than mid in head; palpi bright. Pronotum as long as fore femur, two times wider than long in dorsal view; anterior and posterior margins truncated, pilose; lateral lobe of pronotum as deep as pronotal length, lower margin bright. Tegmina slightly wider than hind margin of pronotum, mesopterous, just reaching abdominal end; two harp and three chord veins present; mirror area divided, as long as wide; apical area well netted, slightly shorter than mirror area; lateral field deeper than lateral lobe of pronotum, folding areas more darker than lower areas. Fore tibia with largely oval-shaped outer tympanum four times longer than wide, but inner one vestigial, not discernable. Hind femur three times longer than middle femur. Hind tibia with five pairs of dorsal large spines on both sides, the largest inner apical spur as long as a half of basitarsus. Hind barsitarsus two times longer than remaining two tarsomeres combined length, with dorsal spinules on both sides, inner apical spur as long as two thirds of last tarsomere. Cercus as long as hind femur. **<♀>** Head without subocular depression. Tegmina mesopterous, shorter than male, slightly shorter than abdominal end, its apex narrowly rounded; medial area longitudinally bright. Subgenital plate convex, roundly triangular, its hind margin narrowly truncated. Ovipositor

1.5 times longer than hind femora.

Distribution. Korea, Japan, China, North America (introduced).

65. *Velarifictorus ornatus* (Shiraki 1911) 여름귀뚜라미 (신칭) (Figs. 165, 180, 212)

Gryllus ornatus Shiraki 1911. Monographie der Grylliden Formosa: 52, pl. 1, Fig. 4A–B. "Formosa = Taiwan". Holotype ♀ in Taiwan University, Taipei.

Specimens examined. <GG> 1♀, Gwangju–eup Gwangju, 13 vi 1992, Shin MJ (SSU); 1♂, Mt. Surisan Gunpo, 19 vi 2005, Kim TW (SSU); 1♀, Giheung Yongin, 31 v 2003, Choi JE (SSU); 1♀, Seopo–ri Deokjeok–myeon Incheon, 14 vi 1962, Na YJ (EU); 1♀, Juan Incheon, 14 vi 1969, Kim MR (EU); 1♂, Mt. Cheonmasan Namyangju, 14 vi 1979, Kim TS (EU); 1♂, Bogwangsa Gwangtan Paju, 9 vi 1979, Kim SH (KU); 1♀, Daebang–dong Seoul, 31 v 1963, Kim HJ (EU); 1♀, Jeongneung Seongbuk–gu Seoul, 21 vi 1959, Kim YI (EU); 1♂, ibid. 13 vi 1959, Lee SA (EU); 1♀, Sinchon Seoul, 26 v 1965, Shin SJ (EU); 1♂, Bulgwang–dong Eunpyeng–gu Seoul, 28 vi 1960, Hong HJ (EU); **<CN>** 2♂3♀, Mt. Gayasan Hanseo Univ. Haemi Seosan, 22 vi 2001, Kim TW (SSU); **<GB>** 1♂, Sangju, 23 vi 2000, Park JG (SSU); **<GN>** 1♀, light trap, Mt. Sanseongsan Samtae Yongtae–ri Sangri–myeon Goseong, 10–11 viii 1996, Jeong JS (GSU); 1♂1♀, Ssanggyesa Mt. Jirisan Heagae–myeon Hadong, 31 vi 2001, Kim TW (SSU); **<JN>** 1♀, Gokseong, 7 vii 1999, Paik YH (SSU); 1♂, Mt. Suribong Dongoe–ri Jindo, 29 vi 2004, Sohn JC et al. (SSU).

Description. <♂> Body coloration darkish brown, legs more brightly mottled. Head globular slightly wider than anterior margin of pronotum; vertex and frons roundly merging, mandibles vertical; occiput with six pale longitudinal strips posteriorly; distinctly transverse strip absent between lateral ocelli, only ecdysial line distinguished; scape as long as wide; median ocellus located in the mid between inner upper margins of antennal socket, with a linked shortly bright line downwardly; subocular area indistinctly furrowed; clypeal suture transverse lower than mid in head; palpi bright. Pronotum as long as fore femur, two times wider than long in dorsal view, with a pair of dorsal crescent patterns; anterior and posterior margins truncated, pilose; lateral lobe of pronotum as deep as pronotal length, lower half bright. Tegmina as wider as hind margin of pronotum, mesopterous, just reaching abdominal end; two harp and three chord veins present; mirror area divided, as long as wide; apical area well netted, as long as two thirds of mirror area; lateral field deeper than lateral lobe of pronotum, folding areas more darker than lower areas. Fore tibia with largely oval–shaped outer tympanum three times longer than wide, but inner one vestigial, not

discernable. Hind femur 2.7 times longer than middle femur. Hind tibia with five pairs of dorsal large spines on both sides, the largest inner apical spur as long as a half of basitarsus. Hind barsitarsus 1.7 times longer than remaining two tarsomeres combined length, with dorsal spinules on both sides, inner apical spur as long as two thirds of last tarsomere. Cercus as long as hind femur. <♀> Tegmina mesoptera, shorter than male, not covering abdominal end, its apex roundly truncated. Subgenital plate convex, roundly trapezoidal, its hind margin narrowly truncated. Ovipositor as long as hind femora.

Distribution. Korea (new record), Japan, Taiwan.

Table 13. Measurements of *Velarifictorus* spp.

Species	BL	PL	TL	HFL	OL
V. aspersus	♂ 15.0	♂ 2.7	♂ 7.6	♂ 11.2	
V. micado	♂ 11.7−18.9 ♀ 18.0−22.0	♂ 2.1−2.8 ♀ 3.1−3.4	♂ 7.8−9.9 ♀ 5.5−10.3	♂ 9.2−11.4 ♀ 10.0−11.5	11.7−14.1
V. ornatus	♂ 11.8−15.6 ♀ 11.5−12.0	♂ 2.3−2.8 ♀ 2.5−2.7	♂ 6.7−8.2 ♀ 4.6−8.3	♂ 7.4−9.4 ♀ 8.3−9.0	7.7−9.6

Subfamily Nemobiinae 알락방울벌레아과

Small crickets ranging in body length from 6−9 ㎜. Head with prominent bristles on vertex and frons. Both sexes winged in most species or wingless in some. When tympana present located on outer side. Hind tibia with long spurs; with 2−4 inner and 3−4 outer subapical spurs and 2−3 inner and three outer apical spurs. Hind basitarsus without dorsal spines. Tegmina with a harp vein.

Key to Species of Nemobiinae

1. Tegmina and tympana absent ····· 2

− Tegmina and tympana present ····· 3

2. Head as high as wide in anterior view; abdominal tergites nearly dark brown; hind tibia with two inner dorsal spines; ovipositor as long as hind femur ····· ····· *Caconemobius sazanami* (p. 166)

− Head 1.2 times higher than wide in anterior view; abdominal tergites brown with bright elliptical spots; hind tibia with one inner dorsal spines; ovipositor slightly shorter than hind

femur ····· *Caconemobius takarai* (p. 167)

3. Hind tibia with four outer dorsal spines, the inner apical spur thick and curved at base in ♂ ····· 4

– Hind tibia with three outer dorsal spines, the inner apical spur simply normal in ♂ ····· 6

4. Body shining black, head, pronotal disc and legs black; ♂ hind tibia with weakly widened inner apical spine near the base ····· *Pteronemobius yezoensis* (p. 168)

– Body lustreless brown, head, pronotal disc and legs light brown; ♂ hind tibia with considerably widened inner apical spine near the base ····· 5

5. ♂: apical parts of epiphallus and ectoparamers smooth, the widths of both equal in lateral view; ovipositor longer, 3.0–3.4 ㎜ ····· *Pteronemobius gorochovi* (p. 170)

– ♂: apical parts of epiphallus and ectoparamers dentate, apical lophi of epiphallus distinctly narrower than ectoparamers in lateral view; ovipositor shorter, 2.5–3.0 ㎜ ····· *Pteronemobius nitidus* (p. 171)

6. Hind femur black and white banded on outside; ovipositor with dorsal apex strongly serrated ····· 7

– Hind femur without contrasted patterns; ovipositor with smooth dorsal apex or weakly serrated ····· 9

7. Body sandy; lateral lobes of pronotum bright ····· *Dianemobius csikii* (p. 173)

– Body black and white spotted; lateral lobes of pronotum completely black ····· 8

8. Maxillary palpi with completely white apical segment; tegmina with whitish base ····· *Dianemobius furumagiensis* (p. 174)

– Maxillary palpi with darkish apex of apical segment; tegmina dark gray, unicolorous ··· *Dianemobius nigrofasciatus* (p. 175)

9. Antennae basal half whitish, distally brown; tegmina dark brown, unicolorous ····· *Polionemobius flavoantennalis* (p. 178)

– Antennae simple brown; tegmina transparent with dark maculations ····· *Polionemobius mikado* (p. 179)

Genus *Caconemobius* Kirby 바다방울벌레속

1906. Synonymic Catalogue of Orthoptera, 2(1): 13. Type species: *Paranemobius schauinslandi* Alfken 1901.

Diagnosis. Entirely wingless. Fore tibiae without tympana, with two apical spurs. Mid tibiae with two apical spurs. Hind tibiae with 1–3 inner and 2–3 outer subapical spurs. Male

genitalia with two apparently hinged epiphallic lobes which slope downwards to meet the ectoparameres. Hind tibiae 0.8−1.0 times as long as hind femora. Abdomen noticeably bulbous. Head very short, palpi very slender. Pronotum with rounded margins. Ovipositor arching downwards. 13 species are known in the Pacific Ocean, the measurements of two Korean *Caconemobius* compared in Table 14.

66. *Caconemobius sazanami* (Furukawa 1970) 바다방울벌레 (Figs. 182, 226)

Parapteronemobius sazanami Furukawa 1970. Kontyû, 38(1): 62, Figs. 16−32. "Japan: Manazuru beach". Syntype in Tsukuba.

Korean records. ***Parapteronemobius sazanami***: Kwon and Huh 1994: 50 (Korean check list); Kwon et al. 1996: 104 (Korean species list); ***Caconemobius sazanami***: Storozhenko 2004: 226, Figs. 515, 587.

Specimens examined. <GG> 8♂, Oido Jeongwangdong Siheung, 3−19 x 2004, Kim TW (SSU); 3♂3♀, Is. Pungdo Ansan, 11−12 viii 2006, Kim TW (SSU); **<JN>** 2♂4♀, Gatbawi Yonghaedong Mokpo, 16 x 2004, Kim TW (SSU); 6♂8♀, Is. Gageodo Heuksan−myeon Sinan−gun, 12 ix 2004, Kang TH (SSU).

Description. <♂> Body coloration dark brown with luster, anteriorly more bright, legs pale bright without maculation. Head as wide as, as long as pronotum, as high as wide in anterior view; vertex roundly merging with frons; interocular distance four times wider than horizontal diameter of an eye; ocelli not bright, vestigial, hardly perceptible; scape wider than long; antennal socket slightly smaller than an eye, touching with inner lower margin of eye, 1.2 times wider than narrowest distance between antennal sockets. Pronotum shorter than fore femur, two times wider than long in dorsal view, with weakly concave anterior margin and gently concave posterior margin; dorsal surface with two transverse sulci anteriorly and median shallow longitudinal depression; lateral lobe of pronotum shorter than pronotal length, lower roundly truncated. Abdominal tergum dark brown, without distinct maculations. Fore and middle coxae each with anterior projections acutely protruded. Fore and middle tibiae each with a pair of small ventro−apical spurs. All basitarsi with numerous ventral bristles. Hind femur two times longer than middle femur, with black crescent on knee. Hind tibia with three external, two internal large spines, the largest inner apical spur as long as a half of basitarsus. Hind basitarsus 1.2 times longer than remaining two tarsomeres combined length, its inner apical spur as long as a half of last tarsomere. Middle tarsomeres minute, compressed. Cercus shorter than hind femur, as long as hind

tibia. Subgenital plate convex, roundly triangular. **<♀>** Subgenital plate shorter than basal width, its hind margin deeply incised as V−shaped forming a pair of lateral triangular lobes. Cercus as long as hind tibia. Ovipositor straightly needle−shaped, as long as hind femur, longer than cercus; ventral valve straight, a little shorter than dorsal one; dorsal valves rather swollen subapically, without serration.

Distribution. Korea, Japan.

67. *Caconemobius takarai* (Ôshiro 1990) 무늬바다방울벌레 (신칭) (Figs. 183, 227)

Parapteronemobius takarai Ôshiro 1990. Akitu, 117: 1−6, Figs. 1−8. "Japan: Is. Takara". Holotype ♂ in Osaka Museum of Natural History.

Specimens examined. <GG> 3♂4♀, Oido Jeongwang−dong Siheung, 3−19 x 2004, Kim TW (SSU); 2♂3♀, Wolmido Bukseong−dong Incheon, 23 ix 2004, Kim TW (SSU); **<CN>** 4♂5♀, Mongsanhang Mongsanpo Taean, 26 viii 2005, Kim TW (SSU); 1♂2♀, Baeksajang Anmyeondo Taean, 10 ix 2005, Kim TW (SSU).

Description. <♂> Body coloration dark gray with luster, legs pale bright with faint maculation. Head as wide as, as long as pronotum, 1.2 times higher than wide in anterior view, mandibles longer than *sazanami*; vertex roundly merging with frons; interocular distance three times wider than horizontal diameter of an eye; median ocellus vestigial, not discernable; scape wider than long; antennal socket smaller than an eye, touching with inner lower margin of eye, as wider as narrowest distance between antennal sockets. Pronotum a half shorter than fore femur, two times wider than long in dorsal view, with truncated anterior margin and gently concave posterior margin, pilose; dorsal surface with two shallow transverse sulci anteriorly and a median shallow longitudinal depression; lateral lobe of pronotum shorter than pronotal length, lower margin roundly truncated. Abdominal tergites brown, with bright elliptical spots longitudinally. Fore and middle coxae each with anterior projections acutely protruded. Fore and middle tibiae each with a pair of small ventro−apical spurs. All basitarsi with numerous ventral bristles. Hind femur two times longer than middle femur, with black crescent on knee. Hind tibia with three outer, one inner dorsal spines, the largest inner apical spur a little shorter than a half of basitarsus. Hind basitarsus 1.2 times longer than remaining two tarsomeres combined length, its inner apical spur a little shorter than a half of last tarsomere. Middle tarsomeres minute, compressed. Cercus shorter than hind tibia. Subgenital plate convex, roundly triangular. **<♀>** Subgenital plate shorter than basal width, its hind margin deeply incised as V−shaped

forming a pair of lateral lobes, its apex roundly obtuse. Cercus a little shorter than hind tibia. Ovipositor straightly needle-shaped, slightly shorter than hind femur, longer than cercus; ventral valve straight, a little shorter than dorsal one; dorsal valves rather swollen subapically, without serration.

Distribution. Korea (new record), Japan.

Table 14. Measurements of *Caconemobius* spp.

Species	BL	PL	HFL	OL
C. sazanami	7.3-9.3	1.5-1.9	5.0-6.6	5.2-5.7
C. takarai	9.2-10.7	2.2-2.8	7.2-7.9	6.5-7.2

Genus *Pteronemobius* Jacobson and Bianchi 북방울벌레속

1904. Priamokrylyia i lozhnostchatokrylyia Rossiiskoi imperii, 450. Type species: *Nemobius tartarus* Saussure 1874.

Diagnosis. Male hind tibia with four inner subapical spurs, the apical one thickened and conical, basal one very short, tuberculiform and glandular. Base of abdomen with dorsal glands. Tegmina in both sexes longer than head and pronotum combined length; posterior margin truncated or convex. 85 species are known in the world, the measurements of three Korean *Pteronemobius* compared in Table 15.

68. *Pteronemobius yezoensis* (Shiraki 1911) 습지방울벌레 (Figs. 189, 219)

Nemobius yezoensis Shiraki 1911. Monographie der Grylliden Formosa: 87, pl. 2, Fig. 6A-C. "Japan: Sapporo". Syntype in Taiwan University, Taipei.

Korean records. ***Nemobius yezoensis***: Shiraki 1930: 197 ("Tokusen"); Cho 1959: 149, Fig. 12 (manual); Cho 1969: 774, pl. 53 (illustrated encyclopedia: 북방울벌레); ***Pteronemobius yezoensis***: Tadauchi 1989: 49 (Japanese check list); Storozhenko 2004: 213, Figs. 516, 554-557.

Specimens examined. <GW> 1♀, Gungdae-ri Mt. Chiaksan Wonju, 6 vi 1974, Lee IH (SSU); 2♀, Misan-ri Mt. Bangtaesan Inje, 24 vi 1996, Kim JI and Kim SY (SSU); 4♂, Jogyeong-dong Mt. Bangtaesan Inje, 19 viii 1995, Kim JK (KU); 1♀, Garibong Mt. Seoraksan Inje, 23 vii 2004, Kim TW (SSU); 11♂7♀, Guryongsa Mt. Chiaksan Wonju, 15 vi 1999, Kim TW (NIAST); 1♂3♀, Geomun-ri Jinbu Pyeongchang, 30 vi 1985, Chang KS (SSU); 1♂, Baegildong Daehwa Pyeongchang, 1 vii 1985, Han BS (SSU); 1♂2♀, Mt.

Baegamsan Gwangam-ri Naechon-myeon Hongcheon, 9 vi 2002, Kim TW (SSU); 1♂, Mt. Gwangdeoksan Naeseo-myeon Hwacheon, 4 vii 2000, Kim TW (NIAST); 3♂, Changwon-3ri Ssangyong Yeongwol, 2 vi 2000, Kim MA (NIAST); 3♀, Sododong Taebaek, 22 vii 1986, Chang KS (SSU); **<GG>** 1♂, Seooneung Deokyang-gu Goyang, 6 vi 1984, Han SS (SSU); 1♂, Mt. Chukryeongsan Namyangju, 18 vi 1983, Kang AK (KU); 1♂, Yangsang-dong Ansan, 19 v-13 vi 2006, Kim TW (SSU); 1♂, Bulgwan-dong Eunpyeong-gu Seoul, 11 vi 1998, Kim TW (SSU); **<CB>** 2♂, Yonggokmaeul Mt. Gyemyeongsan Chungju, 17 vi 2003, Han KD and Kim TW (SSU); **<CN>** 1♀, Mt. Gyeryongsan Gongju, 6 vi 1997, Im JY (NIAST); **<GB>** 5♂5♀, Mt. Palgongsan Daegu, 11 vi 2000, Kim MA (NIAST); 1♂, Daehyeon Bonghwa, 25 vii 1986, Kim JI (SSU).

Description. <♂> Body coloration dark shining black, appendages also dark black. Head small, globular, as long as pronotum, slightly wider than anterior margin of pronotum; vertex rounded, with four longitudinal dark brown strips; interocular distance two times wider than horizontal diameter of an eye; scape wider than long; narrowest distance between antennal sockets as wide as horizontal diameter of an antennal socket; head 1.2 times higher than wide in anterior view; palpi dark black. Pronotum wholly black, as long as fore femur, 1.5 times wider than long in dorsal view, pilose; anterior and posterior margins truncated, weakly bright rimmed; lateral lobe of pronotum as deep as pronotal length. Tegmina slightly wider than posterior margin of pronotum, mesopterous, barely reaching abdominal end; one harp, three chord veins present; mirror area divided, 1.5 times wider than long; apical area shortly vestigial; lateral field dark, deeper than lateral lobe of pronotum. Fore tibia with oval-shaped outer tympanum two times longer than wide, but inner onse absent. Hind femur 2.5 times longer than middle femur. Hind tibia with four pairs of dorsal spines on both sides, among which inner basal spine smaller, inner apical spine longest and thickened as long as largest inner apical spur that as long as three quarters of basitarsus. Hind basitarsus two times longer than remaining two tarsomeres combined length, the inner apical spur a little shorter than last tarsomere. Subgenital plate trapezoidal, wider than long, its hind margin concave. Cercus a little shorter than hind tibia. Apical parts of epiphallus and ectoparamers short and smooth, the widths of both equal in lateral view. <♀> Tegmina dark black, mesopterous, just surpassing a half of abdomen, its posterior margin truncated; medial areas pale brownish longitudinally. Cercus as long as ovipositor. Ovipositor gently recurved needle-shape, 2.8-3.3 ㎜, not serrated apically.

Distribution. Korea, Japan, Russian Far East.

69. *Pteronemobius gorochovi* Storozhenko 2004 담색방울벌레 (신칭) (Figs. 191, 221)

Pteronemobius gorochovi Storozhenko 2004. Long-horned Orthopterans of the Asiatic part of Russia: 214, Figs. 495, 514, 558-564. "Russia, Korea". Holotype ♂ in Institute of Biology and Pedology of the Far East Branch of the Russian Academy of Sciences, Vladivostok.

Eneoptera concolor nec Walker 1871. Catalogue of the Specimens of Dermaptera Saltatoria in the Collection of the British Museum, Suppl. 5: 10. "India: Bombay". Holotype ♀ in The Natural History Museum, London.

Nemobius ohmachii nec Shiraki 1930. Insecta Matsumurana, 4(4): 198, Fig. 7. "Japan: Tokyo". Syntype in Taiwan University, Taipei.

Korean records. ***Pteronemobius ohmachii***: Choo and Choi 1983: 49 (geographic adaptation); ***Pteronemobius concolor***: Kwon and Huh 1994: 50 (Korean check list: 남알락방울벌레); Kwon et al. 1996: 104 (Korean species list); ***Pteronemobius gorochovi***: Storozhenko 2004: 214 (Mt. Jirisan).

Specimens examined. **<GW>** 1♀, light trap, Buyeongyegok Samsan-ri Gangneung, 18-19 viii 2002, Kim JI (SSU); 2♂4♀, Mt. Sambangsan Noron-ri Pyeongchang, 17 ix 2001, Kim TW (SSU); 2♂7♀, Mt. Chiaksan, 2 ix 1973, Choi KY (NIAST); **<GG>** 2♀, Mt. Surisan Gunpo, 21 ix 2003, Kim TW (SSU); 3♂3♀, Mt. Jeugeumsan Naechon-myeon Pocheon, 25 ix 2004, Kim TW (SSU); 1♂, pitfall, Deokwu-ri Bongdam-myeon Hwaseong, 24 ix 2001, Jeong MP (SNU); 1♂, pitfall, Gicheon-ri Paltan Hwaseong, 19 ix 2002, Jeong MP (SNU); **<CB>** 2♀, Yongam-ri Hwanggan Yeongdong, 4-5 viii 2001, Kim JI (SSU); 2♂3♀, Mt. Guryongsan Cheongju, 10 x 2006, Im MS (SSU); **<JN>** 1♂, Mt. Naejangsan Baekyangsa Bukha-myeon Jangseong, 23 viii 1999, Kim TW (SSU).

Description. **<♂>** Body coloration pale or dark brown, lateral sides more darker. Head globular, as long as pronotum, as wide as hind margin of pronotum; vertex with four longitudinal pale brown strips posteriorly; interocular distance 2.2 times wider than horizontal diameter of an eye; narrowest distance between antennal sockets as wide as horizontal diameter of an antennal socket; scape wider than long; palpi dark brown, apex more dark. Pronotum shorter than fore femur, 1.7 times wider than long in dorsal view; anterior and posterior margins truncated, pilose; lateral lobe of pronotum darker than disk, as deep as pronotal length. Tegmina slightly wider than hind margin of pronotum, mesopterous, mot reaching abdominal end; harp area much large, divided by one harp vein; three chord veins present; mirror area small, divided, two times wider than long; apical

area vestigial, not discernable; lateral field darkish, deeper than lateral lobe of pronotum. Hind wings wanting, but macropterous form frequently present. Fore tibia with oval-shaped outer tympanum 2.7 times longer than wide, but inner one absent. Hind femur 2.2 times longer than middle femur. Hind tibia with four pairs of dorsal movable spines on both sides, of them inner basal one thick nipple-shaped, inner apical one longest, thick and sinuate in base, as long as largest inner apical spurs which as long as a half of basitarsus. Hind basitarsus 2.2 times longer than remaining two tarsomeres combined length, inner apical spur as long as last tarsomere. Subgenital plate trapezoidal, wider than long, its hind margin concave. Cercus as long as hind tibia. Apical parts of epiphallus and ectoparameres long, narrow, smooth, the widths of both equal in lateral view. **<♀>** Tegmina mesopterous, just covering a half of abdomen, its hind margin truncated, but macropterous form present. Cercus as long as ovipositor. Ovipositor longer, 3.0-3.4 ㎜.

Distribution. Korea, Japan, Russian Far East.

70. *Pteronemobius nitidus* (Bolívar 1901) 북방울벌레 (Figs. 190, 220)

Nemobius nitidus Bolívar 1901. In Zichy. Zoologische Ergebnisse der dritten Asiatischen Forschungsreise des Grafen Eugen Zichy, 2: 242. "China: Peking = Beijing". Holotype ♀ in Instituto Espanol de Entomologia, Madrid.

Korean records. ***Nemobius nitidus***: Wu 1935: 62 (Catalogus Insectorum Sinensium); ***Pteronemobius nitidus***: Choo and Choi 1983: 49 (geographic adaptation); Kwon and Huh 1994: 50 (Korean check list); Moon and Yoon 1994: 106 (KEI); Kwon et al. 1996: 104 (Korean species list: 북방방울벌레); Hua 2000: 56 (Chinese list); Ichikawa 2001a: 51, Figs. 44, 46; Storozhenko 2004: 216, Figs. 565-567.

Specimens examined. <GW> 1♀, Mt. Chiaksan Wonju, 28 vii 1994, Shin YJ (SSU); 1♀, Deokgeori Jangpyeong, 4 ix 1988, Jeon NY (SSU); 1♀, light trap, Mt. Myeongseongsan Cheolwon, 17 viii 1999, Anonym (SSU); 1♀, Balsan-ri Chuncheon, 14 x 1999, Kim TW (SSU); 1♀, Sambongyaksu Gwangwon-ri Naemyeon Hongcheon, 15 viii 2005, Lee JG (SSU); **<GG>** 1♀, Mt. Manisan Ganghwa, 11 viii 1991, Kim JI (SSU); 2♀, light trap, Jeondeungsa Ganghwa, 10 viii 1991, Kim JI (SSU); 1♀, Baekhak reservoir Yeoncheon, 2 x 2002, Jeong MP (SNU); 1♂, Gwangneung Pocheon, 30 viii 1999, Sohn JC (SSU); 2♀, pitfall, Deokwu-ri Bongdam-myeon Hwaseong, 24 ix-8 x 2001, Jeong MP (SNU); 1♂1♀, pitfall, Gicheon-ri Paltan-myeon Hwaseong, 19 ix 2002, Jeong MP (SNU); 1♂, Mt. Bukhansan Jingwanoe-dong Eunpyeong-gu Seoul, 14 viii 2001, Lee HS (SSU); 16♂, Mt.

Yeogisan Suwon, 7 vii–18 viii 1996, Anonym (NIAST); **<CB>** 1♂, Mt. Cheondeungsan Sancheok–myeon Chungju, 28 viii 2002, Kim TW (SSU); **<CN>** 1♀, Mt. Muryangsa Mt. Mansusan Buyeo, 19 vii 1999, Kim TW (SSU); **<JB>** 1♀, Haechang–ri Haseo Buan, 24 ix 2001, Jeong MP (SNU); **<JN>** 1♀, Mt. Baekwunsan Gwangyang, 24 viii 1999, Kim TW (SSU).

Description. **<♂>** Body coloration pale or dark brown, almost similar with above *gorochovi*; lateral sides more darker. Head globular, as long as pronotum, as wide as hind margin of pronotum; vertex with five longitudinal pale brown strips posteriorly; interocular distance 2.2 times wider than horizontal diameter of an eye; narrowest distance between antennal sockets as wide as horizontal diameter of an antennal socket; scape wider than long; palpi dark brown, apex more dark. Pronotum shorter than fore femur, 1.7 times wider than long in dorsal view; anterior and posterior margins truncated, pilose; lateral lobe of pronotum as deep as pronotal length, lower marin bright, upper margin darker than disk. Tegmina slightly wider than hind margin of pronotum in base, mesopterous, mot reaching abdominal end; one harp, three chord veins present; mirror area divided, 1.5 times wider than long; apical area netted, confused with mirror area; lateral field darkish, deeper than lateral lobe of pronotum. Hind wings wanting, but macropterous form frequently present. Fore tibia with oval–shaped outer tympanum 2.5 times longer than wide, but inner one absent. Hind femur 2.7 times longer than middle femur. Hind tibia with four pairs of dorsal movable spines on both sides, among which inner basal one thick and short nipple–shaped, inner apical one longest, thick and sinuate in base, as long as largest inner apical spurs which as long as two thirds of basitarsus. Hind basitarsus two times longer than remaining two tarsomeres combined length, inner apical spur as long as last tarsomere. Subgenital plate trapezoidal, wider than long, its hind margin concave. Cercus as long as hind femur. Apical parts of epiphallus and ectoparamers dentate, apical lophi of epiphallus distinctly narrower than ectoparamers in lateral view. **<♀>** Hardly separable from *gorochovi,* tegmina mesopterous, just covering a half of abdomen, its hind margin truncated, but macropterous form present. Cercus longer than ovipositor. Ovipositor shorter, 2.5–3.0 ㎜.

Distribution. Korea, China, Russian Far East.

Table 15. Measurements of *Pteronemobius* spp.

Species	BL	PL	TL (Macroptera)	HFL	OL
P. yezoensis	6.6−7.2	1.3−1.6	♂ 3.1−3.9 ♀ 2.6−3.3	4.0−4.8	2.8−3.3
P. gorochovi	6.7−7.7	1.4−1.8	♂ 3.1−3.8 ♀ 2.6−3.5 (4.4)	4.6−5.5	3.0−3.4
P. nitidus	6.4−8.1	1.3−1.7	♂ 3.5−4.0 ♀ 2.5−3.9 (5.0)	4.5−5.8	2.5−3.0

Genus *Dianemobius* Vickery 알락방울벌레속

1973. Canadian Entomologist, 105(1): 421. Type species: *Eneoptera fascipes* Walker 1869.

Diagnosis. Males with four internal and three external subapical, dorsal spines on the hind tibiae, the proximal internal spine glandular, females with three internal and three external dorsal tibial spines, distoventral spurs nearly equal in size, the internal spur slightly longer and curved inward toward the body. Concealed external male genitalia with the lateral plates of the epiphallus attached to the dorsal plate of the epiphallus by membrane and articulating with the dorsal plate at their proximal ends. 12 species are known in the Eastern Asia, the measurements of three Korean *Dianemobius* compared in Table 16.

71. *Dianemobius csikii* (Bolívar 1901) 모래방울벌레 (Figs. 184, 216)

Nemobius csikii Bolívar 1901. In Zichy. Zoologische Ergebnisse der dritten Asiatischen Forschungsreise des Grafen Eugen Zichy, 2: 248. "China: Daba". Holotype ♀ in Hungarian Natural History Museum, Budapest.

Korean records. ***Pteronemobius csikii***: Kim 1981: 70 (Sinhap−ri: 해변방울벌레); ***Dianemobius csikii***: Kwon and Huh 1994: 50 (Korean check list: 동양알락방울벌레); Kwon et al. 1996: 104 (Korean species list); Storozhenko and Paik 2001: 16; Storozhenko 2004: 224, Figs. 521, 583−586.

Specimens examined. **<GW>** 2♀, Donggang riverbed Mitan−myeon Pyeongchang, 10 vii 1999, Kim TW (SSU); **<GG>** 1♀, Hantangang riverbed Jeongok Yeoncheon, 10 ix 2006, Kim TW (SSU); 1♀, Is. Mueido Incheon, 4 ix 2006, Kim TW (SSU); **<CN>** 3♂3♀, Sinhap−ri Seocheon, 11 x 1981, Kim JI (SSU); 1♀, Sindu−ri Wonbuk Taean, 23 vii 2006, Kim TW (SSU); 1♀, Hakampo Wonbuk Taean, 1 x 2006, Kim TW (SSU); **<GB>** 4♂4♀, Hahoemaeul Andong, 6 ix 2000, Kim MA (NIAST); **<JN>** 1♂4♀, Myeongsasimni Sinri Is. Sinjido Wando, 16 vii 2003, Kim TW (SSU).

Description. **<♂>** Body coloration sandy, maculated, bright grey with small black spotted.

Head globular, as long as pronotum, wider than anterior margin of pronotum, but narrower than hind margin of pronotum; interocular distance two times wider than horizontal diameter of an eye; vertex with a few short hairs, roundly merging with frons; scape wider than long; narrowest distance between antennal sockets slightly wider than horizontal diameter of an antennal socket; apice of pali dark brown. Pronotum shorter than fore femur, speckled, pilose; anterior margin narrower than posterior margin; lateral lobes of pronotum bright, as deep as pronotal length. Tegmina a little wider than posterior margin of pronotum, mesopterous, not reaching abdominal end; veins white; one harp, three chord veins present; mirror area divided, 1.5 times wider than long; apical area shortly vestigial, not discernable; lateral field bright, deeper than pronotal length. Fore tibia with roundly oval-shaped outer tympanum two times wider than long, inner tympanum absent. Hind femur weakly speckled dorso-externally, 2.7 times longer than middle femur. Hind tibia with a basal thick dorsal spine modified to nipple-shape and apically three pairs of large, movable dorsal spines, the largest inner apical spur as long as two thirds of basitarsus. Hind basitarsus 1.5 times longer than remaining two tarsomeres combined length, without dorsal spinules, the largest inner apical spur longer than last tarsomere. Cercus as long as a half of hind femur. Subgenital plate wider than long, its hind margin narrowed, weakly emarginated. **<♀>** Tegmina micropterous, just covering a half of abdomen, its posterior margins truncated. Hind tibia with a simply short dorsal spine near base. Subgenital plate ventrally convex, shorter than wide, its hind margin truncated. Ovipositor straight, needle-shaped, as long as hind femur; dorsal apex strongly serrated.

Distribution. Korea, Japan, China, Russian Far East, Mongolia, India.

72. *Dianemobius furumagiensis* (Ohmachi and Furukawa 1929) 여울알락방울벌레 (Figs. 185, 218)

Nemobius furumagiensis Ohmachi and Furukawa 1929. Proc. Imp. Acad. 5: 374. "Japan: Aomori". Holotype ♂ in National Science Museum (Natural History), Tokyo.

Korean records. ***Dianemobius furumagiensis***: Kwon and Huh 1994: 50 (Korean check list); Kwon et al. 1996: 104 (Korean species list); Bae 1998: 160.

Specimens examined. <PB> 1♂, Mt. Myohyangsan pathway Isonnam, 11 x 1987, Z. Korsos and L. Ronkay, No. 1036 (Hungarian Natural History Museum, Budapest); **<GW>** 1♀, light trap, Buyeongyegok Samsan-ri Gangneung, 18-19 viii 2001, Kim JI (SSU); 1♂, Mt. Sambangsan Noron-ri Pyeongchang, 17 ix 2001, Kim TW (SSU); 6♂, Mt. Seokbyeongsan

Sangye-ri Okgye-myeon Gangneung, 27-28 viii 2002, Kim TW (SSU).

Description. <♂> Body coloration black and white combination annulated. Head small and globular, as wide as posterior margin of pronotum; vertex brownish, with longitudinal bright strips posteriorly; interocular distance two times wider than long in dorsal view; scape wider than long; narrowest distance between antennal sockets as wide as horizontal diameter of an antennal socket; mouth parts dark brown from below median ocellus and eyes; maxillary pali bright white to apex. Pronotum as long as head, shorter than fore femur, 1.5 times wider than long in dorsal view; anterior and posterior margins truncated; lateral lobes of pronotum blackish, as deep as pronotal length. Tegmina wider than posterior margin of pronotum, mesopterous, not reaching abdominal end; one harp, three cord veins present; mirror area divided, 1.5 times wider than long; apical area shortly vestigial, narrowly netted; lateral field dark, deeper than lateral lobe of pronotum. Fore tibia with oval-shaped outer tympanum 2.5 times longer than wide, but inner one absent. Hind femur three times longer than middle femur, with three distinct dorso-external black bands. Hind tibia with a small nipple-shaped dorsal spine and apically three pairs of large, movable dorsal spines, the largest inner apical spur as long as four fifth of basitarsus. Hind basitarsus 1.5 times longer than remaining two tarsomeres combined length, without dorsal spinules, the largest inner apical spur as long as last tarsomere. Cercus as long as hind femur. Subgenital plate wider than long, its hind margin narrowed, weakly emarginated. <♀> Tegmina mesopterous, just covering half of abdomen, basal half brightly white than male, apical remains dark blackish, posterior margin truncated. Cercus as long as hind femur, longer than ovipositor. Subgenital plate widely round, wider than basal width, its hind margin distinctly incised as V-shape forming a pair of lateral round lobes. Ovipositor straight, shorter than hind femur, as long as hind tibia, its dorsal apex well serrated.

Distribution. Korea, Japan, Northeast China, Taiwan.

73. *Dianemobius nigrofasciatus* (Matsumura 1904) 알락방울벌레 (Figs. 186, 217)

Nemobius nigrofasciatus Matsumura 1904. Thousand Insects of Japan, 1: 138, pl. 6, Fig. 14. "Japan: Sapporo". Lectotype ♂ in Hokkaido University, Sapporo.

Eneoptera fascipes nec Walker 1869. Catalogue of the Specimens of Dermaptera Saltatoria in the Collection of the British Museum, 1: 67. "North Hindustan". Holotype ♂ in The Natural History Museum, London.

Korean records. ***Pteronemobius fascipes***: Furukawa 1930: 111 (Corea); Doi 1933: 89; Cho

1959: 149, Fig. 11 (manual); Cho 1969: 774, pl. 53 (illustrated encyclopedia); Ju 1969: 20 (North Korean check list); Choo and Choi 1983: 49 (geographic adaptation); Bae and Lee 1990a: 59 (stridulatory apparatus); Bae and Lee 1990b: 67 (stridulatory file); ***Nemobius nigrofasciatus***: Doi 1932: 38 (Siheung); ***Dianemobius nigrofasciatus***: Kwon and Huh 1994: 50 (Korean check list); Moon and Yoon 1994: 106 (KEI); Kwon et al. 1996: 104 (Korean species list); Bae 1998: 159; ***Dianemobius fascipes nigrofasciatus***: Storozhenko 2004: 221, Figs. 517, 518, 574–578.

Specimens examined. **<PN>** 4♂, Pyongyang city Mt. Daesongsan, 20 ix 1979, H. Steinmann and T. Vasarhelyi, No. 551 (Hungarian Natural History Museum, Budapest); **<GW>** 2♀, Golji-ri Imgye-myeon Jeongseon, 5 viii 1977, Lee JW and Yoo SH (KU); 1♂, Inje, 5 ix 1998, Kim TW (SSU); 1♀, Mt. Hambaeksan Taebaek, 14 viii 1999, Kim TW (NIAST); 1♂, Guryongsa Mt. Chiaksan Wonju, 15 vi 1999, Kim TW (NIAST); 1♂, Baekyang-ri Namsan-myeon Chuncheon, 1 vii 2006, Kim TW (SSU); 1♂, Balsan-ri Chuncheon, 10 ix 1998, Jang SS (NIAST); **<GG>** 2♀, Mt. Pakyon 20 km NE from Kaesong both sides of and near to the road between Kaesong and Pakyon pokpo, 10 ix 1971, S. Horvatovich and J. Papp, No. 254 (Hungarian Natural History Museum, Budapest); 1♂1♀, Gwansan-dong Deokyang-gu Goyang, 13 vii 2006, Yoo IS (SSU); 1♂3♀, Gwanak, 19 ix 1992, Kim HJ (SSU); 1♀, Mt. Mugapsan Toechon Gwangju, 5 ix 1998, Kim TW (SSU); 1♂2♀, Mt. Surian Gunpo, 13 x 2002, Kim TW (SSU); 1♂, Byeokje, 3 x 1973, Kim HN (EU); 1♀, Heoninneung Seongnam, 27 viii 1998, Oh SK (SSU); 13♀, Seodun-dong Gwonseon-gu Suwon, 21 vi–25 vii 2001, Kim TW (NIAST); 1♀, Namhangang reverbed Yeoju, 23 x 2004, Kim TW (SSU); 2♀, Mt. Jugeumsan Naechon-myeon Pochen, 25 ix 2004, Kim TW (SSU); 2♀, Mt. Umyeonsan Gangnam-gu Seoul, 4 x 1988, Lee YS (SSU); 1♀, Sinchon Seoul, 11 x 1972, Lee JH (EU); 1♀, Mt. Bukhansan Eupyeong-gu Seoul, 2 x 2001, Kim TW (SSU); 1♀, Jingwanoe-dong Eunpyeong-gu Seoul, 14 viii 2001, Lee HS (SSU); 2♀, light trap, Suwon (= Suigen), 10 vii 1927, Anonym (NIAST); **<CB>** 1♀, Sojeon-ri Gunbuk Okcheon, 23 x 1990, Kim JI (SSU); 1♀, Jugam Cheongwon, 23 ix 2000, Kim TW (NIAST); 2♀, Jubongmaeul Cheongju, 30 ix 2006, Im MS (SSU); **<CN>** 1♀, Mt. Mansusan Boryong, 20 vii 1999, Ku DS (NIAST); **<GB>** 1♀, Mt. Geumosan Gumi, 19–20 vii 2001, Kim KI and Kim AY (SSU); 1♀, Mt. Juwangsan Cheongsong, 30 vii 1983, Park HK (SSU); **<GN>** 1♀, Namhae, 18 viii 1993, Choi JR (NIAST); **<JB>** 2♀, pitfall, Haechang-ri Haseo Buan, 24 ix–12 xi 2001, Jeong MP (SNU); 2♀, Daea-ri Dongsan-myeon Wanju, 27 vii 2002, Kim TW (SSU); **<JN>** 2♀, Piagol Mt. Jirisan Toji

Gurye, 1 vii 2001, Kim TW (SSU); 1♀, Mokpo, 10 x 1988, Lee JT (NIAST); 1♀, Wando-eup Is. Wando, 6 vii 1982, Dept Bio. (SSU); **<JJ>** 1♂, Musucheon, 26 ix 2000, Kim TW (NIAST); 2♀, Gwaneumsa, 27 ix 2000, Kim MA (NIAST).

Description. **<♂>** Body coloration black and white combination annulated, much similar with above *D. furumagiensis*, but more darker. Head small and globular, as wide as posterior margin of pronotum; vertex brightly brown, without longitudinal strips posteriorly; interocular distance two times wider than long in dorsal view; scape black, wider than long; narrowest distance between antennal sockets as wide as horizontal diameter of an antennal socket; mouth parts dark black from below median ocellus and eyes; maxillary palpus bright gray, its apex darkened. Pronotum as long as head or fore femur, two times wider than long in dorsal view; anterior and posterior margins truncated, pilose; lateral lobes of pronotum blackish, as deep as pronotal length. Tegmina wider than posterior margin of pronotum, mesopterous, not reaching abdominal end; one harp, three cord veins present; mirror area divided, 1.2 times wider than long; apical area shortly vestigial, not discernable; lateral field dark, deeper than lateral lobe of pronotum. Hind wings wanting, but macropterous form present frequently. Fore tibia with oval-shaped outer tympanum 2.5 times longer than wide, but inner one absent. Hind femur three times longer than middle femur, with three distinct dorso-external black bands. Hind tibia with a small nipple-shaped dorsal spine and apically three pairs of large, movable dorsal spines, the largest inner apical spur as long as two thirds of basitarsus. Hind basitarsus two times longer than remaining two tarsomeres combined length, without dorsal spinules, the largest inner apical spur as long as last tarsomere. Cercus as long as hind femur. Subgenital plate wider than long, its hind margin narrowed, weakly emarginated. **<♀>** Tegmina mesopterous, just covering a half of abdomen, but macropterous form present frequently, in which hind wings surpassing abdominal end as long as body length. Cercus as long as hind tibia or ovipositor. Subgenital plate widely convex, wider than basal width, its hind margin narrowly truncated. Ovipositor straight, as long as hind tibia, its dorsal apex well serrated.

Distribution. Korea, Japan, Northeast China, Russian Far East.

Remarks. There are confused records with *D. nigrofasciatus* and *D. fascipes* since the synonymous consideration of both by Uvarov (1926), further subspecific status has even been considered by Gorochov (1983) and Storozhenko (2004). There are, however, much supporting to independent species including genetic study by Masaki and Nagase (1992).

Table 16. Measurements of *Dianemobius* spp.

Species	BL	PL	TL	HFL	OL
D. csikii	6.7−7.4	1.2−1.8	3.2−4.0	4.2−5.0	3.5−4.0
D. furumagiensis	8.0−9.0	1.3−1.9	3.6−4.6	4.8−5.6	3.2−3.8
D. nigrofasciatus	6.5−7.5	1.2−1.7	2.8−3.9	3.9−4.5	3.3−3.5

Genus *Polionemobius* Gorochov 좀방울벌레속

1983. Systematics and ecological−faunistic review of the various orders of Insecta of the Far East: 44 (pro subgenus *Dianemobius*). Type species: *Trigonidium taprobanense* Walker 1869.

Diagnosis. Out side of hind femur not banded, Ovipositor weakly serrated at apex. Seven species are known in the Africa and tropical Asia, the measurements of two Korean *Polionemobius* compared in Table 17.

74. *Polionemobius flavoantennalis* (Shiraki 1911) 흰수염방울벌레 (Figs. 187, 222)

Nemobius flavoantennalis Shiraki 1911. Monographie der Grylliden Formosa: 84, pl. 2, Fig. 5A−C. "Japan: Gifu". Syntype in Taiwan University, Taipei.

Korean records. ***Pteronemobius flavoantennalis***: Kwon and Huh 1994: 50 (Korean check list: 더듬이알락방울벌레); Kwon et al. 1996: 104 (Korean species list).

Specimens examined. <GW> 1♀, Mt. Sambangsan Gonggi−ri Yeongwol, 18 ix 2001, Kim MA (NIAST); 2♂1♀, Jeungsan Nam−myeon Jeongseon, 19 ix 2004, Kim TW (SSU); 2♀, Mt. Mindungsan Imgye−myeon Jeongseon, 18 ix 2004, Kim TW (SSU); **<GG>** 2♂4♀, Mt. Surian Gunpo, 13 x 2002, Kim TW (SSU); 1♂, Hongyureung Geumgok Namyangju, 22 ix 2001, Kim TW (SSU); 1♀, Mt. Wulgilsan Joan Namyangju, 13 ix 1998, Kim TW (SSU); 1♀, pitfall, Ansancheon Guseong−eup Yongin, 19 ix 2002, Jeong MP (SNU); 2♂, Mt. Suraksan Euijeongbu, 2 x 2002, Anonym (SSU); 2♂, pitfall, Deokwu−ri Bongdam−myeon Hwaseong, 24 ix 2001, Jeong MP (SNU); 1♂3♀, pitfall, Gicheon−ri Paltan−myeon Hwaseong, 24 ix−12 xi 2002, Jeong MP (SNU); 8♂1♀, Mt. Bukhansan Eunpyeong−gu Seoul, 2 x 2001, Kim TW (SSU); 2♀, Wonji−dong Gangnam−gu Seoul, 14 ix 1985, Cho SR (KU); 1♀, Oryun−dong Songpa−gu Seoul, 3 x 1992, Kim YH (SSU); 1♀, Mt. Umyeonsan Seocho−gu Seoul, 19 ix 1991, Lee SR (SSU); **<CN>** 1♀, Gijipo beach Is. Anmyeon−do Taean, 8 ix 2005, Kim TW (SSU); **<GB>** 1♂1♀, Mt. Naeyeonsan Pohang, 7 ix 2000, Kim MA (NIAST); **<JB>** 1♂2♀, Haechang−ri Haseo Buan, 24 ix−8 x 2001,

Jeong MP (SNU); **<JJ>** 1♀, Andeokgyegok Gamsan-ri Andeok-myeon Namjeju, 13 viii 2004, Kim JK and Kim TW (SSU); 2♂, Seonheul-ri Jocheon Bukjeju, 28 ix 2000, An MK (NIAST); 2♀, Musucheon Bukjeju, 9 x 1999, Kim TW (NIAST)

Description. **<♂>** Body coloration dark shining black, appendages dark brown. Head small, globular, dark brownish, as long as, but slightly wider than pronotum; interocular distance 1.5 times wider than horizontal diameter of an eye; narrowest distance between antennal sockets 1.5 times wider than horizontal diameter of an antennal socket; scape wider than long; antennae white in basal half, remain apical half darkish; maxillary palpus with black apical segment, but second segment white. Pronotum wholly black, shorter than fore femur; anterior and posterior margins truncated, pilose; lateral lobe of pronotum deeper than pronotal length. Tegmina monochromatic dark, wider than hind margin pronotum, macropterous, as long as abdominal end; one harp, three chord veins present; mirror area divided, two times wider than long; apical area vestigial, not discernable; lateral field darkish, as deep as lateral lobe of pronotum. Fore tibia with oval-shaped outer tympanum 2.5 times longer than wide, but inner one absent. Hind femur 2.5 times longer than middle femur. Hind tibia with a short inner dorsal spine in base and three pairs of large dorsal spines on both sides, the largest inner apical spur as long as two thirds of basitarsus. Hind basitarsus two times longer than remaining two tarsomeres combined length, the inner apical spur as long as last tarsomere. Cercus as long as hind tibia. Subgenital plate trapezoidal, wider than long, its hind margin narrowly truncated. **<♀>** Tegmina mesopterous, just covering two thirds of abdomen, its posterior margin roundly truncated. Subgenital plate shorter than wide, trapezoidal, its hind margin widely truncated. Ovipositor weakly upcuved needle-shape, shorter than hind femur, as long as cercus; apex subapically swollen, but without serration.

Distribution. Korea, Japan, Northeast China.

75. *Polionemobius mikado* (Shiraki 1911) 좁방울벌레 (Figs. 188, 223)

Nemobius mikado Shiraki 1911. Monographie der Grylliden Formosa: 80, pl. 1, Fig. 10A-B. "Japan, Taiwan". Syntype in Taiwan University, Taipei.

Trigonidium taprobanense [!] nec Walker 1869. Catalogue of the Specimens of Dermaptera Saltatoria in the Collection of the British Museum, 1: 102. "Ceylon = Sri Lanka". Holotype ♀ in The Natural History Museum, London.

Korean records. ***Nemobius mikado***: Doi 1933: 89; ***Pteronemobius taprobanense***: Cho 1959: 148,

Fig. 10 (manual); Cho 1969: 773, pl. 53 (illustrated encyclopedia); ***Pteronemobius taprobanensis***: Choo and Choi 1983: 49 (geographic adaptation); Bae and Lee 1990a: 59 (stridulatory apparatus); Bae and Lee 1990b: 67 (stridulatory file); ***Polionemobius mikado***: Kwon and Huh 1994: 50 (Korean check list); Moon and Yoon 1994: 106 (KEI); Kwon et al. 1996: 104 (Korean species list).

Specimens examined. **<PN>** 2♂, Pyongyan Hotel garden, 10 viii 1971, S. Horvatovich and J. Papp, No. 157 (Hungarian Natural History Museum, Budapest); 2♂2♀, Pyongyang city Mt. Daesongsan, 20 ix 1979, H. Steinmann and T. Vasarhelyi, No. 551 (Hungarian Natural History Museum, Budapest); **<GW>** 1♂, light trap, Buyeongyegok Samsan-ri Gangneung, 18-19 viii 2001, Kim JI (SSU); 2♀ (macroptera), Mt. Seokbyeongsan Sangye-ri Okgye-myeon Gangneung, 27-28 viii 2002, Kim TW (SSU); 7♂15♀, Mt. Sambangsan Gonggi-ri Yeongwol, 18 ix 2001, Kim MA (NIAST); 1♂, Ssangyong Yeongwol, 13 viii 1998, Jang et al. (NIAST); 3♂4♀, Jeungsan Nam-myeon Jeongseon, 19 ix 2004, Kim TW (SSU); 4♂1♀, Mt. Mindungsan Imgye-myeon Jeongseon, 18 ix 2004, Kim TW (SSU); 1♂, Balsan-ri Chuncheon, 10 viii 1998, Anonym (NIAST); 1♂, Myeongdong-ri Nam-myeon Hongcheon, 11 ix 2001, Sim HS (SSU); **<GG>** 2♀, Mt. Pakyon 20 km NE from Kaesong both sides of and near to the road between Kaesong and Pakyon pokpo, 10 ix 1971, S. Horvatovich and J. Papp, No. 254 (Hungarian Natural History Museum, Budapest); 1♀, Mt. Surisan Gunpo, 7 x 2001, Kim TW (SSU); 1♂, Mt. Ungilsan Joan Namyangju, 13 ix 1998, Kim TW (SSU); 1♂, Suwon, 20 viii 2004, Kim TW (SSU); 3♀, Sihwaho Is. Daebudo Ansan, 27 viii 2004, Kim TW (SSU); 1♀, Yongmunsa Yangpyeong, 22 vii 1989, Kim EK (SSU); 1♂1♀, Sajanggol Dori Jeomdong-myeon Yeoju, 29 viii 2003, Yeo JD (KU); 1♂, Gwangneung Pocheon, 30 viii 1999, Sohn JC (SSU); 1♂2♀, Mt. Jeugeumsan Naechon-myeon Pocheon, 25 ix 2004, Kim TW (SSU); 1♂1♀, pitfall, Deokwu-ri Bongdam-myeon Hwaseong, 24 ix-8 x 2001, Jeong MP (SNU); 2♂8♀, pitfall, Gicheon-ri Paltan Hwaseong, 24 ix-8 x 2001, Jeong MP (SNU); 1♀, Mt. Daemosan Gangnam-gu Seoul, 27 ix 2004, Kim TW (SSU); 1♀, Ewha Univ. campus Seoul, 28 x 1992, Ok JW and Lee HJ (EU); **<CB>** 2♀, Yongam-ri Hwanggan Yeongdong, 4-5 viii 2001, Kim JI (SSU); 1♂, Goesan, 9 x 1987, An SB (NIAST); **<CN>** 1♀, Chungnam Univ. 28 x 1992, Oh et al. (SSU); 2♀, Gijipo beach Is. Anmyeondo Taean, 8 ix 2005, Kim TW (SSU); **<GB>** 1♀, light trap, Geumneung, 11-15 viii 1993, Anonym (NIAST); **<GN>** 1♀, Hyangnobong Dongsan-ri Sangri-myeon Goseong, 17-18 viii 1998, Jeon JS (GSU); 1♀, Seoksan Gunho Deokho-ri Hail-myeon Goseong, 20-21 viii 1998, Ju HG (GSU); 3♂8♀,

Mt. Sanseongsan Samtae Yongtae-ri Hail-myeon Goseong, 18-19 viii 1998, Park JS et al. (GSU); **<JB>** 1♂1♀, pitfall, Haechang-ri Haseo Buan, 24 ix 2001, Jeong MP (SNU); 1♀, light trap, Muju, 21-25 viii 1992, Anonym (NIAST); **<JN>** 1♂, Mt. Naejangsan Baekyangsa Bukha-myeon Jangseong, 11-12 ix 2004, Kim TW (SSU); 1♀, Mt. Baekwunsan Chusan Gwangyang, 24 vi 1995, Choi JR (NIAST); **<JJ>** 1♂, Gwaneumsa, 12 x 1999, Kim TW (SSU); 1♂, Andeok, 14 x 1977, Choe KR (NIAST); 1♂, Wolrim-ri Hallim-eup Bukjeju, 2 viii 2003, Cho SW et al. (SSU); 1♀ (macroptera), Dokkabi road Nohyeong-dong Jeju, 11 viii 2004, Seing JB and Jeong BH (SSU).

Description. **<♂>** Body coloration grayish brown, rather mottled. Head small, globular, as long as pronotum, slightly wider than anterior margin of pronotum; vertex brown, with pale longitudinal strips posteriorly; interocular distance 1.5 times wider than horizontal diameter of an eye; narrowest distance between antennal sockets 1.5 times wider than horizontal diameter of an antennal socket; scape as wide as long; antennae unicolorous with body; maxillary palpus dark brown. Pronotum a little shorter than fore femur, two times wider than long in dorsal view; anterior margin narrower than posterior one, both truncated, pilose; lateral lobe of pronotum dark black, as deep as pronotal length. Tegmina weakly wider than hind margin of pronotum, macropterous, as long as abdominal end; postcubital area transparent, darkly speckled; one harp, three chord veins present; mirror area divided, 1.5 times wider than long; apical area vestigial, shortly netted; lateral field darkish upwardly, deeper than lateral lobe of pronotum. Hind wings wanting, but macropterous form present frequently. Fore tibia with oval-shaped outer tympanum three times longer than wide, but inner one absent. Hind femur 2.7 times longer than middle femur. Hind tibia with a short inner dorsal spine in base and three pairs of large dorsal spines on both sides; the largest inner apical spine rather sinuated in base; the largest inner apical spur as long as three quarters of basitarsus. Hind basitarsus two times longer than remaining two tarsomeres combined length, the inner apical spur as long as last tarsomere. Cercus as long as hind tibia. Subgenital plate trapezoidal, wider than long, its hind margin narrowly concave. **<♀>** Tegmina mesopterous to macropterous, its posterior margin roundly truncated. Subgenital plate much wider than long, trapezoidal, its hind margin shallowly notched in mid. Ovipositor weakly upcuved needle-shape, as long as hind femur, longer than cercus; dorsal apex indistinctly serrated.

Distribution. Korea, Japan, China, Taiwan.

Remarks. Confusedly referred *P. mikado* and *P. taprobanensis* are due to the synonymous

consideration since Uvarov (1926). As far as known the male difference is not so clear, however, the female difference has been recognized in ovipositor length (Ichikawa et al. 2000). The Korean specimens are corresponded to the *P. mikado* with relatively long ovipositor.

Table 17. Measurements of *Polionemobius* spp.

Species	BL	PL	TL	HFL	OL
P. flavoantennalis	5.3−6.6	0.8−1.2	3.0−3.6	3.2−4.0	2.5−2.6
P. mikado	5.4−7.6	1.1−1.3	2.0−4.5	3.6−4.7	3.7−4.2

Subfamily Trigonidiinae 풀종다리아과

As known as sword−tailed crickets. Body size smaller, nearly less than 1 ㎝, slender and fragile. Head generally wider than anterior margin of pronotum. Middle tarsomeres depressed and heart−shaped, bear prominent adhesive pads. Hind tibia always have two inner and three outer apical spurs and three inner and three outer subapical spurs. Hind tibia nearly as long as hind femur. Ovipositor compressed, generally recurved, its apex pointed. More than 275 species are known in the world.

Key to Species of Trigonidiinae

1. ♂ tegmina without speculum, the venation similar in both sexes; fore tibia without tympanum ····· ***Trigonidium japonicum*** (p. 183)
− ♂ tegmina with large speculum, the venation different between both sexes; fore tibia with distinct tympanum ····· 2
2. Pronotum reddish brown; ♂ tegmina with mirror area longer than wide (Fig. 224); hind femur with one outer longitudinal strip ····· ***Homoeoxipha obliterata*** (p. 185)
− Pronotum grayish brown; ♂ tegmina with mirror area as wide as long (Fig. 225); hind femur with two outer longitudinal strips ····· ***Svistella bifasciata*** (p. 186)

Genus *Trigonidium* Rambur 먹종다리속

1839. Faune entomologique de l'Andalousie. Orthoptera, 2: 39. Type species: *Trigonidium cicindeloides* Rambur 1839.

Diagnosis. Tympana and dorsal thorasic gland absent. Male without stridulum. Dorsal veins of tegmina parallel and similar in both sexes. Body smooth and shiny. In lateral view top of tegmina convex. Body length less than 6 ㎜. Epiphallus usually with prominent lateral arms. More than 160 species are known in the world.

76. *Trigonidium japonicum* Ichikawa 2001a 먹종다리 (Fig. 192)

Trigonidium japonicum Ichikawa 2001a. Tettigonia, 3: 50, Figs. 41-43. "Japan: Nara". Holotype ♂ in Osaka Museum of Natural History.

Trigonidium cicindeloides nec Rambur 1839. Faune entomologique de l'Andalousie. Orthoptera, 2: 39. "Spain: Andalucia". Syntype in Museum National d'Histoire Naturelle, Paris.

Homeoxiphus insularis nec Saussure 1878. Mémoires de la Société de Physique et d'Histoire Naturelle de Genève, 25(2): 470. "Australia". Holotype ♂ in Naturhistorisches Museum Wien.

Korean records. ***Metioche insularis***: Doi 1932: 38; Doi 1935: 58; ***Trigonidium cicindeloides***: Kim 1998: 352 (먹종다리붙이); Bae 1998: 161; ***Trigonidium japonicum***: Ichikawa et al. 2000: 285, Figs. 14c, d, pl. 60, 61; Ichikawa 2001a: 50.

Specimens examined. **<GW>** 1♀, Hongcheon, 25 vi 1986, Paik WH (NIAST); 4♀, Balsan-ri Chuncheon, 17 v-12 vi 1998, Park HC (NIAST); 1♀, Dutayeon Yanggu, 12 vi 1990, Kim JI (SSU); 1♀, Guryongsa Mt. Chiaksan Wonju, 15 vi 1999, Kim TW (NIAST); 1♂, Dongsan-ri Jinbu Pyeongchang, 2 vii 1985, Chang KS (SSU); 1♀, Samhwasa Bukpyeong, 26 vi 1984, Chang KS (SSU); 1♂, Socho-myeon Wonju, 29 vi 2000, Kim MA (NIAST); 1♀, Changwon-3ri Ssangyong Yeongwol, 16 vii 1998, Jang SS (NIAST); **<GG>** 1♂, Mt. Cheonmasan Gapyeong, 24 vi 1995, Lee EJ (SSU); 1♀, ibid. 9 vii 1994, Choi HS (SSU); 1♀, Heoninneung Gangnam-gu Seoul, 31 v 1988, Jeon NY (SSU); 1♂, Mt. Suraksan Nowon-gu Seoul, 9 v 1998, Kang HG (SSU); 1♂, Mt. Dobongsan Dobong-gu Seoul, 29 v 1999, Choi EH (SSU); 1♂, Bulgwang-dong Eunpyeong-gu Seoul, 6 vi 1998, Kim TW (SSU); 1♂, Jihaeng-dong Dongducheon, 30 v 1999, Kim YE (SSU); 1♂, Mt. Surisan Anyang, 18 vi 1978, Park EJ (KU); 1♂, Mt. Gwanggyosan Suwon, 30 vi 1990, Kim HD (KU); 1♂1♀, Yeoju, 22 vi 1998, Yoo JS (NIAST); **<CB>** 2♂, Yonggokmaeul Mt. Gyemyeongsan Chungju, 17 v 2003, Han GD and Kim TW (SSU); 1♂, Mt. Hwanghaksan Yeongdong, 2 vi 1978, Kim JH (KU); 1♀, Songmyeon-ri Cheongcheon, 23 vi 1989, Cho HS (SSU); **<CN>** 1♀, Naengjeonggol Mt. Baekhwasan Taean, 22 vi 2001, Hwang JH (SSU); 1♀, Mt. Gyeryongsan Gongju, 5 vi 1997, Moon HJ (NIAST); **<GB>** 1♀, Mt.

Baekamsan Uljin, 29 v 1999, Kim TW (SSU); 1♂1♀, Dalgipokpo Mt. Taehaengsan, 24 vi 1988, Kim HJ (KU); 1♀, Bulyeonggyegok Uljin, 25 vi 1990, Choi EK (KU); 1♂, Daehyeon Seokpo Bonghwa, 24 vii 1986, Chang KS (SSU); **<GN>** 1♂1♀, Mt. Garisan Dongbu-myeon Geojedo, 27 v 1998, Park HC (NIAST); **<JB>** 1♂1♀, Mt. Naejangsan Jeongeup, 26 v 1994, Kim HE and Kim HJ (SSU); 1♂1♀, ibid. 4 vii 1985, Kim DI (KU); 1♀, Goemok-ri Jeoksang-myeon Muju, 30 v 2000, Jang SJ (NIAST); 1♀, Mujugucheongdong, 21 v 1983, Kim BK (KU); **<JN>** 1♀, Cheongdeungdo Jindo, 29 vii 1983, Kim JI (SSU); 1♂, Piagol Mt. Jirisan, 23 vi 1987, Jang JY (KU); 1♀, Seonamsa Seungju, 22 vi 1987, Ku SY (KU); 1♀, Dapgok-ri Gwangyang, 10 viii 1993, Ha SY (SSU); 3♂1♀, Mt. Wolchulsan Yeongam, 10 vi 2000, Kim MA (NIAST); 1♀, Samdu-ri Unoe-myeon Wando, 17 vi 1998, Park HC (NIAST); 1♂2♀, Mt. Duryunsan Haenam, 22-23 vi 1993, BJE and KIH (KU); **<JJ>** 2♂, Mt. Sanbangsan Sagye-ri Andeok-myeon Namjeju, 12 vi 2004, Kim JK and Kim TW (SSU); 1♀, Eoseungsaeng, 28 vi 1990, An SB (NIAST).

Description. **<♂>** Body coloration dark shining black like as a small coleopteroid, the appendages bright yellow without distinct maculae. Head dark black, inverted triangular-shape in anterior view, with round vertex; eyes large, widely separated, interocular distance two times wider than horizontal diameter of an eye; fastigium of vertex as wide as horizontal diameter of an antennal socket; scape longer than wide, scape and pedicel dark black; inner margins of eyes more brightly rimed; palpi with last segments blackish hatchet-shaped, maxillary palpus three times larger than labial one. Pronotum pilose, a little longer than wide in dorsal view, anterior and posterior margins truncated; lateral lobe of pronotum as deep as pronotal length. Tegmina darkish macropterous, slightly exceeding abdominal end, its apex rather pointed; stridulatory apparatus absent; lateral field deeper than lateral lobe of pronotum. Hind wings absent. Fore tibia without tympana. Middle tarsomeres smaller and darkish, depressed. Hind femur three times longer than middle femur, hind tibia with three pairs of dorsal spines on both sides apically, the largest inner apical spur as long as two thirds of basitarsus. Hind basitarsus longer than remaining two tarsomeres combined length, with two apical spines on both sides, its inner apical spur shorter than last tarsomere. Cercus as long as middle femur. Subgenital plate trapezoidal, wider than long, its hind margin weakly concave with a small projected medial lobe, **<♀>** Tegminal venation similar with male, but rather hyaline, less dark than male. Maxillary palpus two times larger than labial one. Cercus as long as ovipositor. Subgenital plate

roundly triangular, as long as basal width, its hind margin weakly notched at apex. Ovipositor strongly recurved needle-shape, as long as a half of hind femur; basal two thirds area rather widened and bumpy; dorsal valves weakly serrated apically. **<Measurements>** BL 4.1-4.3; PL 1.0-1.1; TL 3.4-3.5; HFL 4.0-4.2; OL 1.5-2.0.

Distribution. Korea, Japan.

Genus *Homoeoxipha* Saussure 홍가슴종다리속

1874. Mission scientifique au Mexique et dans l'Amerique centrale, 6: 363. Type species: *Phyllopalpus lycoides* Walker 1869.

Diagnosis. Head narrower than pronotum, elongated and black. Fore tibia with large inner and outer tympana. Male tegmina with stridulum and large mirror. Dorsum of body with dorsal gland. Pronotum with roundly convex anterior margin. Ten species are known in the Africa and tropical Asia.

77. *Homoeoxipha obliterata* (Caudell 1927) 홍가슴종다리 (신칭) (Figs. 195, 224)

Cyrtoxipha ritzemae var. *obliterata* Caudell 1927. Proceedings of the United States National Museum, 71(3): 41. "Japan". Holotype ♂ in National Museum of USA, Washington.

Specimens examined. <JJ> 2♂, rearing, Mt. Sanbangsan Sagye-ri Andeok-myeon Namjeju, 14 viii-1 ix 2004, Kim TW (SSU).

Description. **<♂>** Body coloration pale darkish blue, hind margin of pronotum and tegminal base reddish. Head smaller, as wide as hind margin of pronotum, inverted traingular-shape in anterior view; interocular distance 1.5 times wider than horizontal diameter of an eye; fastigium of vertex as wide as horizontal diameter of an antennal sockets; scape as long as wide, scape and pedicel dark black; last segments of palpi hatchet-form, maxillary one two times larger than labial one. Pronotum pilose, as long as wide, narrowing and rounded in front, widened and truncated in posterior margin; lateral lobe of pronotum as deep as pronotal length. Tegmina wider than hind margin of pronotum, macropterous, fully covering abdomen; postcubital area hyaline with obscure maculation; one harp vein present, inclined from right to left; mirror area occupy three fifth of dorsal surface, not divided, with a small concentric inner veinlet, 1.7 times longer than wide; apical area indistinctly vestigial; lateral filed darkish, deeper than lateral lobe of pronotum. Fore tibia with distinctly oval-shaped outer tympana, but inner one absent. Hind femur with an outer darkish longitudinal band, hind tibia with three pairs of dorsal spines on both sides, the largest

inner apical spur as long as a half of basitarsus. Hind basitarsus 0.7 times longer than remaining two tarsomeres combined length, inner apical spur shorter than last tarsomere. Middle tarsomeres small rounded, depressed. Cercus as long as a half of hind femur. Subgenital plate roundly triangular, shorter than basal width, its hind margin narrowly truncated. **<Measurements>** BL 6.2−6.4; PL 1.0−1.1; TL 4.2−4.3; HFL 3.4−3.5.

Distribution. Korea (new record), Japan.

Genus *Svistella* Gorochov 풀종다리속

1987. Entomofauna of Vietnam: 13. Type species: *Paratrigonidium bifasciatum* Shiraki 1911.

Diagnosis. Tegmina of male wide, those of female corneous, strongly convex. Only two species are known in the Oriental Region.

78. *Svistella bifasciata* (Shiraki 1911) 풀종다리 (Figs. 193−194, 225)

Paratrigonidium bifasciatum Shiraki 1911. Monographie der Grylliden Formosa: 108, pl. 2, Fig. 4A−B. "Japan, Taiwan". Syntype in Taiwan University, Taipei.

Korean records. ***Paratrigonidium bifasciatum***: Shiraki 1930: 230; Doi 1933: 89; Furukawa and Shiraki 1950: 47, Fig. 122; Cho 1959: 150, Fig. 13 (manual); Cho 1969: 774, pl. 53 (illustrated encyclopedia); Bae and Lee 1990a: 59 (stridulatory apparatus); Bae and Lee 1990b: 67 (stridulatory file); Kwon and Huh 1994: 50 (Korean check list); Moon and Yoon 1994: 106 (KEI); Hua 2000: 55 (Chinese list); ***Paratrigonium*** [!] ***bifasciatum***: Ju 1969: 20 (North Korean check list: 풀귀뚜라미); ***Svitella*** [!] ***bifasciata***: Kwon et al. 1996: 104 (Korean species list).

Specimens examined. **<PN>** 7♂6♀, Zamosan 60 km NE from Pyongyan, 2 ix 1971, S. Horvatovich and J. Papp, No. 230, 231 (Hungarian Natural History Museum, Budapest); 1♀, beating, Lake Kyollyong Reservoir ca. 30 km N of Pyongyang, 30 ix 1978, A. Vojnits and L. Zombori, No. 430 (Hungarian Natural History Museum, Budapest); **<GW>** 2♀, Mt. Myeongseongsan Cheolwon, 3 vii 1999, Kim TW (SSU); **<GG>** 1♀, Mt. Hwayasan Gapyeong, 26 viii 2002, Jeong MP (SNU); 1♂, Mt. Ungilsan Joan Namyangju, 13 ix 1998, Kim TW (SSU); 1♂1♀, Mt. Mugapsan Gwangju, 15 ix 1991, Park HC (NIAST); 1♂1♀, Mt. Cheonggyesan Yangpyeong, 26 viii 2002, Jeong MP (SNU); 1♀, Mt. Wolrongsan Paju, 29 viii 2002, Jeong MP (SNU); 1♂, Gwangneung Pocheon, 17 x 1999, Sohn JC (SSU); 1♂, pitfall, Deokwu−ri Bongdam−myeon Hwaseong, 24 ix 2001, Jeong MP (SNU); 1♂, Mt. Suraksan Nowon−gu Seoul, 4 ix 1995, Min Y (SSU); 1♂, Seosamneung Seoul, 18 ix 1971,

Seon MH (EU); 1♂1♀, Mt. Achasan Seoul, 24 viii 1980, Chang KS (SSU); 1♂, ibid. 12 ix 1981, Yoon SJ (EU); 3♂, Mt. Bukhansan Eunpyeong-gu Seoul, 11-12 viii 2004, Kim TW (SSU); **<CB>** 1♀, Hyeon-ri Boeun, 13 x 2000, Anonym (SSU); **<CN>** 1♀, Is. Anmyeondo Taean, 27-28 vii 1996, Lee HS (NIAST); **<GN>** 2♀, light trap, Mt. Sanseongsan Samtae Yongtae-ri Hail-myeon Goseong, 18-19 viii 1998, Park JS and Park KY (GSU); 2♂, Mt. Jeongsusan Yulgoksa Sancheong, 6 ix 1998, Jeon JS (GSU); 1♂, light trap, Geumseongsa Mt. Geumosan Goryong-ri Jingyo-myeon Hadong, 14-15 ix 1998, Jeon JS (GSU); **<JB>** 3♂1♀, pitfall, Haechang-ri Haseo Buan, 24 ix-12 xi 2001, Jeong MP (SNU); 1♀, Geumsansa Gimje, 19 ix 1992, Park JM (SSU); **<JN>** 1♂, Mt. Taecheongsan Bongjeongsa Sangi-ri Samgye-myeon Yeonggwang, 4 ix 1998, Park JS (GSU); 1♀, Jukpo-ri Yeocheon, 6 x 1998, An EK (NIAST); **<JJ>** 1♂3♀, rearing, Mt. Sanbangsan Sagye-ri Andeok-myeon Namjeju, 14 viii-1 ix 2004, Kim TW (SSU); 1♀, Deokcheon-ri Gujoa-eup Bukjeju, 1 viii 2003, Cho SW et al. (SSU).

Description. <♂> Body coloration bright gray with dark maculae on tegmina and appendages. Head short and inverted triangular in anterior view, wider than anterior margin of pronotum; interocular distance wider, 1.7 times wider than horizontal diameter of an eye, in this area a black transverse strip present; vertex with a few longitudinal long hairs anteriorly; fastigium of vertex narrower than an eye or antennal socket in dorsal view; scape longer than wide; inner margin of antennal socket darkish rimed, the horizontal diameter 2.2 times wider than narrowest distance between antennal sockets; subocular and behind areas of eyes with dark patches; last segments of palpi hatchet-shaped, maxillary palpus a little larger than labial one; Pronotum shorter than wide in dorsal view, with dark patches scattered; anterior and lateral margins darkish rimed, pilose; posterior margin truncated with numerous hairs; lateral lobe of pronotum slightly deeper than pronotal length. Tegmina wider than posterior margin of pronotum, macropterous, as long as abdominal end; postcubital area transparent with dark maculation; one harp vein present; mirror area wide, occupy nearly a half of dorsal surface, not divided, as wide as long; apical area shortly vestigial; lateral field blackish, slightly deeper than lateral lobe of pronotum. Hind wings vestigial. Fore tibia with distinctly oval-shaped outer tympanum, but inner one indistinct. Fore and middle femora subapically black banded, hind femur with two outer longitudinal strips dorsally banded. Hind tibia with three pairs of large dorsal spines on both sides apically, the largest inner apical spur as long as a half of basitarsus. Hind barsitasus with a dorsal apical spine, slightly longer than remaining two tarsomeres combined length; inner

apical spur as long as last tarsomere. Middle tarsomeres smaller, rounded and depressed. Cercus slightly longer than a half of hind tibia. Abdomen ventrally darkish. Subgenital plate wider than long, its hind margin widely concave with a small projected medial lobe, posteriorly brightly rimed. **<♀>** Tegmina narrower than male, with distinctly raised longitudinal veins and cross veins weakly netted; tegminal apex narrowly rounded, with stratum meet with lateral filed. Subgenital plate wider than long, its hind margin very deeply incised forming two lateral lobes. Cercus longer than ovipositor. Ovipositor strongly recurved needle-shape, as long as a half of hind femur; basal three fifth area rather widened and bumpy; dorsal valves strongly serrated on apical a fifth. **<Measurements>** BL 6.4-7.0; PL 1.1-1.4; TL 4.0-5.5; HFL 5.4-6.0; OL 2.5-3.0.

Distribution. Korea, Japan, China, Taiwan.

Subfamily Cachoplistinae 방울벌레아과

As known as spider crickets, or long-legged crickets. Head short and vertical. Legs very slender compared with body. Pronotum excavated above anterior margin, posterior margin; lateral edges with crest. Hind tibia with spines and serration. Male tegmina with large stridulatory apparatus. More than 230 species are in the world.

Genus *Meloimorpha* Walker 방울벌레속

1870. Catalogue of the Specimens of Dermaptera Saltatoria in the Collection of the British Museum, 3: 468. Type species: *Meloimorpha cincticornis* Walker 1870.

Diagnosis. Body slender, mostly smooth and shining, extremely minutely punctured. Head a little narrower than prothorax, transversely furrowed between the front and the face. Prothorax with a distinct transverse curved furrow. Anterior margin straight, sides much rounded. Posterior margin slightly rounded. Cerci slender, setose, much longer than abdomen. Ovipositor straight, slender, longer than abdomen. Legs slender, moderately long; femora unarmed. Tegmina macropterous, veins strongly marked. Hind wings obsolete. Three species are known in the Asia.

79. *Meloimorpha japonicus japonicus* (de Haan 1842) 방울벌레 (Figs. 236-237)

Gryllus (*Phalangopsis*) *japonicus* de Haan 1842. In Temminck. Verhandelingen over de natuurlijke geschiedenis der Nederlandsche overzeesche bezittingen. Zoologie: 236. "Japan".

Holotype ♂ in Nationaal Natuurhistorische Museum, Leiden.

Korean records. ***Homoeogryllus japonicus***: Doi 1932: 39; Cho 1959: 147, Fig. 8 (manual); Cho 1969: 772, pl. 53 (illustrated encyclopedia); Ju 1969: 20 (North Korean check list); Bae and Lee 1990a: 60 (stridulatory apparatus); Bae and Lee 1990b: 67 (stridulatory file); Kwon and Huh 1994: 50 (Korean check list); Moon and Yoon 1994: 106 (KEI); ***Melloimorpha*** [!] ***japonica***: Kwon et al. 1996: 104 (Korean species list).

Specimens examined. **<GW>** 1♀, Gilgokcheon Nogok-3ri Wondeok-myeon Samcheok, 24 ix 2005, Kim TW (SSU); **<GG>** 1♂, rearing, Is. Pungdo Ansan, 12 vii-12 ix 2006, Kim TW (SSU); 2♀, Sudong Yangju, 16 ix 1979, Dept. Bio. (SSU); 1♀, Wonji-dong Gangnam-gu Seoul, 14 ix 1985, Kim HS (SSU); 3♂, Mt. Manisan Sangbang-ri Hwado Ganghwa Incheon, 11 viii 2000, Lee YB (NIAST); 1♂, Eungogae Gwangju, 18 x 1980, Kim JS (SSU); **<CB>** 1♀, Deokgok-ri Jecheon, 22 x 1995, Jeon YS (SSU); **<GB>** 3♂2♀, Guryongpo Pohang, 7 ix 2000, Kim TW and Kim HB (NIAST); **<JN>** 1♂, Dongcheon Suncheon, 3 ix 2005, Kim TW (SSU); 1♂1♀, Baekyangsa Mt. Naejangsan Jangseong, 23 viii 1999, Kim TW (SSU); **<JJ>** 1♂, Andeokgyegok Gamsan-ri Andeok-myeon Namjeju, 13 viii 2004, Kim JK and Kim TW (SSU); 1♂, Mt. Sanbangsan Sagye-ri Andeok-myeon Namjeju, 14 viii 2004, Kim JK and Kim TW (SSU).

Description. **<♂>** Body coloration darkish black with whitish antennae, base of appendages more pale bright than body. Head black, as long as pronotum, narrower than anterior margin of pronotum; interocular distance two times wider than horizontal diameter of an eye; fastigium of vertex narrower, as wide as a thirds of scape; scape darkish, as long as wide; antennal socket as wide as greatest width of an eye; antenna with black pedicel, basally dark, apically bright; palpi black. Pronotum as long as a half of fore femur, two times wider than long in dorsal view, its anterior margin weakly concave, posterior margin truncated; two transverse sulci undulate pronotal surface; lateral lobe of pronotum as deep as pronotal length. Tegmina dark black, macropterous, surpassing hind knee, wider than hind margin of pronotum, widely covering dorsum of abdomen; five harp veins present; mirror area divided by two veins, wider than long; apical area well netted, a half shorter than mirror area; lateral field of tegmen deeper than lateral lobe of pronotum, mostly covering lateral sides of abdomen. Hind wings vestigial. Fore and middle coxae each with a small anterior projection. Fore and middle tibiae each with a pair of ventro-apical spurs. Fore tibia with small oval-shaped inner and outer tympana of nearly same size, the base not swollen. Hind femur two times longer than middle femur. Hind tibia with numerous small dorsal spines on

both sides and three pairs of large spines apically; largest inner apical spur as long as a thirds of basitarsus. Hind basitarsus with small dorsal spinules, four times longer than remaining two tarsomeres combined length; inner apical spur as long as last tarsomere. Cercus as long as middle femur. Subgenital plate roundly convex, as long as basal width. <♀> Tegmina with narrow postcubital area than male. Subgenital plate roundly triangular, as long as basal width, its hind margin distinctly incised as V-shaped forming a pair of lateral lobes. Ovipositor straight, needle-shaped, longer than cerci, as long as hind femora; subapically rather swollen, its apex pointed without serration, **<Measurements>** BL 13.6-15.0 (HTL 16.9-18.0); PL 2.0-2.5; TL 12.2-13.6; HFL 10.5-12.0; OL 12.2-12.6.

Distribution. Korea, Japan, China, Taiwan (ssp. *yunnanensis*: Yunnan)

Subfamily Euscyrtinae 홀쭉귀뚜라미아과

Size small to moderate, rather slender. Second tarsomere depressed and heart-shaped. Hind tibia with dorsal spines and serrations. Tegmina micropterous to mactopterous. Male tegmina without stridulatory apparatus or that reduced, the venation similar with female. Ovipositor long and straight, sometime longer than body length. More than 500 species are in the world.

Genus *Euscyrtus* Guérin-Méneville 홀쭉귀뚜라미속

1844. Iconographie du règne animal de G. Cuvier, 7: 334. Type species: *Euscyrtus bivittatus* Guérin-Méneville 1844.

Diagnosis. Male tegmina without stridulum. Fore tibia longer than pronotum at center; inner tympana and smaller outer one present, but sometimes obsolete in micropterous specimens. Hind wings sometimes present. Claws serrated. Ovipositor sinus, continuously tapering without terminal thickening. 22 species are known in the world.

80. *Euscyrtus japonicus* Shiraki 1930 홀쭉귀뚜라미 (Fig. 238)

Euscyrtus japonicus Shiraki 1930. Insecta Matsumurana, 4(4): 245, Fig. 23A. "Japan, Korea". Syntype in Taiwan University, Taipei.

Gryllus (*Eneoptera*) *hemelytrus* nec de Haan 1842. In Temminck. Verhandelingen over de natuurlijke geschiedenis der Nederlandsche overzeesche bezittingen. Zoologie: 231. "Java". Holotype ♂ in Nationaal Natuurhistorische Museum, Leiden.

Korean records. ***Euscirtus*** [!] ***japonicus***: Doi 1932: 39; ***Euscyrtus hemelytrus***: Wu 1935: 75

(Catalogus Insectorum Sinensium); Cho 1959: 147, Fig. 7 (manual); Cho 1969: 771, pl. 80 (illustrated encyclopedia); ***Euscirtus*** [!] ***hemelytrus***: Ju 1969: 19 (North Korean check list: 벙어리귀뚜라미); ***Euscyrtus japonicus***: Tadauchi 1989: 50 (Japanese check list); Kwon and Huh 1994: 50 (Korean check list); Kwon et al. 1996: 104 (Korean species list); Hua 2000: 54 (Chinese list); ***Euscyrtus hemelypterus*** [!]: Hua 2000: 54 (Chinese list).

Specimens examined. **<GG>** 1♀, Mt. Cheonggyesan, 16 ix 1973, Jeong YJ (KU); 2♂, Mt. Bukhansan Eunpyeong-gu Seoul, 3 x 2003, Kim TW (SSU); 1♂, Munsan Paju, 24 ix 1999, Kim TW (NIAST); 1♂, Mt. Chukryeongsan Namyangju, 24 ix 1983, Ko HJ (KU); 1♂3♀, Sudong Yangju, 16 ix 1979, Dept Bio. (KU); 1♂, Gwangneung, 22 x 1983, Ko HJ (KU); 2♂1♀, Mt. Cheonmasan Pyeongnae, 11 ix 1983, Park ME and Park SH (KU); 1♂, Mt. Dobongsan Seoul, 4 ix 1982, Jeong HS (SSU); 1♀, Mt. Yongmasan Seoul, 5 ix 1971, Kim SJ (KU); 1♀, Mt. Yongmunsan Yangpyeong, 27 ix 1986, Jeong EO (SSU); 4♀, Paldang Namyangju, 4-5 x 1962, Park JS et al. (KU); **<CB>** 2♂4♀, Mt. Bumosan Cheongju, 19 ix 2006, Im MS (SSU); 2♂, Jugam Cheongwon, 23 ix 2000, Kim TW (NIAST); **<CN>** 2♂1♀, Gijipo beach Is. Anmyeondo Taean, 8 ix 2005, Kim TW (SSU); 1♂1♀, Sindu-ri Taean, 1 ix 2001, Park HC (NIAST); **<GN>** 2♀, light trap, Mt. Sanseongsan Samtae Yongtae-ri Hail-myeon Goseong, 18-19 viii 1998, Jeon JS (GSU); **<JN>** 1♀, Mt. Mudeungsan Gwangju, 25 viii 1988, Jeong JY (SSU); 4♂, Mt. Naejangsan Baekyangsa Bukha-myeon Jangseong, 11-12 ix 2004, Kim TW (SSU); **<JJ>** 1♂, Mt. Sanbangsan Sagye-ri Andeok-myeon Namjeju, 14 viii 2004, Kim JK and Kim TW (SSU); 1♂1♀, Seonheul-ri Bukjeju, 28 ix 2000, An MK (NIAST); 2♀, Jungmun, 12 viii 1984, Lee SM (NIAST); 1♂, Musucheon Bukjeju, 9 x 1999, Kim TW (NIAST); 1♀ (macroptera), Racecourse Bukjeju, 17 vii 1990, Yoon TJ (KU); 1♀, Bijarim forest, 21 viii 2000, Sohn JC (SSU); 1♀, Seongsan Ilchulbong, 24 viii 1996, Kim SY (SSU).

Description. **<♂>** Body coloration dark yellow, dorso-anterior part more darkish black, lateral sides with bright yellow strips. Head wider and longer than pronotum; interocular distance two times wider than horizontal diameter of an eye; occiput darkish with five pale longitudinal strips; fastigium of vertex longer than basal width, as wide as scape in dorsal view, medial ocellus located in dorsal apex; scape as long as wide. Pronotum as long as fore femur, with a pair of longitudinal bright strips on both sides connected from behind the eyes; anterior and posterior margins weakly concave; lateral lobe of pronotum as deep as pronotal length, lower margin bright, its upper aspect dark. Tegmina micropterous, longer than head and pronotum combined length, but not exceeding half of abdomen, its posterior

margin roundly truncated; stridulatory apparatus absent; radial, medial, cubital areas bright yellowish, remaining parts dark brown. Hind wings vestigial (sometimes macropterous form present). Tympana of fore tibia absent or vestigial on both sides. Hind femur five times longer than middle femur, knee with dark crescent. Hind tibia with numerous small dorsal spines on outer margin and inner margin only basally and 6−7 outer, 9 inner large dorsal spines apically, largest inner apical spur shorter than basitarsus. Hind barsitarsus with dorsal and apical spinules, inner apical spur shorter than last tarsomere. Middle tarsomere small and rounded. Tarsal claws toothed ventrally. Abdominal tergum with longitudinal dark patches. Last abdominal tergite with roundly concave hind margin, its lateral sides forming a pair of blunted projections. Epiproct longer than basal width, with an elongated depression in mid. Cercus as long as tegminal length. Subgenital plate longer than basal width, its apex tapered, conical. **<♀>** Larger than male. Cercus longer than tegminal length, as long as a half of hind tibia. Subgenital plate trapezoidal, shorter than basal width, its hind margin narrowly truncated, without incision. Ovipositor elongated, dorso−ventrally flattened, and slightly sinuated, longer than hind femora, as long as body length, **<Measurements>** BL 10.5−11.5; PL 1.2−1.5; TL 2.4−3.6; HFL 7.0−8.8; OL 11.5−12.2.

Distribution. Korea, Japan.

Remarks. Between confusedly and synonymously referred *E. japonicus* and *E. hemelytrus*, both difference is not so clear so far. According to original author Shiraki (1930), they are just differentiated by the number of inner spines on hind tibia (8 vs. 10), but which is rather variable character (see Chopard 1969; Vasanth 1993).

Sufamily Eneopterinae 솔귀뚜라미아과

Head large, frontal rostrum with parallel margin. Eyes protruding laterally. Second tarsomere wide, dorso−ventrally flattened, and with large ventral pads. Hind tibiae with both articulated spurs and shorter non−articulated spines and usually with at least some spines located between spurs. Tegmina of male wide, 1−5 oblique veins.

Genus *Xenogryllus* Bolívar 솔귀뚜라미속

1890. Jornal de Sciencias Mathematicas, Physicas, e Naturaes, Lisboa (Ser. 2), 1(4): 232. Type species: *Xenogryllus eneopteroides* Bolívar 1890.

Diagnosis. Frontal rostrum wide, anteriorly truncated, with angulate sides. Pronotum narrowing

in front; disk flat; lateral lobes with angulated insertion. Legs rather long; anterior tibiae perforated with an oval external tympanum; posterior femora feebly swollen at base; posterior tibiae serrulated almost from the base; external apical spurs rather long, extending almost to the apex of the basitarsus. Elytra of male with a large mirror, divided by an almost straight vein; apical field long; lateral filed with Sc. bearing several branches. Elytra of the female with oblique veins. Ovipositor long, slender, with apical valves small, lanceolate (Chopard 1969). Six species are known in the tropical Old World.

81. *Xenogryllus marmoratus marmoratus* (de Haan 1842) 솔귀뚜라미 (Figs. 239-240)

Gryllus (*Phalangopsis*) *marmoratus* de Haan 1842. In Temminck. Verhandelingen over de natuurlijke geschiedenis der Nederlandsche overzeesche bezittingen. Zoologie: 235. "Japan". Syntype in Nationaal Natuurhistorische Museum, Leiden.

Korean records. ***Xenogryllus marmoratus***: Kwon and Huh 1994: 50 (Korean check list: 큰홀쭉귀뚜라미); Kwon et al. 1996: 104 (Korean species list).

Specimens examined. <CN> 3♂1♀, Kotji beach Is. Anmyeondo Taean, 11 ix 2005, Kim TW (SSU); 4♂2♀, Hakampo beach Wonbuk-myeon Taean, 8 ix 2005, Kim TW (SSU); 1♀, ibid. 30 ix 2006, Kim TW (SSU); **<JN>** 2♂, Samhakdo Sanjeong-dong Mokpo, 16 x 2004, Kim TW (SSU); 1♀, Mt. Dalmasan Bukpyeong-myeon Haenam, 4 ix 2004, Lee JG (SSU); **<JJ>** 15♂23♀, Hyeopjae beach Hallim Bukjeju, 26 ix 2000, Kim TW and Kim MA (NIAST).

Description. <♂> Body coloration bright straw-like brown. Head small globular, narrower than hind margin of pronotum; eyes widely separated, interocular distance as wide as three times of horizontal diameter of an eye; occiput with six pale longitudinal bright strips posteriorly; fastigium of vertex wider than an eye, with a median ocellus anteriorly, its shape transversely elliptical; scape wider than long, antennal socket narrower than frontal ridge. Pronotum shorter than anterior femur, as long as head, wider than long in dorsal view; anterior margin slightly concave, narrower than posterior one; lateral lobe of pronotum as deep as pronotal length, darker than disk, lower margin rounded. Tegmina macropterous, surpassing abdominal end, but not reaching hind knee, its postcubital area much wider with a few black dots scattered; CuP area darkish black; two harp veins present; mirror area largely divided, wider than long; apical area well netted, as long as mirror area; radial area darkish black; lateral field mostly covering lateral side of abdomen. Hind wings in folding state slightly surpassing tegminal apex. For tibia with oval-shaped

outer tympanum, but inner tympanum weakly slit-shaped, hardly discernable, its base not swollen; three ventro-apical spurs present. Middle tibia with two pairs of apical spurs on both sides. Hind leg with femur as long as tegmenl tibia with numerous small dorsal spines on both sides and four pairs of large dorsal spines on both sides apically; basitarsus with 5-6 outer, 1-2 inner dorsal spines, longer than remaining two tarsomeres combined length; inner largest apical spur of tibia shorter than basitarsus, inner apical spur of basitarsus as long as last tarsomere; middle tarsomere small and rounded. Cercus as long as two thirds of hind tibia. <♀> Head slightly wider than anterior margin of pronotum. Pronotum with anterior margin as wide as posterior margin. Tegmina with narrower postcubital area than male. Subgenital plate roundly triangular, shorter than basal width, its hind margin narrowly concave at apex. Ovipositor needle-shaped, slightly recurved, a little longer than hind femora; apex weakly swollen, without serration. **<Measurements>** BL 16.7-19.7; PL 2.5-2.7; TL 13.5-16.5; HFL 14.3-15.0; OL 15.0-17.0.

Distribution. Korea, Japan, China, Taiwan, India (ssp. *unipartitus*: Taiwan).

Subfamily Podoscirtinae 청솔귀뚜라미아과

Fore and mid femora shorter than or as long as pronotum. Fore tibia with swollen inner base. Tarsal claws not serrated. Apical valves of ovipositor expand. More than 400 species are in the world.

Genus *Truljalia* Gorochov 청솔귀뚜라미속

1985. Entomologicheskoe Obozrenie, 64(1): 89. Type species: *Calyptotrypus citri* Bey-Bienko 1956.

Diagnosis. A sharp bend present between the disc and lateral lobes of pronotum. Male speculum large and round, stridulatory vein evenly curved, Male with strongly divided anal plate, the genitalia with flake guide plate (Gorochov 1985). 13 species are known in the Oriental Region.

82. *Truljalia hibinonis* (Matsumura 1917) 청솔귀뚜라미 (Figs. 241-242)

Madasumma hibinonis Matsumura 1917. Oyo-konchugaku: 279. "Japan: Tokyo". Lectotype ♂ in Hokkaido University, Sapporo.

Korean records. ***Madasumma hibinonis***: Ju 1969: 20 (North Korean check list: 푸른씩씨리).

Specimens examined. <GN> 3♂1♀, Baechun-ri Chukdong-myeon Sacheon, 11 ix 2002, Paik YH (SSU); 1♂1♀, Sangbongseo-dong Jinju, 23-28 ix 1984, Oh TS (GSU).

Description. <♂> Body coloration bright green, laterally more yellowish. Head small, globular, shorter than pronotum; antennae bright yellow dorsally, darkish annulated ventrally; scape longer than wide; antennal socket with weakly raised outer margin touching inner margin of eye, as wide as 2.2 times of interspace between antennal socket; interocular distance two times wider than horizontal diameter of an eye in dorsal view; pale longitudinal strips present behind the eyes. Pronotum as long as fore femur, its anterior margin concave and posterior margin weakly convex; lateral lobe of pronotum shorter than pronotal length, its lower margin widely round, upper angle with yellowish longitudinal strips. Tegmina macropterous, slightly wider than hind margin of pronotum, reaching apex of hind tibia; dorsal veins more brownish; five harp veins present; mirror area divided, slightly wider than long; apical area well netted, elongated, as long as mirror and harp areas combined length; lateral field deeper than lateral lobe of pronotum, mostly covering lateral sides of abdomen. Hind wings slightly surpassing tegminal end in folding state. Fore coxa with a small projection anteriorly. Fore tibia with swollen inner base bearing slit-like tympanum and opened outer tympanum oval-shaped, its diameter shorter than inner one. Fore and middle tibia each with a pair of ventral apical spurs. Hind leg with femur 3.2 times longer than middle femur; tibia with numerous small outer dorsal spines and 5-6 outer and six inner large dorsal spines in apical half, inner dorsal small spines absent; basitarsus with dorso-apical spines, as long as remaining two tarsomeres combined length; apical inner largest spur shorter than basitarsus, and inner apical spur of basitarsus shorter than last tarsomere; middle tarsomere short and rounded. Cercus slightly shorter than hind tibia. **<♀>** Subgenital plate trapezoidal, as long as basal width, its hind margin deeply incised as forming V-shaped two lobes, lateral sides sinuated. Ovipositor needle-shaped, as long as hind femora, its apex darkish black, swollen, apically serrated. **<Measurements>** BL 19.0-21.3 (HWL 30.0-35.0); PL 3.6-4.1; TL 22.1-25.4; HFL 10.8-12.2; OL 11.7.

Distribution. Korea, Japan, China.

Remarks. This was only appeared in the North Korean check-list, but studied specimens' data showing the distribution is quite restricted to far southern end of the Korean peninsula.

Family Mogoplistidae 어리귀뚜라미과

As known as scaly crickets, body always covered with delicate silver scales. Body size also smaller, the length less than 1.5 cm. Head short, the clypeus extending onto dorsum of head; entire rostrum composed of clypeus. Pronotum relatively long, especially in the male. Male tegmina rarely reaching the end of abdomen. Hind wings absent. Females always wingless. Hind tibiae without movable spurs. Ovipositor straight needle-shaped. 175 species are known in the world.

Subfamily Mogoplistinae 어리귀뚜라미아과

Characters are samely given in the family.

Key to Species of Mogoplistidae

1. ♂ pronotum strongly produced backwards, almost completely covers tegmina invisible (Fig. 231); ovipositor slightly recurved ····· ***Ectatoderus annulipedus*** (p. 196)
– ♂ pronotum moderately produced backwards, leaving free a large part of the tegmina (Fig. 229); ovipositor straight ····· ***Ornebius kanetataki*** (p. 197)

Genus *Ectatoderus* Guérin-Méneville 비늘귀뚜라미속

1849. In Lefebvre. Voy. Abyssinie, 4(6): 336. Type species: *Ectatoderus nigriventris* Guérin-Méneville 1849.

Diagnosis. Male with pronotum rather protruding posteriorly, tegmen almost hidden under tegmen; posterior margin bordered with short round scales; paraproct short, right angled. External genitalia membranous except small area sclerotized. In dorsal view, endomembrane hylaine; spermatophore sac with wing-like structure. Female with ovipositor slightly curved upward (Yang and Yen 2001). 36 species are known in the world.

83. *Ectatoderus annulipedus* (Shiraki 1911) 비늘귀뚜라미 (신칭) (Figs. 231-232)

Liphoplus annulipedus Shiraki 1911. Monographie der Grylliden Formosa: 22, pl. 1, Fig. 3. "Formosa = Taiwan". Lectotype ♂ in Taiwan University, Taipei.

Specimens examined. <JJ> 1♂2♀, rearing from nymphs, Mt. Sanbangsan Sagye-ri Andeok-myeon Namjeju, 14 viii-1 ix 2004, Kim JK and Kim TW (SSU); 1♂ nymph, Andeokgyegok Gamsan-ri Andeok-myeon Namjeju, 13 viii 2004, Kim JK and Kim TW

(SSU); 1♀, Bijarim Gujoa-eup Bukjeju, 21 viii 2000, Sohn JC (SSU).

Description. **<♂>** Body covered by fine scales, depressed, the coloration brownish gray, appendages more maculated. Head small, round, longer the height; eyes small, widely separated, interocular distance 4.2 times wider than horizontal diameter of an eye; scape ad long as wide, as wide as horizontal diameter of an eye or antennal socket; fastigium of vertex 1.2 times wider than horizontal diameter of an antennal socket; transverse clypeal suture present dorsal apex of fastigium of vertex; clypeus anteriorly protruding, higher than wide in anterior view, with median longitudinal furrow. Pronotum longer than middle femur, 2.5 times longer than head; anterior margin truncated, posterior margin widely rounded, wider than anterior one; lateral lobe of pronotum much short. Tegmina micropterous, almost hidden under pronotum not visible, its hind margin truncated. Fore tibia with only hardly discernable small inner tympanum round-shaped. Hind femur three times longer than middle femur. Middle tarsomere small, rounded, depressed. Hind tibia with numerous small spinules on both sides, its largest inner apical spur as long as a thirds of basitarsus. Hind basitarsus three times longer than remaining two tarsomeres combined length, with small spinules on both sides, the inner apical spur as long as last tarsomere. **<♀>** Pronotum 1.5 times longer than head. Tegmina absent. Cercus shorter than hind femur. Subgenital plate roundly triangular, shorter than basal width, its hind margin narrowly incised. Ovipositor gently recurved. slightly shorter than hind femora, its apex without serration, suapically swollen. **<Measurements>** BL 6.7-8.3; PL ♂ 3.0, ♀ 2.1-2.3; HFL 4.5-4.8; OL 4.0-4.2.

Distribution. Korea (new record), Japan, China, Taiwan.

Genus *Ornebius* Guérin-Méneville 어리귀뚜라미속

1844. Iconographie du règne animal de G. Cuvier, 7: 331. Type species: *Ornebius xanthopterus* Guérin-Méneville 1844.

Diagnosis. Body flat, slender in dorsal view; pronotum moderately produced posteriorly; tegmen mostly exposed; scales of hind margin of pronotum long, fan-like; hind tibia armed with thick spines, hind tarsus with pulvillus on underside of second segment. Paraproct with digital process directed caudodorsad distinctly. External genitalia membranous except small area sclerotized. Dorsal view of endomembrane hylaine (Yang and Yen 2001). More than 110 species are known in the world.

84. *Ornebius kanetataki* (Matsumura 1904) 어리귀뚜라미 (Figs. 229-230)

Ectatoderus kanetataki Matsumura 1904. Thousand Insects of Japan, 1: 131, pl. 6, Fig. 1. "Japan: Mt. Ibuki". Lectotype ♂ in Hokkaido University, Sapporo.

Korean records. ***Liphoplus kanetaki*** [!]: Ju 1969: 20 (North Korean check list); ***Ornebius kanetataki***: Choo and Choi 1983: 49 (geographic adaptation); Paik 1993: 42; Kwon and Huh 1994: 50 (Korean check list); Kwon et al. 1996: 104 (Korean species list).

Specimens examined. **<GG>** 1♀, Mt. Bukhansan Eupyeong-gu Seoul, 3 x 2003, Kim TW (SSU); **<CN>** 1♀, Sambong beach Is. Anmyeondo Taean, 8 ix 2005, Kim TW (SSU); **<GN>** 1♀, Gadeok-ri Geumseong-myeon Hadong, 19 ix 1998, An NY (GSU); **<JN>** 1♀, Seomjingang riverbed Toji-myeon Gurye, 29 ix 2001, Kim TW (SSU); 2♀, Is. Hongdo, 7 x 1999, An SL (NSM); **<JJ>** 1♂, Jungmun Seoguipo, 16 i 2003, Kim TW (SSU).

Description. **<♂>** Body depressed, the coloration brownish gray with dark brown tegmina. Head depressed, longer the height; eyes small, widely separated, interocular distance four times wider than horizontal diameter of an eye; scape ad long as wide, as wide as horizontal diameter of an eye or antennal socket; fastigium of vertex 1.2 times wider than horizontal diameter of an antennal socket; transverse clypeal suture present dorsal apex of fastigium of vertex; clypeus anteriorly protruding, higher than wide in anterior view, with median longitudinal furrow. Pronotum two times longer than head, slightly longer than tegmina; anterior margin narrowly truncated, posterior margin widely rounded, wider than anterior one; lateral lobe of pronotum much short. Tegmina micropterous, not exceeding half of abdomen, its posterior margin round; tegminal base covered by posterior margin of pronotum. Fore tibia with only inner tympanum small rounded. Hind femur three times longer than middle femur. Middle tarsomere small, rounded, depressed. Hind tibia with numerous small spinules on both sides, its largest inner apical spur as long as a thirds of basitarsus. Hind basitarsus 2.2 times longer than remaining two tarsomeres combined length, with small spinules on both sides, the inner apical spur as long as last tarsomere. **<♀>** Pronotum 1.2 times longer than head. Tegmina absent. Cerci slightly longer than hind femur. Subgenital plate roundly triangular, shorter than basal width, its hind margin narrowly incised. Ovipositor slightly shorter than hind femora, almost straight needle-shaped, its apex without serration, suapically swollen. **<Measurements>** BL ♂ 6.8, ♀ 7.8-8.5; PL ♂ 2.4, ♀ 1.9-2.0; TL ♂ 2.1; HFL ♂ 4.5, ♀ 4.5-5.1; OL 3.8-4.3.

Distribution. Korea, Japan, China, Taiwan.

Family Myrmecophilidae 개미집귀뚜라미과

As known as ant-loving crickets, because of their habitats restricted to the ant nests. Smallest size, rarely than more 2 ㎜. Generally ovoidal appearance, such as very broad hind femora. Head rounded, smaller than pronotum, antennae not much longer than body. Compound eyes reduced. Single row of movable spurs present on the dorsal surface of the hind basitarsus. Tegmina and wings laking in both sexes. More than 60 species are known in the world.

Subfamily Myrmecophilinae 개미집귀뚜라미아과

Characters are samely given in the family.

Genus *Myrmecophilus* Berthold 개미집귀뚜라미속

1827. In Latreille. Nat. Fam. Thierreich: 409. Type species: *Blatta acervorum* Panzer 1799.

Diagnosis. Fore head and tibial spines without special pubescence. No tubercle on the inferior margin of posterior femora. 56 species are known in the world.

85. *Myrmecophilus* sp. 개미집귀뚜라미 (신칭) (Fig. 233)

Specimens examined. <GG> 1♂, Mt. Bukhansan Eunpyeong-gu Seoul, 14 iv 2002, Kim TW (SSU); 1♀, Mt. Surisan Gunpo, 25 xi 2001, Kim TW; 12 nymphs, Jeokseong Paju, 11 vii 2004, Kim TW (SSU); **<CN>** 1 nymph, Mt. Gayasan Hanseo Univ. Haemi Seosan, 22 vi 2001, Kim TW (SSU).

Distribution. Korea (new record).

Remarks. The genus is newly recognized in Korea. I had an information from Mr. Jang Yongjun who has been interested in the symbiosis insects with ants. According to him, the crickets are observed in the ant's nest such as *Camponotus*, *Formica*, *Lasius*, and *Tetramorium* spp. in Korea, also I was able to catch a few specimens by searching the place from several different localities. But most are nymphs with externally ambiguous characters, here I leave its description to later when until adult specimens more collected and to observe microscopic structure of the body scales by SEM method (see Maruyama 2004).

Suborder Caelifera 메뚜기아목

True grasshoppers, short-horned grasshoppers, locusts, Orthoptera (*s. str.*). Antennae comparatively robust, not thread-like, seldom as long as body (less than 30 segments). Base of abdomen with generally lateral tympanal apparatus. Cerci never long and flexible. Male subgenital plate always devoid of styles, the phallic structures include an aedeagus. Ovipositor short and stout, with the inner valves reduced that composed of four main valves. More than 2,000 genera 11,000 species are kwon in the world.

Key to Superfamilies of Caelifera

1. Hind tarsus 1-segmented (Fig. 257) ····· **Tridactyloidea** (p. 200)
- Hind tarsus 3-segmented ····· 2
2. Pronotum elongate, covering entire dorsum of abdomen; fore and mid tarsi 2-segmented ····· **Tetrigoidea** (p. 203)
- Pronotum moderate, not covering entire dorsum of abdomen; fore and mid tarsi 3-segmented ····· **Acridoidea** (p. 220)

Superfamily Tridactyloidea 좁쌀메뚜기상과

As known as pygmy mole crickets, pygmy sand crickets, or mud crickets. Smallest Caelifera, size variable less than 4 ㎜, but not exceeding 1.5 ㎝. Most found on wet muddy land near water source, as the semi-aquatic insects. Black, white, yellow or marmorated with red. Head round, eyes well developed. Antenna 9-12 segmented, moniliform. Pronotum rounded, hind margin convex or projected. Fore leg with expanded apex of tibia, typically spines present for digging. Tarsal formula 2-2-1. Adults always with wings.

Family Tridactylidae 좁쌀메뚜기과

Representative family of the superfamily. Size very smaller not exceeding 1 cm. Body black with whitish speckles. Eyes rather small. Mouth parts slightly prognathus. Pronotum with convex hind margin, hardly elongated. Fore legs short, modified to digging. Male tegmina sometimes with stridulatory files against hind wings. Cerci 2-segmented. Phallic structure of male not developed. Ovipositor absent, however, linked projections of paraproct long, without

segment. More than 140 species present worldwide, only one species is recorded in Korea.

Subfamily Tridactylinae 좁쌀메뚜기아과

Characters are samely given in the family.

Genus *Xya* Latreille 좁쌀메뚜기속

1809. Histoire Naturelle generale et partculiere des Crustaces et des Insectes, 4: 383. Type species: *Xya variegatus* Latreille 1809.

Diagnosis. Tarsi very short, small knob-like, distinctly shorter than apical spurs on hind tibia. 52 species described in the world.

86. *Xya japonica* (de Haan 1842) 좁쌀메뚜기 (Figs. 243, 253-257)

Gryllus (*Xya*) *japonicus* de Haan 1842. In Temminck. Verhandelingen over de natuurlijke geschiedenis der Nederlandsche overzeesche bezittingen. Zoologie: 238. "Japan". Lectotype ♀ in Nationaal Natuurhistorische Museum, Leiden.

Korean records. ***Tridactylus japonicus***: Doi 1932: 39 (Seoul); Cho 1959: 151, Fig. 15 (manual); Cho 1969: 767, pl. 80 (illustrated encyclopedia); Ju 1969: 21 (North Korean check list: 벼룩메뚜기); ***Xya japonica***: Kwon and Huh 1994: 50 (Korean check list); Huh and Kwon 1995: 8 (Is. Jejudo); Moon and Yoon 1996: 51 (KEI); Kwon et al. 1996: 104 (Korean species list); Murai 2005: 9, Figs. 1, 5a, 7a, 8, 12, 16a.

Specimens examined. <GW> 1♀, Samhwasa Bukpyeong, 26 vi 1984, Sohn JH (SSU); 1♀, Bongjeongsa Mt. Taehwasan Palgoe-ri Yeongwol, 14 v 2001, Park HC (NIAST); 3♂2♀, Mt. Myeongseongsan Cheolwon, 5 vi 1999, Han TM (SSU); 1♀, Gangchon Chuncheon, 27 v 1995, Ku TH (KU); 3♂, Balsan-ri Chuncheon, 17 iv 1998, Park HC (NIAST); 1♀, Sododong Taebaek, 22 vii 1986, Chang KS (SSU); 1♀, Mt. Baekamsan Gwangam-ri Naechon-myeon Hongcheon, 9 vi 2002, Kim TW (SSU); **<GG>** 1♀, Daeseong-ri Gapyeong, 12 v 1990, No KM (SSU); 2♂, Mt. Myeongjisan Seungcheonsa Dodae-ri Buk-myeon Gapyeong, 28 v 2001, Kim TW (SSU); 1♂2♀, Cheongpyeong Gapyeong, 6 vi 1971, Park KS (KU); 1♀, Mt. Hwayasan Gapyeong, 26 viii 2002, Anonym (SSU); 1♂, Seondu-ri Ganghwado, 12 viii 1991, Kim JI (SSU); 1♂, Hyoja-ri Goyang, 20 v 1984, Yoo HJ (SSU); 1♀, Gwangneung, 20 viii 1975, Lee HK (KU); 1♀, ibid. 18 vi 1983, Ko HJ (SSU); 1♂, Mt. Chukryeongsan Sudong-myeong Namyangju, 24 iv 1993, Ha SY (SSU); 2

♀, Mt. Suraksan Namyangju, 15 ix 1991, Kim HH (SSU); 1♂, light trap, Seodun-dong Gwonseon-gu Suwon, 20 v 1998, Lee YB (NIAST); 2♂, Mt. Gwangkyosan Sanggwangkyo Suwon, 17 v 1998, Jang SS (NIAST); 1♂1♀, Hantaek botanical garden Jangpyeong-ri Baekam Yongin, 2 v 2001, Lee YB (NIAST); 1♂, Jangheung, 7 v 1989, Shin HS (SSU); 1 ♀, Mt. Cheonmasan Namyangju, 26 v 1990, Lee MS (SSU); 2♂1♀, Mt. Cheonggyesan Gwacheon, 2-19 v 1989, Choi YJ et al. (SSU); 1♀, Bogwangsa Gwangtan Paju, 23 iv 1988, Kim JH (SSU); 1♀, Pyeongtaek, 16 v 1999, Kim TW (SSU); 1♀, Mt. Wangbangsan Pocheon, 29 v 1983, Lee VJ (SSU); 1♂, pitfall, Gicheon-ri Paltan Hwaseong, 8 x 2001, Jeong MP (SNU); 1♂, Wonji-dong Gangnam-gu Seoul, 14 ix 1985, Kim SJ (SSU); 1♂, Sangil-dong Gangdong-gu, 11 v 2000, Kim JM (SSU); 1♀, Ui-dong Seoul, 5 v 1961, Jae (KU); 1♂, Is. Yeongjongdo Incheon, 8 v 1993, Kim EH (SSU); **<CB>** 1♀, Goegok-ri Susan-myeon Jecheon, 6 vi 1974, Shin CH (KU); 1♀, Yongam-ri Hwanggan Yeongdong, 4-5 viii 2001, Kim JI (SSU); **<CN>** 1♀, Soho-dong Dong-gu Daejeon, 8 v 1999, Lee YJ (SSU); 1♂, Taeguksa Anheung-myeon Taean, 15 ix 2001, Kim MA (NIAST); **<GB>** 1♂1 ♀, Daehyeon Seokpo Bonghwa, 24 vii 1986, Chang KS (SSU); 1♂1♀, Huibangsa Mt. Sobaeksan, 23 vii 1974, Kim CW and Kim JI (KU); 1♀, Dalgipokpo Mt. Taehaengsan Cheongsong, 24 vi 1988, Shim HJ (SSU); **<GN>** 1♀, Haknam-ri Ulju, 31 v 1985, Kim YS (SSU); **<JB>** 1♀, Seonwunsa Gochang, 27 vi 1990, Kang MJ (SSU); **<JN>** 1♂, Mt. Jogyesan Suncheon, 23 v 1988, Jeong SY (SSU).

Description. **<♂>** Body coloration generally dark shining black. Head conical, small and shorter than pronotum; mouthpart weakly prognathus. Lateral ocelli touched inner lower margins of compound eyes, median ocellus located a little lower than between lateral ocelli. Antennae black moniliform, 10-segmented. Interocular distance in dorsal view, slightly wider than an eye. A pair of feeble carinae present from eye to vertex. Apical segment of maxillary palpus wide and round, the one of labial palpus conical with a lot of setae. Head and pronotum with numerous punctures. Pronotum convex and rounded without distinct carinae or sulci. Lateral lower posterior corners of pronotum with clear whitish markings. Fore legs shorter; coxa rather developed as long as tibia; femoral knee with roundly blunted inner lobe; tibia shorter than femur, with four spinal teeth on swollen apex for digging, numerous hairs present. Tegmina black and micropterous, not exceeding half the abdomen; apex roundly truncated; only two, subcosta and radius veins distinguished, the subcosta sinuated S-like; stridulatory files present on costa vein ventro-apically. Hind wings pale, nearly transparent, surpassing the tegmina, but the total length variable near

abdominal tip, sometime longer than the one. Mid legs longer than fore one; femur oar-like, more widened distally; tibia shorter than femur, spindle-shaped with a mucous gland. Hind femora much thick and large, as long as two third of the body length; small white spots present on dorsal carinae subasally. Hind tibia with distally five outer and four inner subapical spurs modified to lamella-form, with basally small denticulations; apical spurs slender and longest, as long as a third of tibia, longer than tarsus, seems like to tarsus, on apex with a few sort hairs. Hind tarsus degenerated to very small knob-like. Second abdominal sternums with a pair of opening of scent glands. Abdominal end with a pair of cerci and a pair of rod-shaped styli; cerci 2-segmented, long hairs present, apical segment more slender and shorter than basal one; stylus with long hairs as long as cercus. Epiproct thick anchor-shaped, the lateral margin wavy, the posterior margin bluntly pointed. Paraprocts with a pair of large spines laterally directed on posterior angle. Subgenital plate with roundly truncated hind margin. Genitalia membranous. **<♀>** Slightly larger than male. Subgenital plate with a median groove. Ovipositor absent. **<Measurements>** BL 4.0-5.0; HFL 2.5-3.0.

Distribution. Korea, Japan, Northeast China, Russian Far East.

Superfamily Tetrigoidea 모메뚜기상과

As known as ground hoppers or grouse hoppers, all ground dwellers, sometimes regarded with semi-aquatic insects. Mostly brown or gray, sometimes with dorsal patterns but never green. Smaller body (less than 2 ㎝) with relatively longer pronotum which dorsally covers all abdominal parts. Tarsal formula 2-2-3. Male phallic structure membranous without epiphallus. Ovipositor with valves strongly serrated. Eggs with terminal filament. There are about 1,195 species distributed all over the world (Otte 1997).

Family Tetrigidae 모메뚜기과

Basic family of the superfamily. Antennae more shorter (less than 16 segments), the pronotum is tectiform. More than 170 genera 850 species are known in the world.

Key to Subfamilies of Tetrigidae

1. Lateral lobes of pronotum with acutely pointed posterior angles forming outward spines (Fig. 260) ····· **Scelimeninae** (p. 204)

− Lateral lobes of pronotum with smooth posterior angles turned downwards (Figs. 264, 266) ····· **Tetriginae** (p. 206)

Subfamily Scelimeninae 가시모메뚜기아과

Posterior angles of lateral lobes of pronotum projecting distinctly outwards in the form of sharp spines. Fastigium of vertex without carina on its anterior margin. Fore and middle femora rather similar. Third segment of hind tarsus shorter than the first.

Genus *Criotettix* Bolívar 가시모메뚜기속

1887. Annales de la Société Entomologique de Belgique, 31: 184. Type species: *Acrydium bispinosum* Dalman 1818.

= *Acanthalobus* Hancock 1904. Spolia Zeylanica. 2: 131. Type species: *Criotettix saginatus* Bolivar 1887. [Rehn 1930]

Diagnosis. Antennae short, fully articulated between the ventral margins of the eyes; lateral ocelli situated in front of the middle of eyes. Spines of lateral lobes of pronotum lamellately−triangular and directed slightly obliquely caudad. Both anterior pairs of femora without denticles. Lateral margins of hind tibiae with distinct denticles. 43 species described in the world.

87. *Criotettix japonicus* (de Haan 1842) 가시모메뚜기 (Figs. 244, 260)

Acridium (*Tetrix*) *bispinosum* var. *japonica* de Haan 1842. In Temminck. Verhandelingen over de natuurlijke geschiedenis der Nederlandsche overzeesche bezittingen, Zoologie: 169. "Japan". Syntype in Nationaal Natuurhistorische Museum, Leiden.

Korean records. ***Acanthalobus japonicus***: Doi 1932: 34 (Seoul); ***Acantholobus*** [!] ***japonicus***: Cho 1959: 169, Fig. 47 (manual); Cho 1969: 746, pl. 49 (illustrated encyclopedia); Ju 1969: 21 (North Korean check list); ***Criotettix japonicus***: Kwon and Huh 1994: 50 (Korean check list); Moon and Yoon 1996: 51 (KEI); Kwon et al. 1996: 104 (Korean species list): Kim and Kim 2004: 262, Fig. 3 (taxonomy).

Specimens examined. **<GW>** 2♀, Nogok−3ri Wondeok Samcheok, 16 iv 2005, Kim TW (SSU); **<GG>** 1♀, Mt. Surisan Sanbon Gunpo, 22 viii 2002, Kim TW (SSU); 1♀, Mt.

Cheonggyesan Bundang, 17 v 1977, Lee JH (KU); 1♀, Mt. Cheonggyesan Seoul, 31 v 1992, Sohn HR (SSU); 1♂, ibid. 15 ix 1997, Park JE (SSU); **<CB>** 1♀, Sojeong-ri Gunbuk-myeon Okcheon, 23 x 1990, Kim JI (SSU); 1♀, Suam-ri Sari-myeon Geosan, 12 x 2000, Lee YB (NIAST); 1♂2♀, Mt. Guryongsan Cheongju, 10 x 2006, Im MS (SSU); **<CN>** 1♂, Sindu-ri Wonbuk Taean, 18 vii 2002, Kim TW (SSU); **<GN>** 1♂, Geumsan Namhae, 5 v 2001, Ohg HY (SSU); **<JB>** 1♂, Mt. Soyosan Seonun-ri Buan Gochang, 23 v 2001, Kim MA (NIAST); 1♂, Bongeun-ri Buan Gochang, 10 x 1981, Chang KS (SSU); **<JN>** 2♂12♀, Mt. Guksabong Yeongam, 15 v 2000, Kim TW and Kim MA (NIAST); 2♀, Bongseomaeul Gurye, 2 ix 2005, Park WS; 6♂4♀, Dongsan-ri Jangseong, 30 iii 1974, Kim JH (KU); 1♀, Is. Soando Wando, 3 viii 1995, Yoon MR (SSU); 1♀, Mt. Jogyesan Seungju Suncheon, 24 v 1988, Lee GM (SSU); 1♂1♀, Daedo-ri Munpyeong-myeon Naju, 13 v 2006, Kim YJ (SSU); **<JJ>** 1♀, Seonheul-ri, 28 ix 2000, Kim MA (NIAST); 1♀, Jeolmul Bonggae-dong Bukjeju, 10 vi 2006, Kang W (SSU).

Description. **<♀>** Body coloration variably bright gray or dark reddish brown, but never without distinct a pair of markings. Head short with slightly inclined frons. Antennae with bright coloration, only its apex more darker; the length rather shorter, its middle antennomeres twice longer than the broad; scape thick larger than pedicel; pedicel round-shaped; flagellum 12-segmented. Interocular distance two times wider than the horizontal diameter of an eye. Eyes projecting more than anterior margin of fastigium. Fastigium of vertex truncated with median ridge. Antennal sockets located between inner lower margin of eyes. Frontal ridge roundly protruding between the eyes in lateral view. Maxillary palpi bright. Pronotum longer and flat, with numerous punctures and granules; anterior margin of pronotum truncated; prozona as long as wide; median carina clear weakly undulate; lateral carinae on prozona rather converged towards mid; two transverse sulci intersect lateral carinae, near the area median carina slightly convex; lateral lobes of pronotum pointed, spine-shaped outwardly, two sinus present; inferior sinus more deep than superior tegminal sinus; the spine towards horizontal, postero-basally more thick making the sinus. Tegmen ovoidal, three times longer than the middle width. Pronotal apex much longer than abdominal end. Hind wings as long as pronotal apex, its outer margin scalloped, anterior margin more darker than weakly tinged anal area by black. Tarsal claws bifurcated. Hind femur with undulate dorsal carina, denticulation present. Hind tibia with two pairs of apical spurs, inner ones longer than outer ones. Hind basitarsus longer than remaining two segment. Subgenital plate with small triangular apex. Ovipositor with long

and slender valves, five times longer than greatest width, its apex sharply pointed, serration well developed; upper valves more thicker and slightly shorter than lower ones; ventral valves two times more than longer than subgenital plate. **<♂>** Slightly smaller and slender than female. Interocular distance 1.5 times wider than an eye. Epiproct long triangular. Cercus shorter than epiproct, thick and conical, base with granules and hairs, apical a third abruptly tapered. Subgenital plate long triangular with median carina, its apex shallowly notched. Pseudepiphallus pentagonal, its margin with denticulation and the apex pointed. **<Measurements>** BL 9.0−14.0 (HPL 14.0−21.2); PL 13.3−20.3; HFL 6.2−9.2.

Distribution. Korea, Japan, China.

Subfamily Tetriginae 모메뚜기아과

Posterior angles of lateral lobes of pronotum excavate ventrad, and with rounded apex. Fastigium of vertex with a carina on its anterior margin. Middle femora more flattened than anterior ones, often wider than them. Third segment of hind tarsus shorter than the first.

Key to Species of Tetriginae

1. Eyes greatly protruding, obviously above level of vertex and pronotum (Fig. 261); prozona short and oblong, its width two times of the length ····· ***Euparatettix insularis*** (p. 207)
− Eyes slightly protruding above level of vertex and pronotum; prozona squared or moderately oblong, its width less than two times of the length ····· 2
2. Posterior margin of lateral lobes of pronotum with only one (inferior) sinus (Fig. 258); tegmina and wings invisible or vestigial ····· ***Formosatettix robustus*** (p. 209)
− Posterior margin of lateral lobes of pronotum with two (superior and inferior) sinuses (Fig. 259); tegmina and wings well developed or rather shortened ····· 3
3. Fastigium triangularly protruding between the eyes; frontal ridge strongly inclined forming an acute angle with vertex (Fig. 262) ····· ***Clinotettix ussuriensis*** (p. 212)
− Fastigium moderately protruding between the eyes; frontal ridge slightly inclined below antennae, straight or slightly concave above antennae ····· 4
4. Pronotum more tectiform with strongly triangular anterior margin (Fig. 259) ····· ····· ***Tetrix simulans*** (p. 214)
− Pronotum rather platform with straight or very slightly triangular anterior margin ····· 5

5. Frontal ridge with distinct emargination between the eyes; hind wings strongly abbreviated, its outer margin straight (Fig. 263) ····· ***Tetrix silvicultrix*** (p. 214)

− Frontal ridge with weak or without emargination between the eyes; hind wings reaching pronotal apex, its outer margin scalloped ····· 6

6. Body robuster; interocular distance 1.4−2.0 times wider than an eye (Fig. 264); ovipositor with wide and thick upper valves, 2.3−2.6 times longer than broad (Fig. 265) ····· ····· ***Tetrix japonica*** (p. 216)

− Body slender; interocular distance equal to or narrower than an eye (Fig. 266); ovipositor with slender and narrow upper valves, 2.7−3.0 times longer than broad (Fig. 267) ····· ····· ***Tetrix minor*** (p. 218)

Genus *Euparatettix* Hancock 장삼모메뚜기속

1904. Spolia Zeylanica, 2: 145. Type species: *Paratettix personata* Bolívar 1887.

Diagnosis. Antennae articulated at least partly between the eyes, lateral ocelli being situated at the middle of the eye. Middle femora at least slightly narrower than the visible part of the tegmen, and not bearing a regular row of bristles on their ventral margins. Middle tibiae not tapered apicad, Frontal ridge in profile forms an arc between fastigium and ventral ocellus. 50 species are known in the world.

88. *Euparatettix insularis* Bey−Bienko 1951 장삼모메뚜기 (Figs. 245, 261)

Euparatettix insularis Bey−Bienko in Bey−Bienko and Mishchenko 1951. Locusts and Grasshoppers of the U.S.S.R. and Adjacent Countries, 1: 106, Fig. 61. "Japan: Sagami". Holotype ♂ in Zoological Institute of the Russian Academy of Sciences, St. Petersburg.

Tettix histricus nec Stål 1861. Kongliga Svenska fregatten Eugenies Resa omkring jorden under befäl af C.A. Virgin åren 1851−1853 (Zoologi), 2(1): 347. "Java". Holotype ♂ in Naturhistoriska Riksmuseet, Stockholm.

Tettix longulus nec Shiraki 1906. Trans. Sapporo Nat. Hist. Soc. 1(2): 161. "Japan". Type in ? Nom. dub. since Storozhenko et al. (1994).

Korean records. ***Tettix longulus***: Doi 1932: 34; ***Paratettix histricus***: Doi 1933: 88; Kamijo 1933: 48; Cho 1959: 170, Fig. 48 (manual); Cho 1969: 746, pl. 49 (illustrated encyclopedia); Ju 1969: 22 (North Korean check list); ***Euparatettix insularis***: Kwon and Huh 1994: 50 (Korean check list); Huh and Kwon 1995: 8 (Is. Jejudo); Moon and Yoon 1996: 51 (KEI); Kwon et al. 1996: 104 (Korean species list); Bae 1998: 168; Kim and

Kim 2004: 263, Fig. 4 (taxonomy).

Specimens examined. **<GG>** 1♀, Mt. Myeongjisan Gapyeong, 4 v 2000, Kim YJ (SSU); 2♀, Sangjeok-dong Seongnam, 6 x 1994, Kim YJ (SSU); 1♀, Mt. Gwanggyosan Sangkwanggyo Suwon, 30 vii 1999, Park HC (NIAST); 3♂2♀, Eco-garden NIAST Seodun-dong Suwon, 8 xi 1999, Kim TW (NIAST); 1♂, Mt. Yongmunsan Yangpyeong, 28 vii 2000, Kim TW (SSU); 2♀, light trap, Is. Yeongheung-do Incheon, 15 vii 1999, Kim TW et al. (NIAST); 1♂, Gwangneung Pocheon, 30 viii 1999, Sohn JC (SSU); **<CB>** 1♂3♀, Suryuji Nohyeon Boeun, 23 x 1990, Park HC and Kim JI (SSU); 2♀, Sojeong-ri Gunbuk Okcheon, 23 x 1990, Park HC (SSU); 1♀, Mt. Wolaksan Jecheon, 29 viii 1994, Kim JH (SSU); 1♀, Nohyeon-ri Munei Cheongwon, 28 v 1991, Kim JI (SSU); **<CN>** 1♂, Seondong-myeon Nonsan, 7 xii 2000, Lee HS (SSU); **<GN>** 2♀, Halimjeong Gimhae, 18 ix 1983, Kim MR (KU); **<JB>** 2♀, Yongdeok-eup Wanju, 26 vii 1996, Jang SY (SSU); **<JN>** 1♀, Is. Sinjido Wando, 6 viii 1987, Lee OJ (SSU); 1♂3♀, Dongsan Jangseong, 30 iii 1974, Kim JH (KU); **<JJ>** 2♀, Jungmun, 11-12 viii 1984, Lee SM; 1♀, Andeokgyegok Gamsan-ri Andeok Namjeju, 13 vi 2004, Kim JK and Kim TW (SSU).

Description. **<♀>** Body coloration variably brown, gray with sometimes dorsal markings. Head small, inclined. Eyes greatly protruding, obviously above level of vertex and pronotum. Interocular distance narrower than the horizontal diameter of an eye. Vertex with clear median carina, anterior margin truncated, the eyes more protruding than the margin forwards. In dorsal view front ridge slightly visible; the areas between median carina and eyes depressed. Antennae longer, its middle antennomeres more than five times longer than the width; flagellum 11-segmented. Frontal ridge roundly convex in lateral view, without emargination between the eyes. Pronotum elongate and slender, surpassing the half of hind tibia; prozona short and oblong, its width two times of the length; dorsal median carina of pronotum slightly convex and undulate forwards; lateral carinae clear, from two third of the pronotum inner carinulae present just behind the tegminal end along the tip; two sulci intersect the lateral carinae in prozona, the distance between them equal. Paranotum with inferior sinus slightly deeper than superior tegminal sinus. Tegmen ovoidal, three times longer than the middle width, broader than middle femur. Hind wings weakly darker, surpassing pronotal apex. Hind femora with dark inner surface; dorsal carinae subapically diverged outwardly. All tarsal claws bifurcated. Hind basitarsus with sharply pointed three ventral pads. Ovipositor with thick dorsal valves two times broader than ventral ones, the length three times longer than the middle width; ventral valves as long as subgenital plate.

<♂> Distinctly smaller and slender than female. Subgenital plate triangular, its apex shallowly notched. **<Measurements>** BL ♀ 8.5−10.2, ♂ 6.5−6.8 (HWL ♀ 13.5−16.2, ♂ 10.5−12.7); PL ♀ 10.0−13.5, ♂ 7.7−9.6; HFL ♀ 4.7−6.4, ♂ 4.5−4.9.

Distribution. Korea, Japan.

Genus *Formosatettix* Tinkham 볼록모메뚜기속

1937. Trans. Nat. Hist. Soc. Formosa, 27: 237. Type species: *Formosatettix arisanensis* Tinkham 1937.

Diagnosis. Body robust. Antennae filiform, 13−15 segmented; scape partly below margin of eyes. Fastigium of vertex much wider than eye in dorsal view, transversely truncate anteriorly. Fastigium produced in front of eyes to a variable degree in lateral aspect. Median carina of pronotum high, arched or straight in lateral view; posterior process short, not reaching apices of abdomen. Prozona transverse or subsquare as long as wide or 1.05−1.25 times as wide as long. Hind margin of paranotum with only lower sinus, tegminal upper sinus completely or almost absent. Tegmen and hind wings absent or very short, lobe−like, covered by pronotum. basitarsus of hind leg longer than third segment. Subgenital plate of female with triangular posterior margin. The pronotal character of this genus is regarded with paedogenesis of *Tetrix* (Kim and Kim 2005). 44 species are known in the world.

89. *Formosatettix robustus* Storozhenko 1981 참볼록모메뚜기 (Figs. 246, 258)

Formosatettix robustus Storozhenko 1981. Spiders and insects of the Far East of the USSR: 6, Figs. 1−6. "Russia: Primorye". Holotype ♂ in Zoological Institute of the Russian Academy of Sciences, St. Petersburg.

Korean records. ***Formosatettix robustus***: Kostia 1995: 264, Figs. 4, 8, 11 (North Korea); Kwon et al. 1996: 104 (Korean species list: 새볼록모메뚜기); Kim and Kim 2004: 263, Fig. 5 (taxonomy).

Specimens examined. <GW> 2♂, Buyeongyegok Samsan−ri Yeongok Gangneung, 18−19 vi 2001, Kim AY (SSU); 1♂, Gangchon, 22 v 1976, Lee GO (KU); 1♀, Geonbongsa Goseong, 24 viii 1992, Park HC (KU); 2♂, Hwaeomsa Toseong Goseong, 17 v 2002, Choi MJ and Lee HJ (SSU); 1♀, "Kongosan" = Mt. Geumgangsan, 14 viii 1937, Mori and Cho (KU); 1♂, Yongdae−ri Naeseorak, 26 v 1983, Chang KS (SSU); 1♂1♀, Samhwasa Bukpyeong, 26−27 vi 1984, Lee MI and Sohn JH (SSU); 1♀, Mt. Cheongoksan Hajang−myeon

Samcheok, 30 vii 2006, Kim TW (SSU); 1♂, Baekdamsa Mt. Seoraksan, 4 vi 1979, Kim KM (KU); 10♂8♀, Mt. Daeamsan Dong-myeon Yanggu, 23 v-8 vii 2003, Kim JK and Kim TW (SSU); 1♀, Daecheongbong Mt. Seraksan Seo-myeon Yangyang, 27 viii 2002, Kim TW (SSU); 1♀, Guryongsa Mt. Chiaksan Wonju, 15 vi 1999, Kim TW (SSU); 1♂1♀, Yongdae-ri Inje, 9 v 1999, Ham MK (SSU); 1♀, Baekyang-ri Namsan-myeon Chuncheon, 1 vii 2006, Kim TW (SSU); 2♂, Dangungak Mt. Taebaeksan Taebaek, 30 v 1999, Yoo JS and Lee HJ (SSU); 1♀, Mt. Hambaeksan Taebaek, 6 vii 2005, Kim TW (SSU); 1♂2♀, Mapyeong-ri Jinbu Pyeongchang, 30 vi 1985, Kim YS et al. (SSU); 1♀, Mt. Baegamsan Gwangam-ri Naechon-myeon Hongcheon, 9 vi 2002, Kim TW (SSU); 1♀, Sanwangbong Mt. Odaesan Hongcheon, 11 viii 1997, Kim JI et al. (SSU); 1♀, Hwacheon, 11 vi 1968, Kim JI (KU); **<GG>** 1♀, Seungcheonsa Mt. Myeongjisan Dodae-ri Buk-myeon Gapyeong, 28 v 2001, Kim TW (SSU); 1♂1♀, Malaise trap, Mt. Chukryeongsan Sang-myeon Gapyeong, 15 vi-3 vii 1999, Ku DS (NIAST); 1♀, Is. Seokmodo Ganghwa, 22 vii 1992, Park HC (KU); 1♂, Songchugyegok Mt. Bukhansan Goyang, 9 vi 2001, Kim TW (SSU); 1♀, Gwangneung, 13 vi 1981, Kim HO (SSU); 2♂, Namhansanseong Gwangju, 20 vii 1998, Woo SH (SSU); 1♂, Mt. Surisan Gunpo, 5-25 iv 2002, Kim TW (SSU); 3♂5♀, Mt. Cheonmasan Mukhyeon-ri Hwado Namyangju, 15 vi 2000, Lee YB (NIAST); 1♂2♀, Mt. Gwanggyosan Suwon, 18 v 2001, Kim TW (NIAST); 1♀, Mt. Chilbosan Geumgok-dong Suwon, 12 viii 2001, Lee YB (NIAST); 1♂1♀, Saneum-ri Danwol-myeon Yangpyeong, 14 vi 2005, Kim AY (SSU); 1♂, Yeonsu-ri Yongmun Yangpyeong, 5 vi 1983, Chang KS (SSU); 1♂, Mt. Godaesan Sinseo-myeon Yeoncheon, 5 viii 2006, Kim TW (SSU); 11♂7♀, Hantangang riverbed Yeoncheon, 27 v 2001, Kim TW (SSU); 1♂1♀, Wonhyosa Euijeongbu, 6 vi 1985, Cho NH (SSU); 2♂, Mt. Cheonmasan Pyeongnae, 2 vi 1984, Park GS and Kim MH (SSU); 1♀, Mt. Geomdansan Hanam, 29 v 1999, Na SJ (SSU); 2♂, Mt. Cheonggyesan Wonji-dong Gangnam-gu Seoul, 21 v 2002, Kim JI et al. (SSU); 5♂1♀, Mt. Suraksan Nowon-gu Seoul, 5-18 v 1997, Park YS et al. (SSU); **<CB>** 4♂, Hwayang-ri Goesan, 25 v 1996, Kim EY et al. (SSU); 2♂1♀, Mt. Wolaksan Jecheon, 27 v 1996, Kim JY (SSU); 1♀, Mt. Songnisan Cheongcheon Goesan, 29 vii 1957, Kang JS (KU); 1♂1♀, Mt. Gyemyeongsan Yonggokmaeul Chungju, 17 vi 2003, Han KD and Kim TW (SSU); **<CN>** 1♀, Hoedeok-dong Daedeok-gu Daejeon, 26 viii 1997, Kim EJ (SSU); 1♀, Donghaksa Mt. Gyeryongsan Gongju, 21 v 1988, Lee SJ (SSU); 1♀, Seongbulsa Mt. Seodaesan Geumsan, 25 v 2002, Kim SY (SSU); 1♀, Mt. Mansusan Boryeong, 11 vi 1999, Kim TW (SSU); 4♂1♀, Mt. Gwangdeoksan Cheonan, 17 v 1984, Lee YM et al. (SSU); 2

♂6♀, Malaise trap, Mt. Oseosan Hongseong, 16 v–9 ix 1999, Ku DS (NIAST); **<GB>** 1♀, Seobu-dong Dong-gu Ulsan, 23 v 1998, Lee JK (SSU); 1♂3♀, Mt. Hwanghaksan Daehang Gimcheon, 2–5 vi 1978, Hong SB et al. (KU); 1♀, Mt. Sudosan 1,000 m Jeungsan Gimcheon, 9 vi 1977, Yamagishi K; 1♂, Mt. Sudosan 500 m Jeungsan Gimcheon, 31 v 1977, Yamagishi K; 1♂, Jikjisa Gimcheon, 13 v 1989, Kim JI (SSU); 4♂2♀, Mungyeongsaejae, 26 v 1996, Kim JI et al. (SSU); 1♀, Mt. Cheongryangsan Bonghwa, 14 vi 1996, Kim JH (SSU); 1♀, Seonginbong Is. Ulleungdo, 9 vii 1986, Kim YS (SSU); 2♂, Malaise trap, Mt. Baegamsan Uljin, 20 vi–12 viii 1999, Ku DS (NIAST); 2♀, Mt. Juwangsan Cheongsong, 23 vi 1988, Sim HJ and Kim HY (SSU); 2♂1♀, Mt. Taehaengsan Cheongsong, 24 vi 1988, Kwon MK (SSU); 1♂, Mt. Yonghwasan Jidong Jukjang Pohang, 26 vi 2001, Lee YB (SSU); 2♂1♀, Mt. Palgongsan Daegu, 12 vi 2000, Kim MA (NIAST); **<GN>** 1♀, Masan, 15 viii 1995, Choi MY (SSU); 1♀, Deokgok-ri Jinbuk-myeon Masan, 20 v 2006, Kim SJ (SSU); 1♂, Yucheon-ri Gusan-myeon Happo-gu Masan, 20 v 2006, Kim SJ (SSU); 1♂, Taejongdae Busan, 18 v 1996, Eom IH (SSU); 1♀, Ssanggyesa Mt. Jirisan Hwagae Hadong, 31 vi 2001, Kim TW (SSU); **<JB>** 9♂9♀, Seonwunsa Gochang, 21 v 1992, Kim HJ et al. (SSU); 1♀, Mt. Moaksan Geumsansa Gimje, 23 v 1992, Park HH (SSU); 1♂, Mt. Naesosan, 20 v 1992, Kim SY (SSU); 2♂3♀, Mt. Naejangsan, 304 vii 1985, Kim DW et al. (SSU); 1♂1♀, Mt. Deokyusan Muju, 25 v 1993, Kim HJ and Huh GS (SSU); 3♂, Mujugucheondong, 20–21 v 1983, Han JH et al. (SSU); 1♂, Jiksopokpo Byeonsanbando Buan, 24 v 2001, Lee HA (SSU); 1♂, Naesosa Buan, 22 v 1992, Lee GI (SSU); 1♀, Baemsagol Mt. Jirisan, 29 vii 1985, Yoon HJ (SSU); **<JN>** 1♂1♀, Mt. Baegunsan Gwangyang, 19 v 1991, Kang YH (SSU); 2♂1♀, Mt. Jogyesan Seungju Suncheon, 23 v 1988, Kim YK et al. (SSU); 3♂, Baekyangsa Jangseong, 24–26 v 1994, Kim HE et al. (SSU); 2♂, Mt. Jeamsan Jangheung, 14 v 2000, Jang SJ (NIAST); 1♀, Piagol Mt. Jirisan, 23 vi 1987, Park GY (SSU); 3♂2♀, Mt. Duryunsan Samsan Haenam, 23 vi 1993, KBH et al. (SSU); 2♀, Mt. Gyedangsan Jeungri Iyang-myeon Hwasun, 17 vii 2003, Kim TW (SSU).

Description. <♀> Body coloration variably brown, gray, sometimes with a pair of markings. Head smaller, inclined. Antennae thin and longer, its middle antennomeres five times longer than the middle width; flagellum 11-segmented. Interocular distance 2.5 times wider than the horizontal diameter of an eye. Fastigium of vertex truncated, slightly more projecting than eyes; median carina connected frontal ridge intersect anterior margin of fastigium; frontal ridges between antennal sockets roundly convex, with weak emargination

between lateral ocelli. Pronotum highly arched by median carina, with rather triangularly projected anterior margin; pronotal apex not reaching the abdominal end; lateral inner carinulae indistinct; lateral carinae weakly diverged to inwards, the length slightly longer than the distance to median carina. Paranotum only with inferior sinus, tegmina and hind wings vestigial, not visible, rudimentary small lobe-like, fully concealed by pronotum. Hind basitarsus two times longer than remaining two segments, with pointed ventral pads. All tarsal claws bifurcated. Ovipositor with slender dorsal valves, 3.8-4.2 times as long as broad; ventral valves slightly longer than subgenital plate. **<♂>** Slightly smaller, slender than female. Interocular distance slightly narrower than female. Subgenital plate short, conical, its apex shallowly notched. **<Measurements>** BL 8.7-14.0; PL 7.4-9.8; HFL 6.9-8.2.

Distribution. Korea, Northeast China, Russian Far East.

Genus *Clinotettix* Bey-Bienko 뿔모메뚜기속

1933. Boletín de la Real Sociedad Española de Historia Natural, 33: 327. Type species: *Clinotettix ussuriensis* Bey-Bienko 1933.

Diagnosis. Frons strongly sloping for its whole length, forming with vertex a very acute angle. Frontal ridge bipartite dorsally only halfway between the fastigium and the bases of the antennae, extending farther apicad in the form of an unpaired carina. Pronotum flat dorsally, posterior angle of lateral lobes widely rounded. Vertex very strongly projecting anteriorly between the eyes. Two species known in Manchurian Subregion. Synonymously regarded with *Tetrix* in Rehn and Grant (1961).

90. *Clinotettix ussuriensis* Bey-Bienko 1933 뿔모메뚜기 (Figs. 247, 262)

Clinotettix ussuriensis Bey-Bienko 1933. Boletín de la Real Sociedad Española de Historia Natural, 33: 329, Figs. 9-10. "Russia: Ussuri". Holotype ♀ in Zoological Institute of the Russian Academy of Sciences, St. Petersburg.

Korean records. ***Clinotettix ussuriensis***: Kostia 1995: 264, Figs. 9-10 (North Korea); Kim and Kim 2004: 264, Fig. 6 (taxonomy).

Specimens examined. <GW> 1♀, Jangneung Yeongweol, 17 iv 2004, Kim TW (SSU); **<GG>** 1♂, Munsan Paju, 9 x 1972, Kim JI (KU); 2♀, Dongmakgol Yeoncheon, 6 vi 2006, Kim TW (SSU).

Description. <♀> Body coloration dull grayish brown without distinct markings. Head with

strongly projecting fastigium, the frons also strongly inclined. Antennae short and thick, its middle antennomeres 1.5 times longer than wide, the coloration bright yellow, its apex more dark black; flagellum 11-segmented. Interocular distance 2.5 times wider than the horizontal diameter of an eye. Fastigium with distinct median carina, its anterior margin triangularly projected the length as long as vertical diameter of an eye or slightly shorter than one; frontal ridge not visible from above. Frons strongly slanted, frontal ridges roundly protruding between the eyes, weakly emarginated slightly above between the antennal sockets. Lateral ocelii distinct, but not projecting like tubercle. Median ridge of frons below the median ocellus shorter than roundly projecting frontal ridges. Pronotum with well developed granules and median, lateral carinae; anterior margin of pronotum truncated; lateral carinae nearly paralleled or weakly diverged on prozona, the one as long as the distance between median carina; median carina weakly crest, rather tectiform. Paranotum with inferior sinus more deep than superior tegminal sinus; Pronotal apex slightly longer than hind femur; lateral inner carinular from the pronotal apex distinct to humus. Tegmina ovoidal, three times longer than the middle width. Hind wings slightly shorter than pronotal apex. Hind basitarsus longer than remaining two segments, with rather pointed ventral pads. All tarsal claws bifurcated. Ovipositor with thick dorsal valves three times broader than ventral valves; dorsal valve three times longer than middle width; ventral valves longer than subgenital plate. **<♂>** Slightly smaller and slender than male. Interocular distance two times wider than the horizontal diameter of an eye. Pronotal apex as long as the half of hind tibia. Hind wings as long as tegminal apex, slightly longer. Subgenital plate long triangular, its apex shallowly notched. **<Measurements>** BL ♀ 10.7, ♂ 9.4 (HPL 13.4-13.7); PL 12.3-13.4; HFL ♀ 6.6, ♂ 5.8.

Distribution. Korea, Northeast China, Russian Far East.

Genus *Tetrix* Latreille 모메뚜기속

1802. Histoire Naturelle generale et partculiere des Crustaces et des Insectes, 3(12): 284. Type species: *Gryllus* (*Bulla*) *subulatus* Linnaeus 1758.

Diagnosis. Small, powerful built, short limbs. Integument granular and rough. Paranota have two flaps at their hind edge. Frons weakly sloping, above the antennae being entirely, or almost vertical. Groove of frontal ridge almost reaches the fastigium dorsally. Pronotum roof-like dorsally, or almost flat. Holarctic genus with 118 species, the measurements of four Korean *Tetrix* compared in Table 18.

91. *Tetrix simulans* (Bey-Bienko 1929) 광대모메뚜기 (Figs. 248, 259)

Acrydium simulans Bey-Bienko 1929. Eos, Revista española de Entomologia, 5(4): 367. "Russia: Transbaikalia". Holotype ♀ in Zoological Institute of the Russian Academy of Sciences, St. Petersburg.

Korean records. ***Tetrix simulans***: Kostia 1995: 262, Figs. 1, 5, 12 (North Korea); Kim and Kim 2004: 265, Fig. 7 (taxonomy).

Specimens examined. **<GW>** 2♂, Samhwasa Bukpyeong, 27 vi 1984, Chang KS and Kim YS (SSU); 1♀, Haesanryeong Hwacheon, ? viii 2002, Paik YH (SSU).

Description. **<♀>** Body coloration variable dark brown to black. Head small and inclined. Antennae long and slender, its middle antennomeres more than five times longer than the width; scape with small denticulation. Interocular distance 1.5 times wider than the horizontal diameter of an eye. Fastigium of vertex rather roundly truncated, its anterior margin intersected by median carina connected with frontal ridge; frontal ridge visible from above; frontal ridge roundly convex between the antennal sockets, very weakly emarginated in lateral view. Pronotum with triangularly projected anterior margin; median carina much highly arched forming the pronotum as roof-shaped tectiform; pronotal apex slightly shorter than hind femur. Lateral carinae of prozona rather inwardly paralleled, the length weakly loner than the distance to median carina. Paranotum with inferior sinus more deep than superior tegminal sinus. Lateral inner carinular of pronotum present only a third from the pronotal apex, not reaching humus. Tegmina ovoidal, three times longer than middle width. Hind wings slightly shorter than pronotal apex. Hind basitarsus two times longer than remaining two segments combined length. Ovipositor with thick dorsal valves, three times longer than the width; ventral valves as long as subgenital plate. **<♂>** Slightly smaller and slender than female. Subgenital plate short triangular with shallow notch at apex.

Distribution. Korea, Northeast China, Mongolia, East Russia.

92. *Tetrix silvicultrix* Ichikawa 1993 야산모메뚜기 (Figs. 249, 263)

Tetrix silvicultrix Ichikawa 1993. Akitu, 135: 4, Figs. 1I-K. "Japan: Hyogo". Holotype ♀ in ONHM.

Korean records. ***Tetrix silvicultrix***: Kim and Kim 2004: 265, Fig. 8 (taxonomy).

Specimens examined. **<GW>** 1♀, Guryongsa Mt. Chiaksan Wonju, 15 vi 1999, Kim TW (SSU); **<GG>** 1♂, Mt. Gwanaksan Gwacheon, 26 v 1989, Park JH (SSU); 1♂1♀,

Gwangneungnae, 18 vi 1983, Kim GA and Lim MW (SSU); 1♀, Mt. Munjusan Wolgot Gimpo, 1 vii 1987, Kim JI (SSU); 1♀, Bogwangsa Gwangtan Goyang, 11 vi 1977, Kim YS (KU); 1♂1♀, Mt. Guryongsan Seoul, 9 vi 1996, Paik SJ (SSU); 2♂, Mt. Daemosan Seoul, 1 vi 1996, Kim HS (SSU); 3♂1♀, Mt. Cheonggyesan Wonji-dong Seoul, 1 vi 1985, Kim HJ et al. (SSU); 1♂, Mt. Achasan Seoul, 29 v 1999, Cho YJ (SSU); 3♂1♀, Mt. Suraksan Seoul, 10-28 v 1997, Kim MH et al. (SSU); 2♂, Mt. Dobongsan Seoul, 23 v 1990, Sohn SY (SSU); 1♀, Mt. Umyeonsan Seoul, 4 ix 1993, Eom MY (SSU); 1♀, Mt. Bukhansan Seoul, 28 v 1998, Kim TW (SSU); 3♀, Namhansanseong Seongnam, 7 vi 1986, Kim SH et al. (SSU); 1♀, Mt. Gwanggyosan Suwon, 13 vii 1991, Lee YJ (SSU); 1♂, Seopo-ri Is. Deokjeok-do Ongjin, 6 vii 1981, Kim JI (SSU); 1♂1♀, Mt. Cheonmasan Pyeongnae, 4-8 vi 1983, Gwak HS and Park SH (SSU); 1♀, Hanam, 31 v 1998, Song SJ (SSU); **<CB>** 1♀, Songmyeon-ri Cheongcheon, 22 vi 1987, Lee HS (SSU); 1♀, Mt. Wolaksan Chungju, 31 v 1995, Kim JH (SSU); **<CN>** 1♀, Hanseo Univ. campus Haemi Seosan, 22 vi 2001, Lee HY (NIAST); **<GB>** 1♂3♀, Jikjisa Mt. Hwanghaksan, 2-4 vi 1978 Kim MK et al. (KU); 1♀, Bulyeonggyegok Uljin, 27 vi 1990, Kim MY (SSU); 2♂, Mt. Sudosan, 12-15 vi 1977, Yamagishi K; 1♀, Mt. Sobaeksan Punggi, 6 vi 1981, Jin DW (SSU); 1♀, Mt. Palgongsan Daegu, 12 vi 2000, Kim MA (NIAST); **<GN>** 1♀, Mt. Jirisan Samchang, 9 viii 1994, Lee GI (SSU); **<JN>** 1♀, Mt. Duryunsan Haenam, 23 vi 1993, Yang GG (SSU).

Description. <♀> Body coloration variably brown, gray, sometimes with markings. Antennae thin, longer, its middle antennomeres five times longer than middle width; flagellum 11-segmented. Anterior margin of fastigium of vertex truncated, its median carina well developed, intersected by median carina connected frontal ridge. Interocular distance 1.4-1.8 times as wide as the horizontal diameter of an eye from dorsal view; frontal ridge roundly protruding between antennal sockets, with distinct emargination between lateral ocelli. Pronotum with slightly triangular anterior margin; median carina well developed forming roof-shaped tectiform; lateral inner carinulae distinct from pronotal apex to humus; lateral carinae on prozona paralleled, as long as the distance to median carina. Paranotum with inferior sinus more deep than superior tegminal sinus. Pronotal apex slightly shorter than hind knee. Tegmen ovoidal, three times longer than middle width. Hind wings strongly abbreviated, just reaching to half the pronotal apex, its anterior margin roundly visible from lateral view, the inner margin not scalloped, straight. basitarsus two times longer than remaining two segments combined length. Ovipositor with rather slender upper valves, 2.5-3.0 times as long as broad; ventral valves as long as subgenital plate. **<♂>** Slightly

smaller and slender than female. Subgenital plate short triangular with shallow notch at apex.

Distribution. Korea, Japan.

93. *Tetrix japonica* (Bolívar 1887) 모메뚜기 (Figs. 250−251, 264, 265)

Tettix japonicus Bolívar 1887. Annales de la Société Entomologique de Belgique, 31: 263. "Japan". Holotype ♀ in Naturhistorisches Museum Wien.

Korean records. ***Tettix japonicus***: Doi 1932: 34; ***Acrydium japonicus***: Doi 1933: 88; Cho 1963: 162 (Is. Jejudo); Ju 1969: 22 (North Korean check list); ***Acrydium japonicum***: Furukawa 1939: 109 176; Cho 1959: 169, Fig. 46 (manual); Cho 1969: 745, pl. 49 (illustrated encyclopedia); Lee and Ko 1988: 204 (Is. Oeyondo); ***Tetrix japonica***: Kwon and Huh 1994: 50 (Korean check list); Storozhenko et al. 1994: 13, Figs. 32−44; Huh and Kwon 1995: 8 (Is. Jejudo); Kostia 1995: 260, Figs. 3, 7 14 (North Korea); Moon and Yoon 1996: 52 (KEI); Kwon et al. 1996: 104 (Korean species list); Bae 1998: 164; Kim and Kim 2004: 266, Figs. 9, 10 (taxonomy).

Specimens examined. **<GW>** 1♂, Mt. Cheongoksan Hajang−myeon Samcheok, 30 vii 2006, Kim TW (SSU); 1♀, Mt. Daeamsan Dong−myeon Yanggu, 7−8 vii 2003, Kim JK and Kim TW (SSU); 5♂1♀, Ssangyong Yeongwol, 7 ix 1998, Jang SJ et al. (NIAST); 2♀, Guryongsa Mt. Chiaksan Wonju, 15 vi 1999, Kim TW (SSU); 1♂1♀, Garibong Mt. Seoraksan Inje, 23 vii 2004, Kim TW (SSU); 3♀, Jeungsan Nam−myeon Jeongseon, 19 ix 2004, Kim TW (SSU); 2♂1♀, Mt. Myeongseongsan Cheolwon, 5 vi 1999, Han TM (SSU); 1♀, Baekyang−ri Namsan−myeon Chuncheon, 1 vii 2006, Kim TW (SSU); 14♂12♀, Mt. Baegamsan Gwangam−ri Naechon−myeon Hongcheon, 9 vi 2002, Kim TW (SSU); 1♀, Haesanryeong Hwacheon, 8 vii 2006, Kim TW (SSU); **<GG>** 1♂1♀, Seungcheonsa Mt. Myeongjisan Dodae−ri Buk−myeon Gapyeong, 28 v−8 ix 2001, Kim SY and Kim TW (SSU); 1♀, Hongjeokgogae Hwaak−ri Buk−myeon Gapyeong, 15 viii 2006, Lee JG (SSU); 1♂, Mt. Ungilsan Joan−myeon Namyangju, 5 iv 1999, Kim TW (SSU); 1♂1♀, Naegok−2ri Jinjeop−eup Namyangju, 13−17 v 2006, Moon GS (SSU); 3♂10♀, Eco−garden Seodun−dong Suwon, 20 vii−20 x 1999, Kim TW (NIAST); 1♀, Is. Pungdo Ansan, 11−12 viii 2006, Kim TW (SSU); 1♂, Yulgeuk−ri Yeoju, 21 v 1998, Kim TW (SSU); 4♂4♀, Dongmakgol Yeoncheon, 6 vi 2006, Kim TW (SSU); 1♀, Byeopwon Paju, 5 vii 1998, Kim TW (SSU); 1♀, Mt. Jugeumsan Naechon−myeon Pocheon, 25 ix 2004, Kim TW (SSU); 1♂2♀, Misa−dong Hanam, 26 viii 2002, Kim TW (SSU); 1♀, pitfall, Deogwu−ri

Bongdam-myeon Hwaseong, 24 ix 2001, Jeong MP (SNU); **<CB>** 1♀ (macroptera), Joryeong Mungyeong, 22 vi 1989, Park JM (SSU); 2♂, Yongam-ri Hwanggan Yeongdong, 4-5 viii 2001, Kim JI (SSU); 1♂1♀, Mt. Jangryongsan Geumsan-ri Gunseo-myeon Okcheon, 26 vii 2002, Kim TW (SSU); 1♂2♀, Mt. Gyemyeongsan Chungju, 24 viii 2000, Kim TW (SSU); 3♀, Mt. Namsan Chungju, 25 viii 2000, Kim TW (SSU); 1♀, Mt. Cheondeungsan Sancheok-myeon Chungju, 6 viii 2002, Kim TW (SSU); **<CN>** 1♂1♀, Gapsa Mt. Gyeryongsan Gongju, 5 viii 2000, Kim TW (SSU); 1♂, Muryangsa Mt. Mansusan Buyeo, 19 vii 1999, Kim TW (SSU); 1♀, Kotji beach Is. Anmyeondo Taean, 11 ix 2005, Kim TW (SSU); 1♀, Sindu-ri Wonbuk-myeon Taean, 18 vii 2002, Kim TW (SSU); 1♂, Insan-ri Geumma-myeon Hongseong, 28 v 2006, Min Y (SSU); **<GB>** 1♂1♀, Mt. Tohamsan Gyengju, 8 ix 2000, Kim TW (SSU); 1♀, Mt. Baegamsan Uljin, 29 v 1999, Kang TH (SSU); 1♀, Mt. Juwangsan Cheongsong, 23 vi 1988, Sim HJ (SSU); 2♀, Mt. Taehaengsan Cheongsong, 24 vi 1988, Kwon MK (SSU); **<GN>** 1♀, Nori Chodong Milyang, 24 vii 1985, Lee OK (SSU); 1♀, light trap, Jungsanri Mt. Jirisan, 25 vi 2001, Jeon JB (SSU); 1♂ (macroptera), light trap, Mt. Gayasan Danchibong Chiin-ri Gaya-myeon Hapcheon, 19-20 viii 1996, Park CO (GSU);**<JB>** 3♀, Seonwunsa Gochang, 27 vi 1990, Ju WA (SSU); 1♀ (macroptera), ibid. 29 vii 2004, Lee JG (SSU); 1♂ (macroptera), Naebyeonsan Buan, 26 vi 1991, Ko KM (SSU); 1♀, Buyong Gimje, 28 vii 1984, Chang KS (SSU); 1♂, Daea-ri Dongsang-myeon Wanju, 27 vii 2002, Kim TW (SSU); 1♀, Mt. Naejangsan Jeongeup, 26 v 1994, Kim HE (SSU); **<JN>** 1♂, Mt. Baekwusan Gwangyang, 25 viii 1999, Kim TW (SSU); 1♂, Mt. Mudeungsan Gwangju, 25 viii 1988, Jeong JY (SSU); 1♀, Piagol Mt. Jirisan Toji Gurye, 22 v 1999, Han TM (SSU); 1♀, Is. Songido Yeonggwang, 17 viii 1989, Kim JI (SSU); 1♂, Is. Anmado Yeonggwang, 19 viii 1989, Lee OJ (SSU); 1♀, Guksabong Yeongam, 15 v 2000, Kim TW (SSU); 1♀, Mangchuk-ri Wando, 6 vii 1982, Lee IS (SSU); 1♂, Is. Sinjido Wando, 6 viii 1987, Lee OJ (SSU); 1♀, Yaksan park Sangdeukam-ri Is. Joyakdo Wando, 15 vii 2003, Han KD (SSU); 1♀, Is. Hoenggando Wando, 22 viii 1982, Chang KS (SSU); 1♀, Baekyangsa Mt. Naejangsan Bukha-myeon Jangseong, 11-12 ix 2004, Kim TW (SSU); 1♂, Ssanggyesa Mt. Jirisan Hwagae Hadong, 31 vi 2001, Kim TW (SSU); 1♀, Mt. Duryunsan Haenam, 23 vi 1993, ASH (SSU); **<JJ>** 1♂, Andeokgyegok Gamsan-ri Andeok-myeon Namjeju, 13 viii 2004, Kim JK and Kim TW (SSU); 1♀, Donnaeko, 15 vii 1990, Park HC (KU); 1♂, Gwaneumsa road Yeongpyeong-dong Bukjeju, 18 vii 2001, Lee HS (NIAST); 1♂3♀, Jeongbangpokpo Dongheung-dong Seoguipo, 9 vii 2002, Kim TW (SSU); 1♂1♀,

Seongpanak, 4−5 v 1990, Park HC and Yoon TJ (KU); ; 2♀, Jungmun, 11 viii 1984, Lee SM; 1♀, Eorimoksanjang, 30 vii 1972, Kim JI (KU); 1♀, Eoseungsaengak, 29 vii 1972, Kim JI (KU); 1♂, Wanggwanneung, 1 viii 1972, Kim JI (KU).

Description. **<♀>** Body coloration very variably gray, brown, or sometimes remarkable patterns. Antennae longer than fore femur, its middle antennomeres 4−5 time longer than the middle width. Interocular distance wider than the horizontal diameter of an eye. Fastigium of vertex truncated, distinct median carina connected with frontal ridge intersect anterior margin of fastigium; frontal ridge weakly convex between antennal sockets, without distinct emargination between lateral ocelli; frontal ridge rather visible from above. In lateral view, frontal ridge roundly convex between antennal sockets. Pronotum with straight anterior margin; median carina distinct, rather convex on constricted area by transverse sulci; pronotal apex generally not surpassing hind knees (sometimes macropterous form present); lateral inner carinulae distinct on pronotal apex, indistinct before humus. Hind wings transparent, macropterous, slightly shorter than pronotal apex, its anterior margin scalloped (in macropterous from, hind wings longer than pronotal apex). Ovipositor short with thick dorsal valves, its length two time longer than middle width; ventral valves as long as subgenital plate. **<♂>** Slightly smaller and slender than female. Interocular distance narrower than female. Subgenital plate short triangular, with shallow notch in apex.

Distribution. Korea, Japan, China, Inner Mongolia, East Russia.

94. *Tetrix minor* Ichikawa 1993 꼬마모메뚜기 (Figs. 252, 266, 267)

Tetrix minor Ichikawa 1993. Akitu, 135: 6, Figs. 2D−F. "Japan: Osaka". Holotype ♀ in ONHM.

Korean records. ***Tetrix minor***: Kim and Kim 2004: 266, Fig. 11 (taxonomy).

Specimens examined. **<GG>** 1♀, Ganghwa, 18 iii 1990, Oh SJ (SSU); 1♂1♀, Gangseo Eco−park Banghwa−dong Seoul, 24 vii 2004, Kim TW (SSU); 1♀, Sudongmyeon, 29 iii 1980, Kim JS (SSU); 2♂, Yeonggpyeong Pocheon, 18 viii 1996, Anonym (SSU); 1♂, Mt. Daemosan Seoul, 19 viii 1996, Kim JE (SSU); 1♀, Mt. Bukhansan Seoul, 28 v 1998, Kim TW (SSU); 1♀, Suyuo−dong Seoul, 10 x 1997, Cho GH (SSU); **<CB>** 1♀, Mt. Cheongdeungsan Sancheok Chungju, 6 viii 2002, Kim TW (SSU); 1♀, Mt. Gyemyeongsan Chungju, 24 viii 2000, Kim TW (SSU); 1♂, Songmyeon−ri Cheongcheon, 22 vi 1989, Lee HS (SSU); 1♀, Deokgok−ri Jecheon, 15 ix 1996, Jeon YS (SSU); 1♂, Sojeong−ri Gunbuk Okcheon, 23 x 1990, Park HC (SSU); 1♀, Gosa−ri Yeonpung, 22 vi 1989, Yang JO (SSU);

1♂, Suryuji Nohyeon Boeun, 23 x 1990, Park HC (SSU); **<GB>** 1♀, Mt. Hwanghaksan, 4 vi 1978, Ko MK (KU); **<GN>** 1♂, Yeocha-ri Nambu-myeon Geoje, 15 vii 1994, Park GY (GSU); 1♀, Tappo-Ssanggeun Tapo-ri Nambu-myeon Geoje, 25 vi 1994, Yes SD (GSU); 1♀, Uitmaeul Buchon-ri Dongbu-myeon Geoje, 24 vi 1994, Ko YS (GSU); 1♂, light trap, Mt. Gayasan Danchibong Chiin-ri Gaya-myeon Hapcheon, 19-20 viii 1999, Lee SY (GSU); **<JN>** 1♀, Mt Sanghwangbong Wando, 15 vii 2003, Kim TW (SSU); **<JJ>** 1♂, Gwaneumsa, 30 vii 1998, Park HC (NIAST); ; 3♀, Jungmun, 11-12 viii 1984, Lee SM; 1♂, Andeokgyegok Gamsan-ri Andeok Namjeju, 21 iv 2004, Kim JK and Kim TW (SSU); 1♀, Seongpanak, 5 v 1990, Park HC (NIAST); 1♂5♀, Nohyeong-dong Jeju, 11 viii 2004, Seung JB and Jeong BH (SSU); 1♀, Cheonwangsa Jeju, 10 vii 2002, Kim TW (SSU).

Description. **<♀>** Body coloration variably brown, gray, sometimes with remarkable patterns. Body size rather small and shape most slender in Korean tetrigids. Head with short fastigium, anterior margin of fastigium truncated, intersected by median carina connected with frontal ridge; frontal ridge slightly visible in dorsal view; interocular distance slightly narrower than the horizontal diameter of an eye. Antennae slender, its middle antennomeres 4-5 times longer than the middle width; scape with small denticulation; flagellum 11-segmented. Frontal ridge weakly convex between antennal sockets, weakly emarginated between lateral ocelli in lateral view. Anterior margin of pronotum truncate, the width of pronotum narrowest in Korean tetrigids; median carina of pronotum almost straight in lateral view; lateral carina on prozona as long as the distance with median carina; lateral inner carinulae of pronotum well marked from pronotal apex, but not reaching humus, indistinct near tegminal apex; pronotal apex sharply pointed, surpassing abdominal end or at least hind knee. Paranotum with inferior sinus as deep as superior tegminal sinus. Tegmina ovoidal, 2.5 times longer than middle width. Hind wings slightly longer than pronotal apex. Middle femur four times longer than the middle width. Hind femora rather slender, 3.0-3.2 times as long as broad. Hind basitarsus longer than remaining two segments, with sharply pointed first, second ventral pads. Ovipositor slender and narrower, its upper valves 2.7-3.0 times as long as broad; ventral valves slightly longer than subgenital plate. **<♂>** More smaller and slender than female. Middle femur rather thick and compressed, the length three times longer than the middle width, the width slightly narrower than tegmen. Subgenital plate subconical, its apex shallowly notched.

Distribution. Korea, Japan, China (Sichuan).

Table 18. Measurements of *Tetrix* spp.

Species	HPL (Macroptera)	PL (Macroptera)	HFL
T. simulans	8.2−9.4	7.4−7.6	5.2−5.9
T. silvicultrix	8.5−10.5	7.2−9.0	6.0−7.2
T. japonicus	7.7−12.3 (12.5−15.3)	6.7−10.0 (9.5−13.3)	5.5−7.3
T. minor	8.0−10.0 (12.5−13.0)	6.0−9.5 (10.2−10.7)	4.5−6.0

Superfamily Acridoidea 메뚜기상과

True grasshoppers and locusts. Size rather medium or larger, body shapes variable. Tympana present on first abdominal tergite. Male phallic structure well sclerotized including cingulum, aedeagus. More than 8000 species in all over the world.

Key to Families of Acridoidea

1. Fastigium of vertex with a longitudinal furrow at apex ····· **Pyrgomorphidae** (p. 220)
− Fastigium of vertex without a longitudinal furrow ····· 2
2. Abdomen with Krauss's organ; out side of hind femur with irregular pattern ····· **Pamphagidae** (p. 226)
− Abdomen without Krauss's organ; out side of hind femur with regular plumage pattern ····· **Acrididae** (p. 228)

Family Pyrgomorphidae 섬서구메뚜기과

Members mostly with a conical head as seen in profile, the vertex finely drawn groove or fastigial furrow at its tip. In dorsal view this can clearly be seen to be the result of each side of the vertex being produced and pressed together on the mid−line. Prosternum bears a process, tubercle or collar. More than 450 species present worldwide.

Subfamily Pyrgomorphinae 섬서구메뚜기아과

Characters are samely given in the family.

Genus *Atractomorpha* Saussure 섬서구메뚜기속

1862. Annales de la Société Entomologique de France, 4(1): 474. Type species: *Truxalis crenulatus* Fabricius 1793.

= *Perena* Walker 1870. Catalogue of the Specimens of Dermaptera Saltatoria in the Collection of the British Museum, 3: 506. Type species: *Perena concolor* Walker 1870. [Kirby 1910]

Diagnosis. Body elongated fusiform. Head conical, frontal profile very strongly oblique. Fastigium of vertex well developed, lanceolate to pyramidal in outline as seen from above. Tegmina well developed, usually extending beyond the apex of the abdomen, acute lanceolate at apex, narrower in male than in female. Prosternal tubercle obliquely truncated. Mesosternal interspace trapezoidal, often rather narrow, particularly in the male. Metasternal interspace ellipsoidal or oblong. Epiproct elongate trigonal. Cerci short and conical. Epiphallus with middle portion anchor-shaped. Ovipositor with dorsal valves sinuate and crenulated (Banerjee and Kevan 1960). 25 species are distributes in the Old World tropics and subtropics, the measurements of two Korean *Atractomorpha* compared in Table 19.

Key to Species of *Atractomorpha*

1. Pronotum with prozona clearly longer than metazona; paranotum without membranous area near posterior margin; wings transparent, weakly tinged with yellow in basal half ..... ***A. lata*** (p. 221)

– Pronotum with prozona as long as metazona; paranotum with membranous area near posterior margin; wings bright pink in basal half ..... ***A. sinensis*** (p. 225)

95. *Atractomorpha lata* (Motschulsky 1866) 섬서구메뚜기 (Figs. 271, 282-283)

Truxalis lata Motschulsky 1866. Bull. Moscou. obshchestva ispyt. prirody, 39(1): 181. "Japan". Type lost.

= *Perena concolor* Walker 1870 (*partim*). Catalogue of the Specimens of Dermaptera Saltatoria in the Collection of the British Museum, 3: 506. "Corea". Lectotype ♀ (examined) in The Natural History Museum, London. [Banerjee and Kevan 1960]

= *Atractomorpha bedeli* Bolívar 1884. Anales de la Sociedad Española de Historia Natural, 13: 64. "Japan: Yokohama". Lectotype ♀ in Instituto Espanol de Entomologia, Madrid. [Banerjee and Kevan 1960]

= *Atractomorpha heteroptera* Bey-Bienko in Bey-Bienko and Mishchenko 1951. Locusts and

Grasshoppers of the U.S.S.R. and Adjacent Countries, 1: 275, Figs. 565, 566, 569. "China: Manchuria". Holotype ♀ in Zoological Institute of the Russian Academy of Sciences, St. Petersburg. [Kevan 1963]

Truxalis brevicornis Thunberg 1815. Mémoires de l'Académie Impériale des Sciences de St. Pétersbourg, 5: 264. "China". Holotype ♂ in Zoological Institute, Uppsala University Uppsala. Nom. nub. since Kevan (1963).

Korean records. ***Atractomorpha bedeli***: Ikonnikov 1913: 19; Doi 1932: 34; Haku 1937: 73 (Daegu); Furukawa and Shiraki 1950: 26, Fig. 58; Kang and Son 1958: 21 (chromosomes); Cho 1959: 171, Fig. 50 (manual); Cho and Lee 1959; 8 (Gwangneung); Cho 1969: 728, pl. 48 (illustrated encyclopedia); Ju 1969: 22 (North Korean check list); ***Atractomorpha lata***: Bey-Bienko and Mishchenko 1951: 277, Fig. 570; Kevan 1963: 85, pl. 12; Steinmann 1967: 565, Fig. 1F; Rentz and Miller 1971: 256 (Osan); Inoue 1985: 137, Figs. 31, 62, 93 (taxonomy with karyomorphology); Tadauchi 1989: 54 (Japanese check list); Kwon and Huh 1994: 51 (Korean check list); Xia et al. 1994: 293, Figs. 162, 163c, d; Huh and Kwon 1995: 9 (Is. Jejudo); Moon and Yoon 1996: 52 (KEI); Kwon et al. 1996: 104 (Korean species list); Yin et al. 1996: 79 (synonymic catalogue); Chung et al. 1997: 535 (genetic structure); Bae 1998: 169; Hua 2000: 35 (Chinese list); ***Atractomorpha brevicornis heteroptera***: Banerjee and Kevan 1960: 186 (North Korea); Tsyplenkov 1970: 214 (North Korea); ***Atractomorpha brevicornis brevicornis***: Banerjee and Kevan 1960: 186, Figs. 10, 16, 26, 37, 43 (South Korea); ***Acrida*** [!] ***bedeli***: Kim et al. 1987: 216 (cytotaxonomy).

Specimens examined. **<LT>** 1♀, "Corea", date unknown, E. Belcher (The Natural History Museum, London); **<PN>** 4♂2♀, Sagam 45 km N from Pyongyang, 12 viii 1971, S. Horvatovich and J. Papp, No. 163 (Hungarian Natural History Museum, Budapest); 1♀, Chang-lyong san 50 km N of Pyongyan and 15 km E from Sa-gam, 13 viii 1971, S. Horvatovich and J. Papp, No. 168 (Hungarian Natural History Museum, Budapest); 1♂1♀, Bongwa-ri on the riverside Te-dong about 45 km E from Pyongyan, 16 viii 1971, S. Horvatovich and J. Papp, No. 178 (Hungarian Natural History Museum, Budapest); 2♂2♀, Zamo san 60 km NE from Pyongyan, 2 ix 1971, S. Horvatovich and J. Papp, No. 230 (Hungarian Natural History Museum, Budapest); **<GW>** 2♀, Geondongsa Ganseong, 22 viii 1993, Moon TY (KU); 1♀, Naegokdong Gangneung, 12 ix 1993, Jang MA (SSU); 1♀, Buyeongyegok Samsan-ri Yeongok Gangneung, 18-19 viii 2001, Kim JI (SSU); 1♀, Cheongok-dong Donghae, 23 viii 1998, Lee HH (SSU); 1♀, Mt. Seolaksan Sokcho, 20 vii 1998, Nam MA (SSU); 1♀, Mt. Chiaksan Wonju, 19 vii 1998, Kim SA (SSU); 1♀,

Seohwa Inje, 29 viii 1990, Park HC (SSU); 1♀, Soyanggang Chuncheon, 1 x 1983, No YM (SSU); 1♀, Cheongpyeongsa Chuncheon, 31 vii 1994, Shin JH (SSU); 1♀, Mt. Odaesan Jinbu Pyeongchang, 16 viii 1990, Lee MS (SSU); 1♀, Noil-ri Hongcheon, 19 ix 1993, Kim SJ (SSU); **<GG>** 3♂2♀, Mt. Myeongjisan Gapyeong, 23 ix 1989, Park JM et al. (SSU); 1♂, Gyodongdo Ganghwa-do Incheon, 17 viii 1987, Yoo HJ (SSU); 1♀, Seokmodo Ganghwado Incheon, 27 ix 1992, Moon TY (KU); 1♀, Mt. Surian Gunpo, 7 x 2001, Kim TW (SSU); 1♂, Maseok Namyangju, 17 ix 1988, Sim HJ (SSU); 2♀, Namhansanseong Seongnam, 17 ix 1988, Kim JH (SSU); 1♂, Yeongcheong-dong Masan-ri Miyang-myeon Anseong, 28 viii 2003, Yeo JD (KU); 1♂, Munbal-ri Paju, 9 ix 1998, Jang HY (SSU); 1♀, Rodriguez shooting range Yeongpyeong Pocheon, 21 ix 1996, Kim JI and Park HC (SSU); 1♂, Hyangnam Hwaseong, 1 x 1988, Lee MO (SSU); 2♂2♀, Mt. Cheonggyesan Gangnam-gu Seoul, 8 x 1988, Oh HJ (SSU); 1♀, Hagye-dong Nowon-gu Seoul, 20 vii 1998, Lee HJ (SSU); 2♀, Mt. Dobongsan Seoul, 24 viii 1988, Kang JH (SSU); 1♀, Jamsil Seoul, 2 ix 1977, Kim BS (SSU); 1♀, Mt. Manisan Ganghwa-do Incheon, 12 viii 1996, Shin HJ (SSU); **<CB>** 2♀, Hwayang-ri Cheongcheon Goesan, 15 ix 1984, Kim YS (SSU); 2♂, Yongam-ri Hwanggan-myeon Yeongdong, 4-5 viii 2001, Kim AY (SSU); 2♀, Sojeong-ri Gunbuk Okcheon, 23 x 1990, Kim JI and Park HC (SSU); 1♂, Mt. Wolaksan Jecheon, 29 viii 1994, Kim JH (SSU); 1♀, Danwol-dong Chungju, 14 ix 1996, Jeon YH (SSU); 3♂, Mt. Cheondeungsan Sancheok-myeon Chungju, 28 viii 2002, Kim TW (SSU); **<CN>** 1♀, Mok-dong Jung-gu Daejeon, 8 viii 1997, Lee NY (SSU); 1♂, Hoedeok Daejeon, 26 viii 1997, Kim BY (SSU); 1♀, Mt. Gyeryongsan Gongju, 15 viii 1993, Lee GA (SSU); 1♂, Gongsanseong Okryong Gongju, 15 viii 1988, Moon G (SSU); 1♂, Dusan-ri Dangjin, 18 viii 1984, Choi HS (SSU); 1♀, Wungcheon Boreong, 15 viii 1989, Jang EJ (SSU); 3♀, Hyudae-ri Asan, 20 ix 1992, Kim HJ (SSU); 1♂, Cheonan, 7 x 1996, Jeong JY (SSU); **<GB>** 2♂, Mt. Palgongsan Daegu, 8 x 1991, L. Zombori (Hungarian Natural History Museum, Budapest); 1♂, Hyoseong Univ. Geongsan, 7 vii 1992, Yoon HG (SSU); 1♀, Ubo-myeon Gunui, 18 ix 1994, Park YH (SSU); 1♀, Gwaneum-ri Mungyeong, 18 ix 1986, Jeong MS (SSU); 1♂, Deokgol-ri Gongseong Sangju, 13 viii 1985, Kim OH (SSU); 1♂, Waryong Andong, 22 ix 1991, An HJ (SSU); 1♀, Jangsu Yeongju, 5 x 1998, Lyu JY (SSU); 1♀, Mt. Juwangsan Cheongsong, 16 viii 1990, Lee JA (SSU); **<GN>** 1♀, Geompo, 17 ix 1997, No JY (SSU); 1♀, Deokgye, 18 viii 1996, Park HG (SSU); 1♀, Yaeum Ulsan, 22 ix 1991, Sim SJ (SSU); 1♂, Yeonyang-myeong Ulju, 29 vii 1989, Park HM (SSU); 1♀, Nabul-ri Jinyang, 15 viii 1992, Kim GY (GSU); 1♂, Banrim-dong Changwon, 24 viii

1994, Kim AR (SSU); 1♀, Donam-dong Chungmu, 11 ix 1992, Shin MJ (SSU); 1♀, Hapcheon, 12 ix 1992, Park HH (SSU); 2♀, Naewonjeongsa Busan, 25 viii 1996, Park EG (SSU); 1♀, Yeonsan-dong Dongnae Busan, 21 viii 1985, Park MN (SSU); **<JB>** 1♂1♀, Buan Gochang, 11 ix-25 x 1992, Choi HJ (SSU); 1♀, Toji-myeon Gurye, 27 ix 1996, Hun R (SSU); 1♀, Unbong Namwon, 30 ix 1984, Chang KS (SSU); 1♀, Mt. Naejangsan, 18 x 1980, Wu GS (SNU); 1♀, Mt. Deokyusan Muju, 9 viii 1984, Shon JH (SSU); 1♀, Bongeun-ri Buan, 10 x 1981, Chang KS (SSU); 1♀, Yongdeok Wanju, 26 vii 1996, Lee CH (SSU); 1♂, Pyeonghwa-dong Iri, 10 viii 1987, Kim HJ (SSU); **<JN>** 1♂, Okryong-myeon Gwangyang, 14 viii 1994, Shin JH (SSU); 1♀, Mt. Mudeungsan Seo-gu Gwangju, 10 x 1988, Im WS (SSU); 1♀, Naju, 2 viii 1996, Im IH (SSU); 1♀, Taein Donggwangyang, 20 ix 1994, Jeong HJ (SSU); 1♀, Mt. Yudalsan Mokpo, 10 viii 1988, Kwon MK (SSU); 1♀, Is. Sangbaekdo Samsan-myeon Yeosu, 13 x 2001, Yoon IB (SSU); 1♀, Soho-dong Yeosu, 23 ix 1991, Sim SJ (SSU); 1♀, Jukpo-ri Yeocheon, 6 x 1998, An EG (SSU); 1♀, Is. Bogildo Wando, 23 viii 1982, Chang KS (SSU); 1♀, Jagaedo Wando, 23 viii 1982, Kim JI (SSU); 1♀, Is. Hoenggando Wando, 22 viii 1982, Chang KS (SSU); 1♀, Baekyangsa Jangseong, 12 viii 1989, Kang YH (SSU); 1♀, Hwangryong Jangseong, 9 viii 1996, Kim MJ (SSU).

Description. **<♂>** Body slender and elongated, coloration generally pale green, sometimes brown, gray, or pinkish variable. Head conical with incurved frons. Antennae thick filiform, but basal part rather triangular in cross section. Fastigium of vertex longer than the horizontal diameter of an eye in lateral view. Median ocellus located between slightly lower margin of eyes. Pronotum with fairly strong and well defined middle and lateral carinae. Pronotum with prozona clearly longer than metazona; pronotal disk long than the height of lateral lobe. Paranotum without transparent area near posterior margin. Along behind eyes and lateral lower margins of paranotum with numerous white small granule lines. Prosternum with a rectangular tongue-shaped tubercle. Tegmina slender and macropterous, its apex sharply pointed. Wings transparent, weakly tinged with yellow in basal half. Tympana large ovoidal, clearly opened, without covering lobe. Interocular distance in dorsum 1.5 times wider than the horizontal diameter of an eye. Mesosternal interspace rectangular, longer than wide. Epiproct elongated triangular, clearly longer than subgenital plate. Cercus conical, rather incurved at apex, 2.5 times longer than the basal width. Subgenital plate very short and round pouch-form. Epiphallus anchor-shaped, with anterior margin curved strongly inward and dorso-lateral appendages. **<♀>** Very larger than male. Interocular

distance in dorsum two times wider than horizontal diameter of an eye. Mesosternal interspace trapezoidal, the width of median as wide as long. Epiproct long triangular. Cercus very short and conical, as long as basal width. Ovipositor with very thick dorsal valves than ventral valves; ventral valves as long as subgenital plate.

Distribution. Korea, Japan, Northeast China.

96. *Atractomorpha sinensis sinensis* Bolívar 1905 분홍날개섬서구메뚜기 (신칭) (Fig. 270)

Atractomorpha sinensis Bolívar 1905. Boletín de la Real Sociedad Española de Historia Natural, 5: 205. "China". Holotype ♀ in Museum National d'Histoire Naturelle, Paris.

Specimens examined. <JN> 2♂, Is. Gageodo Heuksan-myeon Sinan-gun, 17 xii 2006, Kang EY (SSU); **<JJ>** 1♂, Jeongbangpokpo Dongheung-dong Seoguipo, 9 vii 2002, Kim TW (SSU).

Description. <♂> Body slender and elongated, coloration green or brown, two contrastive types present. Head conical and tapering forwards. Fastigium of vertex as long as an eye's horizontal diameter; fastigial furrow present. Antennae thick and short, flagellum 13-segmented. Frons strongly slanted, median ocellus present between the lower margins of eyes. Pronotum with many granule and puncture; anterior margin slightly concave, posterior margin protruding with obtuse angle, its median with a small notch; 1st sulcus indistinct, but 2nd and 3rd sulci distinct; prozona as long as or slightly longer than metazona; median carina distinct on whole pronotal disk, but lateral carinae distinct in prozona, indistinct in metazona. Paranotum with a distinct transparent area near the posterior margin; posterior margin widely concave. Small white granules present along behind eye to lower margin of paranutum. Prosternum with a small tubercle tongue-shaped, its anterior side rather concave, lower margin rather round, lateral sides perpendicular. Tegmina slender and macropterous, its apex sharply pointed surpassing abdominal end or hind knee; anterior margin with slight convex precostal bulge, but nearly parallel with posterior margin. Wings pinkish in basal half, not surpassing tegminal apex. Mesosternal interspace square, width as wide as long. Tympana large ovoidal without covering lobe. Hind femur slightly longer than abdominal end. Last abdominal tergite with round median concavity, a pair of lobe roundly protruding. Epiproct long triangular without any tubercle. Cercus conical, 2.5 times longer than the basal width, shorter than epiproct. Subgenital plate compressed pouch-shaped, slightly longer than epiproct.

Distribution. Korea (new record), Japan, China, Taiwan, Hawaii (introduced) (ssp. *montana*:

West Himalaya).

Table 19. Measurements of *Atractomorpha* spp.

Species	BL	HTL	PL	TL	HFL
A. lata	♂ 19.7−22.0 ♀ 30.8−38.8	♂ 22.7−27.8 ♀ 37.8−46.4	♂ 4.2−4.5 ♀ 7.8−8.4	♂ 15.0−18.6 ♀ 27.0−32.0	♂ 9.3−12.0 ♀ 15.5−17.8
A. sinensis	♂ 20.3	♂ 26.2	♂ 4.3	♂ 18.6	♂ 10.8

Family Pamphagidae 주름메뚜기과

Medium to large sized rugged earth−hoppers with rough sculptured cuticle giving them a stone− or twig−like appearance. Vertex and frons often meet in a beak−like profile. A prosternal process or collar present. Krauss's organ furnished with ridges or tubercles which developed at the sides of the second abdominal segment, just behind and below the tympanum. Male cerci simply conical sensory structure. More than 320 species in the world, only one species recorded in Korea.

Subfamily Akicerinae 주름메뚜기아과

Small tubercles present on base of mid tibia used in the stridulation.

Genus *Haplotropis* Saussure 뚱보주름메뚜기속

1888. Mémoires de la Société de Physique et d'Histoire Naturelle de Genève, 30(1): 125. Type species: *Haplotropis brunneriana* Saussure 1888.

Diagnosis. Median carina of pronotum elevated into lamellate, arcuate in lateral view, entire or weakly cut by hind sulcus. Dorsal carina of hind femur without serrations. Only two species known in the Manchurian Subregion.

97. *Haplotropis brunneriana* Saussure 1888 뚱보주름메뚜기 (Figs. 268−269)

Haplotropis brunneriana Saussure 1888. Mémoires de la Société de Physique et d'Histoire Naturelle de Genève, 30(1): 126, No. 1, pl. 2, Fig. 10a. "Russia: Amur". Type in ?

Korean records. *Haplotropis brunneriana*: Tsyplenkov 1970: 214 (Pyeongyang); Storozhenko 1986: 279, Figs. 137(1, 2), 149(5); Kwon and Huh 1994: 51 (Korean check list); Moon

and Yoon 1996: 52 (KEI); Kwon et al. 1996: 104 (Korean species list).

Specimens examined. **<GW>** 1♂, Gangchon, 25 v 1977, Jeong SY (EU); 1♂, Ssangyong, 28 v 1988, Kim YS (EU); 1♀, Yongsan-ri Chunseong, 30 v 1980, Kim MS (KU); 1♂, Mt. Chiaksan Hoengseong, vi 1974, Anonym (KU); **<GG>** 2♂, Bagyonsan near Sanchontong about 10 km from Kaesong, 8 vi 1970, S. Mahunka and H. Steinmann (Hungarian Natural History Museum, Budapest); 1♀, Mt. Cheonggyesan Gapyeong, 24 v 1986, Kim HM (SSU); 2♂2♀, Hyeonri Gapyeong, 12 vi 1984, Chang KS (SSU); 1♀, Bogwangsa Gwangtan Paju, 7 vi 1977, Sim DA (EU); 1♀, Ilyeong Goyang, 16 v 1982, Anonym (SSU); 1♂, Gwacheon, 21 vi 1978, Park JH (KU); 1♀, Gwangneung, 16 vi 1974, Han SJ (EU); 1♂1♀, Gwangju, 3-24 vi 1984, Jeong HJ (EU); 1♀, Maseok Namyangju, 9 vi 1984, Song MA (SSU); 9♂ 10♀, Mt. Choenmasan Namyangju, 20 v-5 viii 1981, Chang KS et al. (SSU); 2♀, Dongducheon, 7 vi 1976, Gho HS (EU); 1♀, Mt. Soyosan, 11 vi 1983, Na EJ (SSU); 1♂, Ungilsan Yangsu-ri, 12 v 1989, Hwang JH (SSU); 1♂, Paju, 10 vi 1984, Park HS (EU); 2 ♂1♀, Mt. Cheonggyesan Wonji-dong Gangnam-gu Seoul, 1 vi 1985, Chang KS et al. (SSU); **<CN>** 1♀, Dong-gu Daejeon, 8 viii 1997, Im HJ (SSU); **<GB>** 1♂, Mt. Munjusan Bonghwa, vi 1974, Anonym (KU); 1♀, Mt. Cheongryangsan Bonghwa, 14 vi 1996, Kim DS (KU); **<GN>** 1♀, Cheonggoksa Jinyang, v 1978, Anonym (KU); **<JB>** 1♀, Buan Gochang, 11 ix 1992, Choi HJ (SSU); 1♂2♀, Naesosa Buan, 30 vii 1984, Chang KS (SSU); **<JN>** 2♂, Mt. Paekunsan Gwangyang, 19-20 v 1991, Bae YB and KJH (SSU).

Description. **<♂>** Body coloration variable grayish brown. Head short and globular; vertex significantly depressed anteriorly; interocular distance two times wider than the horizontal diameter of an eye; occiput coarsely punctated; small triangular foveolae present just above of lateral ocelli; scape shorter than wide; antennal socket located between lower margin of eyes, weakly wider than frontal ridge. Pronotum longer than middle femur, with distinct median carina crest-shaped, its anterior margin obtusely projected, posterior margin triangularly projected; puncture and granules developed on integument; each contacted sides of median carina three pairs of deep punctures; lateral lobe of pronotum the height as long as pronotal length, its hind margin oblique meet with lower margin angularly. Tegmen ovoidal, micropterous, just reaching second abdominal tergite, covering a half of tympanum; each tegmina not overlapped on dorsum. Hind wing as long as tegmina, folded below tegmina. Fore and middle femora much thick, without spinules. Fore tibia with six pairs of ventral spinules, middle tibia with seven pairs of ventral spinules. Middle tibia with dorsal denticulation on base. Prosternum without distinct tubercle. Mesosternal interspace two

times wider than long. Krauss' organ on second abdominal tergite with 17−18 longitudinal ridges. Tympanum on first abdominal tergite spherical. Hind femur with smooth dorsal and ventral carinae, out side of hind femur with irregular netted pattern. Hind tibia bluish with 10 outer, 9 inner dorsal spines. Arolium between tarsal claws largely developed, as long as claws. All claws bifurcated. Abdominal tergites with dorsal median carina. Last abdominal tergite deeply concave. Epiproct shield−shaped, triangularly elongated with longitudinal median groove. Cercus short and thick, two times longer than middle width. Subgenital plate cone−shaped, with median dorsal furrow, its apex pointed. Epiphallus shield−shaped, wider than long, ancorae small and finger−shaped; dorsal surface with a pair of strongly denticulated areas. **<♀>** Body larger and robuster than male. Interocular distance and mesosternal interspace wider than male. Middle femur slender, tegmen shorter than male. Subgenital plate slightly wider than long, its hind margin undulate, convex at apex. Ovipositor short hook−shaped, with pointed valves, its apex without tooth; ventral valves shorter than subgenital plate. **<Measurements>** BL ♂ 28.0−37.0, ♀ 35.0−49.0; PL ♂ 8.5−10.5, ♀ 10.6−12.5; TL 6.5−7.5; HFL ♂ 16.5−19.0, ♀ 18.0−20.5.

Distribution. Korea, Northeast China, Russian Far East.

Remarks. Judging from the labelling data and ecological study by Chang (1981), this grasshopper is suspected to decline in recent days. Against large body size, their dispersal ability quitely restricted due to slow moving, in addition the fecondity is so low, ie. average produced number of eggs is small as 17.9 per a female. This characters seemed to make the grasshopper rather susceptible for the habitats fragmentation as well as the reduction of those preferring barren tract. Exact reason is unclear for why those are recently not collected as like the some protected Orthoptera in Europe.

Family Acrididae 메뚜기과

True locusts and grasshoppers, largest family of Acridoidea. Antennae typically filiform. Members lack a fastigial furrow, or suture at the tip of the vertex. Tegmina variable to apterous, bracyterous. macropterous. Abdominal tergite with tympana. Male with a well developed epiphallus bridge−shaped with ancorae and lophi, sclerotized cingulum present. More than 7,000 species present in the World.

Key to Subfamilies of Acrididae

1. Prosternum with a thick process ····· 2
– Prosternum without clear process ····· 6
2. Hind knee with spine–like outer ventral lobe; hind tibia with a external apical spine ····· **Oxyinae** (p. 229)
– Hind knee with simple outer ventral lobe; hind tibia without external apical spine ····· 3
3. Hind femur with smooth dorsal carina ····· **Melanoplinae** (p. 236)
– Hind femur with small denticles on dorsal carina ····· 4
4. Mesosternal interspace narrow and longer, distinctly longer than greatest width (Fig. 284) ····· **Cyrtacanthacridinae** (p. 263)
– Mesosternal interspace wide and shorter, the length equal to greatest width or distinctly short ····· 5
5. Hind femur short and wider, 2.8–3.8 times of greatest width; ♂ cercus distally bilobate (Fig. 287) ····· **Calliptaminae** (p. 266)
– Hind femur long and narrower, 5.0–5.5 times of greatest width; ♂ cercus rounded distally (Fig. 288) ····· **Eyprepocneminae** (p. 270)
6. Hind femur with articulated stridulatory pegs on inner side ····· **Gomphocerinae** (p. 274)
– Hind femur without stridulatory pegs ····· 7
7. Tegmina without intercalary vein; hind wings transparent or faintly tinged with simple color, but without dark band ····· **Acridinae** (p. 312)
– Tegmina with raised intercalary vein; hind wings usually banded or brightly marked with yellows, reds, or blues ····· **Oedipodinae** (p. 324)

Subfamily Oxyinae 벼메뚜기아과

Head moderately acute in profile, temporal foveloae absent. Tegmina developed. Prosternal tubercle present. Lower apical lobes of hind knees pointed, spine–like. Hind tibiae often flattened; outer apical spine present. Epiphallus usually divided; hinged in middle. Members are confined to the Old World.

Genus *Oxya* Audinet–Serville 벼메뚜기속

1831. Annales des Sciences Naturelles, Paris, 22(86): 264, 286. Type species: *Oxya hyla* Audinet–Serville 1831.

Diagnosis. Integument smooth or finely rugose, shiny. Antennae filiform, as long as or shorter than head and pronotum together. Fastigium of vertex short, wide, with widely rounded apex; frons oblique, slightly convex; frontal ridge sulcate, with distinct carinulae. Eyes large, oval; interocular distance as wide as or wider than antennal scape. Pronotum subcylindrical, with slightly flattened dorsum and scarcely marked median carina and without lateral carinae; crossed by three narrow sulci; metazona shorter than prozona, with rounded or widely obtuse-angular posterior margin. Prosternal process conical. Tegmina developed and conjoined on dorsal base. Inner margin of hind tibia with a regular row of about 10 spines. Male subgenital plate with pointed apex. 46 species are known in the world, the measurements of two Korean *Oxya* compared in Table 20.

Key to Species of *Oxya*

1. ♂ epiproct with tubercles on each lateral sides; ovipositor with longer hook-like marginal spines (Fig. 281) ····· ***O. hyla intricata*** (p. 230)
- ♂ epiproct without lateral tubercle; ovipositor with short tooth-like marginal spines ····· ····· ***O. chinensis sinuosa*** (p. 232)

98. *Oxya hyla intricata* (Stål 1861) 애기벼메뚜기 (Fig. 274, 281)

Acridium (*Oxya*) *intricatum* Stål 1861. Kongliga Svenska fregatten Eugenies Resa omkring jorden under befäl af C.A. Virgin åren 1851-1853 (Zoologi), 2(1): 335. "Malacca". Lectotype ♂ in Naturhistoriska Riksmuseet, Stockholm.

Korean records. *Oxya intericata* [!]: Ju 1969: 25 (North Korean check list).

Specimens examined. <GG> 1♀, Daerim-dong Seoul, 1 vi 1992, Moon JW (SSU).

Description. <♀> Body coloration yellowish laterally, green dorsally, black longitudinal strips present from behind the eyes along with lateral sides of pronotum to before the tympana. Head conical with fastigium of vertex obtusely protruding; eye elliptical, its vertical diameter larger than the length of subocular groove; frons inclined. Pronotum with disk longer than wide, tree transverse sulci clear; prozona longer than metazona; anterior margin truncated, posterior margin obtusely convex. Prosternal tubercle large, sinker-shaped, its base narrower than middle part. Tegmina macropterous, reaching half of hind tibia, its apex roundly conical; anterior margin with a dense row of short bristles extending from costal bulge almost to apex of tegmen. Mesosternal lobes wider than long. Tympanum of first

abdominal tergite large, ovoidal, upper half covered by anterior margin of tegmen. Hind femur with smooth dorsal and ventral carinae; hind knees with sharply pointed spine-shaped inner and outer ventral lobes. Hind tibia apically expanded with 8-9 outer, ten inner dorsal spines, and two pairs of apical spurs, the spinal half apex dark black. Hind basitarsus as long as remaining two segments combined length; apical arolium largely developed, longer than claws. Last abdominal tergite ∧-shaped. Cerci simple, conical, 2.5 times longer than basal width. Subgenital plate longer than width, obtusely protruding; hind margin with two pairs of spinules apically, among them two on median, two on lateral carinae. Ovipositor spine-like marginal serrations developed, with upper and lower valves with long spines and small spinules, the apical ones curved as hook-shape; dorsal valves longer and thicker than ventral ones; ventral valves as long as subgenital plate.

Distribution. Korea, Japan, China, Taiwan, Thailand, Vietnam, Indonesia, Philippines (ssp. *hyla*: Africa, Madagascar, India, Sri Lanka).

Remarks. Although one specimen and one record confirmed, however, their regular occurrence in Korea is rather questioned owing to the rarity of specimen. I fail to more collect the grasshoppers at the same location in the field work.

99a. *Oxya chinensis chinensis* (Thunberg 1815) 중국벼메뚜기

Gryllus chinensis Thunberg 1815. Mémoires de l'Académie Impériale des Sciences de St. Pétersbourg, 5: 253. "China". Holotype ♀ in Zoological Institute, Uppsala University.

= *Oxya vicina* Brunner von Wattenwyl 1893. Annali del Museo Civico di Storia Naturale 'Giacomo Doria', Genova (Ser. 2), 13: 152. "China: Amoy". Lectotype ♀ in Museo Civico di Storia Naturale, Genova. [Hollis 1971]

= *Oxya formosana* Shiraki 1937. Out. cont. dis. ins. Formosa, 3: 21. "Taiwan". Type lost. [Hollis 1971]

= *Oxya manzhurica nakaii* Furukawa 1939. Rep. First scient. Exped. Manchoukuo. Sect. 5, Div. 1, 5(16): 83. "China: Jehol". Type lost. [Hollis 1971]

Korean records. ***Oxya vicina***: Ikonnikov 1913: 19; Doi 1932: 34; Haku 1937: 73 (Daegu); Kang and Son 1958: 21 (chromosomes); Kang and Son 1959: 21 (chromosome); ***Oxya chinensis***: Furukawa 1939: 89, 164; Hollis 1971: 322, text-Figs. 188-203; Inoue 1985: 135 (taxonomy with karyomorphology); Tadauchi 1989: 56 (Japanese check list); Kwon and Huh 1994: 51 (Korean check list); Kwon et al. 1996: 105 (Korean species list); Hua 2000: 38 (Chinese list); ***Oxya nakaii***: Lee and Lee 1983: 14, Figs. 7-8 (taxonomy); Kwon

and Huh 1994: 51 (Korean check list: 만주벼메뚜기); Kwon et al. 1996: 105 (Korean species list); ***Oxya chinensis formosana***: Tadauchi 1989: 56 (Japanese check list).

Distribution. China, Taiwan.

99b. *Oxya chinensis sinuosa* Mishchenko 1951 벼메뚜기 (Figs. 272-273)

Oxya sinuosa Mishchenko in Bey-Bienko and Mishchenko 1951. Locusts and Grasshoppers of the U.S.S.R. and Adjacent Countries, 1: 167, Figs. 281, 290, 300. "Korea: Seoul". Syntype in Zoological Institute of the Russian Academy of Sciences, St. Petersburg.

Gryllus velox nec Fabricius 1787. Mantissa insectorum exhibens species nuper in Etruria collectas a Ptro Rossio, 1: 239. "China". Lectotype ♀ in Zoological Museum, University of Copenhagen.

Gryllus japonicus nec Thunberg 1824. Mémoires de l'Académie Impériale des Sciences de St. Pétersbourg, 9: 429. "Japan". Holotype ♀ in Zoological Institute, Uppsala University.

Oxya yezoensis nec Shiraki 1910. Acrididen Japans: 56, Fig. 7a-e. "Japan: Sapporo". Neotype ♂ in Hokkaido University, Sapporo. = *Oxya japonica* Willemse 1925. Tijdschrift voor Entomologie, 68: 31, Fig. 28. "Japan". Holotype ♀ in Naturhistorisches Museum Wien. [Fukuhara 1966]

Korean records. ***Oxya velox***: Doi 1932: 34; Bey-Bienko and Mishchenko 1951: 167, Figs. 288, 297; Mishchenko 1952; 154, Figs. 223, 232; Cho 1959: 175, Fig. 56 (manual); Cho and Lee 1959; 14 (Gwangneung); Kang and Son 1959: 17 (chromosome); Zheng 1964: 885; Cho 1969: 731, pl. 48 (illustrated encyclopedia: 벼메뚜기); Ju 1969: 25 (North Korean check list); Lee and Lee 1983: 15, Figs. 9-10 (taxonomy); Kim et al. 1987: 216 (cytotaxonomy); ***Oxya sinuosa***: Mishchenko 1952; 157, Figs. 216, 224, 235; Tsyplenkov 1970: 213 (North Korea); Rentz and Miller 1971: 262 (Mt. Palgongsan); Lee and Lee 1983: 18, Figs. 11-12 (taxonomy); ***Oxya yezensis*** [!]: Lee 1957: 10 (Gwangneung); ***Oxya yezoensis***: Cho and Lee 1959; 15 (Gwangneung); ***Oxya japonica* Willemse**: Cho 1959: 175, Fig. 57 (manual); Cho 1969: 732, pl. 78 (illustrated encyclopedia: 잔날개벼메뚜기); Ju 1969: 25 (North Korean check list); Kim 1978: 129 (ovarioles); ***Oxya chinensis sinuosa***: Storozhenko 1983: 49, Figs. 10-11; Storozhenko 1986: 289, Fig. 144(13, 14); Kwon and Huh 1994: 51 (Korean check list: 우리벼메뚜기); Huh and Kwon 1995: 9 (Is. Jejudo); Otte 1995: 116 (Orthoptera species file): Kwon et al. 1996: 105 (Korean species list); Yin et al. 1996: 483 (synonymic catalogue); Yoo et al. 1996: 82 (karyotype); ***Oxya japonica* (Thunberg)**: Kwon and Huh 1994: 51 (Korean check list: 벼메뚜기); Moon and Yoon 1996:

52 (KEI); Bae 1998: 178.

Specimens examined. <JG> 1♀, Mt. Myohyangsan river Chongchon-gang valley, 12 ix 1980, L. Forro and GY. Topal, No. 640 (Hungarian Natural History Museum, Budapest); **<PN>** 1♂, Pyeongyang, 16 ix 1988, Anonym (Museum für Naturkunde der Humbolt Universitat, Berlin); 1♂1♀, Lake Yonpungho 10 km SW of Kaechon, 1 x 1978, A. Vojnits and L. Zombori, No. 438 (Hungarian Natural History Museum, Budapest); 2♂1♀, Sunhakang 17 km W of Pyongyang, 23 ix 1979, H. Steinmann and T. Vasarhelyi, No. 567 (Hungarian Natural History Museum, Budapest); **<GW>** 1♀, Naegok-dong Gangneung, 12 ix 1993, Jang MA (SSU); 3♂1♀, Sogeumgang Yeongok Gangneung, 17 ix 1971, Kim CW (KU); 2♂, Mt. Geonbongsan Goseong, 18 ix 1967, Oh JK and Kim CW (KU); 2♂, Gojin-dong Goseong, 28 viii 1990, Lee OJ (SSU); 1♂1♀, Samsan-ri Myeongju, 16-17 ix 1971, Kim JI and Yoon IB (KU); 1♀, Okgye Myeongju, 13 ix 1993, Jeong JR (SSU); 1♂2♀, Gilgokcheon Nogok-3ri Wondeok Samcheok, 24 ix 2005, Kim TW (SSU); 1♀, Gwaneumsa Mt. Baekdeoksan Yeongwol, 26 viii 2001, Kim SY and Kim AY (SSU); 2♂, Bukdaesa Mt. Odaesan Pyeongchang, 18 ix 1971, Kim JI (KU); 1♀, Mt. Chiaksan Wonju, 30 ix 1973, Lee GJ (KU); 1♀, Inje, 5 ix 1998, Kim TW (SSU); 1♂1♀, Deokgeo-ri Jangpyeong, 4 ix 1988, Jeon NY (SSU); 1♂3♀, Hyesanryeong Hwacheon, 3 x 2006, Kim TW (SSU); **<GG>** 2♂6♀, Mt. Myeongjisan Gapyeong, 23 ix 1989, Moon HK et al. (SSU); 2♂, Seooneung Goyang, 26 x 1988, Lee SE (SSU); 1♀, Daehwa Ilsan Goyang, 4 viii 1998, Kim TW (SSU); 7♂, Mt. Gwanaksan Gwacheon, 5 x 1996, Choi HS (SSU); 1♀, Gwangneung, 29 ix 1990, Yoo EK (SSU); 1♀ (mesoptera), Gwangjiwon, 23 ix 1984, Jeong HK (SSU); 27♂4♀, Ganghwado Incheon, 20 x 2004, Kim TW (SSU); 2♂, Maseok Namyangju, 17 ix 1988, Lee YK and Kim JH (SSU); 3♂, Mt. Cheonmasan Namyangju, 1 x 1981, Chang KS (SSU); 1♂2♀, Munsan Paju, 9 x 1972, Kim CW and Kim JI (KU); 1♀, Jangheung Yangju, 26 x 1997, Kim TW (SSU); 1♂1♀, Dangjingyo Hyeonsu-ri Jeomdong-myeon Yeoju, 29 viii 2003, Yeo JD (KU); 2♂1♀, Baekhak reservoir Yeonchoen, 28 viii 2002, Jeong MP (SNU); 1♂, Gwangneung arboretum Pocheon, 20 viii 1994, Lee SH (SSU); 1♀, Mt. Gwanaksan Seoul, 4 x 1997, An HJ (SSU); 2♂1♀, Mt. Maebongsan Dogok-dong Seoul, 1 ix 1985, Moon TY (KU); 1♂ (mesoptera), Mt. Dobongsan Dobong-gu Seoul, 31 x 1992, Choi SA (SSU); 1♂1♀, Mt. Cheonggyesan Seocho-gu Seoul, 8 ix 1990, Guk SH (SSU); 3♂3♀, Hanggan riverbed Yongsan-gu Seoul, 14 x 2001, Kim TW (SSU); 3♂1♀, Mt. Bukhansan Bulgwang-dong Seoul, 30 x-3 xi 1997, Kim TW (SSU); 1♂2♀, Yongyudo Incheon, 19 xi 2006, Kim TW (SSU); **<CB>** 1♂1♀, Hwayang-ri Cheongcheon Goesan, 15 x 1984, Kim

YS (SSU); 1♀, Suryuji Nohyeon Boeun, 23 x 1990, Park HC (SSU); 2♀, Mt. Songnisan, 18 ix 1992, Park HC (SSU); 1♀, Dongi-myeon Okcheon, 30 ix 1993, Lee GH (SSU); 1♀, Onyang, 27 ix 1988, Jeon NY (SSU); 1♂, Dumoso Mokgye-ri Geumga-myeon Chungju, 9 ix 2002, Yeo JD (KU); **<CN>** 1♀, Gongsanseong Okryong-dong Gongju, 19 viii 1988, Moon K (SSU); 1♀, Seosan, 21 viii 1968, Hong KS (KU); **<GB>** 1♀, Wonri Gyeongsan, 19 x 1994, Anonym (KU); 1♂, Mt. Sobaeksan Yeongpung, 15 vii 1994, Shin JH (SSU); **<GN>** 1♂, Seokcheongyo Anui Sancheon Geochang, 24 x 1998, Anonym (SNU); 1♀, Doma-ri Gohyeon-myeon Namhae, 28 viii 2003, Park JS (GSU); 1♂, Yaksuam Doksan-ri Naedong-myeon Jinju, 22 viii 2001, An TH (GSU); 1♂, Chilseongbong Nongol Cheongam Hadong, 28 viii 2002, An TH (GSU); 1♀, Bakgok-ri Gunbuk-myeon Haman, 28 ix 2003, Park JS (GSU); 1♀, Yeonsan-dong Dongnae Busan, 21 viii 1985, Park MN (SSU); **<JB>** 5♂, Toji Guyre, 27 ix 1996, Huh R (KU); 1♀, Wunbong Namwon, 30 ix 1984, Chang KS (SSU); 1♀, Iri, 22 ix 1991, Oh JS (SSU); 1♀, Yongdong Jeongeup, 6 x 1998, Jeong YW (SSU); 1♀, Taein Jeoneup, 12 viii 1995, Kim MS (SSU); **<JN>** 1♀, Deokheung-dong Seo-gu Gwangju, 5 x 1998, Oh GO (SSU); 1♀, Mt. Mudeungsan Gwangju, 10 x 1988, Lee SE (SSU); 1♀, Dongcheon Pungdeok-dong Suncheon, 3 ix 2005, Kim TW (SSU); 1♀, Jukpo-ri Yeocheon, 4 viii 1998, An EK (SSU); 1♀, Hakdong Yeocheon, 15 viii 1990, Jeon HJ (SSU); 1♀, Nohwa-eup Wando, 21 viii 1982, Kim JI (SSU); **<JJ>** 1♂2♀, Andeokgyegok Namjeju, 16 vii-16 viii 1990, Park HC et al. (KU); 17♀, Northern slope Mt. Hallasan, 4 viii 1955, Cho PS et al. (KU).

Description. **<♂>** Body cylindrical, the coloration variably green or brown. Darkish longitudinal strips present on lateral sides from behind eyes, pass pronotum, pleura, to tympanal area. Head with weakly round vertex and strongly inclined frons; interocular distance narrower, as wide as three times of horizontal diameter of an eye; fastigium of vertex shorter than basal width; antennae as long as head and pronotum combined length, its middle antennomeres 2.5-3.0 times longer than wide; scape a little shorter than wide; frontal ridge rather wider than antennal sockets, diminished near clypeal suture; facial lateral carinae distinct to clypeal suture; subocular groove short, as long as a half of vertical diameter of an eye. Pronotum a little longer than middle femur, its anterior margin weakly convex, posterior margin obtusely projected; prozona 1.5 times longer than metazona, three transverse sulci distinct; dorsal surface finely punctated; lateral lobe of pronotum a little shorter than pronotal length. Tegmina macropterous, surpassing hind knee (rarely 1♂1♀ mesopterous types of *O. sinuosa* were observed which are similar condition

to the Japanese *O. yezoensis*), its apex narrowly rounded; remigium greenish, vannus hyaline; precostal bulge present. Hind wings as long as tegmina, hyaline. Prosternum bearing a thick tubercle, its base narrower, apically rather swollen, the apex pointed. Mesosternal interspace narrower, 3.5–4.0 times longer than wide, mesosternal lobe wider than long. Fore and middle tibiae much ticker than female. Fore tibia with six inner, four outer ventral spines apically. Middle tibia with three outer, seven inner ventral spines apically. Hind femur with spiniform genicular lower lobes. Hind tibia with ten inner, eight outer dorsal spines, apically rather widened dorsally than ventrally. Hind basitarsus as long as remaining two tarsomeres combined length. Tarsal arolium largely developed, as long as claws. Abdominal tympanum largely oval, 1.2 times longer than wide, without covering lobe or inner cavity. Last abdominal tergite obtusely emarginated, its hind margin rather thickened. Epiproct triangular, slightly wider than long, with a weak basal transverse folding. Cercus simply conical, three times longer than basal width, more protruding behind than epiproct. Subgenital plate shortly conical, its apex narrowly truncated. <♀> Larger than male. Interocular distance wider than male, as wide as two times of horizontal diameter of an eye. Mesosternal interspace three times longer than wide. Third and fourth abdominal tergites with weakly projected lower margin latero-posteriorly. Subgenital plate longer than wide, its hind margin with two pairs of spines; lateral carinae weakly developed near hind margin. Ovipositor with serrated valves; upper valves narrower in base, inner dorsal margin diverged apically; ventral valves longer than lateral basivalvular sclerite; basivalvular sclerite three times longer than greatest width, with an inner spine subapically; lateral basivalvular sclerite serrated in lower marin posteriorly.

Distribution. Korea, Japan (Tokashikijima).

Remarks. There are so many *Oxya* spp. had been referred in Korea, but mostly just repetitions without referring the major revisions. The Korean specimens must basically belonging to the *O. chinensis* group with many synonyms since Hollis (1971), but the ssp. *sinuosa* (Korea) and sp. *maritima* (Russian Far East) reconsidered from the synonymy (Storozhenko 1983), moreover, sp. *manzhurica* (NE China) is also reconsidered (Ichikawa 2001b) around the Korean peninsula. According to Storozhenko (1983, 1986), *O. chinensis chinensis* (♂ cercus with roundly conical apex; BL ♂ 25–33, ♀ 30–40.5) and *O. chinensis sinuosa* (♂ cercus with sharply conical apex; BL ♂ 21.5–27.5, ♀ 28.5–36) are differentiated.

Table 20. Measurements of *Oxya* spp.

Species	BL	HTL	PL	TL	HFL
O. hyla intricata	♀ 27.0	♀ 32.1	♀ 5.6	♀ 23.5	♀ 14.6
O. chinensis sinuosa	♂ 22.3−28.7 ♀ 26.2−37.0	♂ 22.3−39.5 ♀ 26.2−40.8	♂ 4.4−6.7 ♀ 5.6−8.2	♂ 15.7−29.5 ♀ 18.6−30.5	♂ 12.9−18.2 ♀ 13.8−22.2

Subfamily Melanoplinae 밑들이메뚜기아과

Frons convex; profile of the frons and fastigium forming the same curve. Dorsal carina of hind femur smooth, without serration. Second segment of posterior tarsi short. Endophallic sclerites with a clear break. Sometime both separated as long−winged Melanoplinae in the New World and short−winged Podisminae in the Old World (Li and Xia 2005), but synonymously considered since Storozhenko (1993).

Key to Species of Melanoplinae

1. Tegmina absent (Fig. 316) ····· 2
− Tegmina present ····· 3
2. Abdomen with distinct tympana; ♂ furcula larger, reaching 1/4 of epiproct ····· ***Zubovskya koreana*** (p. 237)
− Abdomen without tympana; ♂ furcula smaller, reaching only 1/5−1/6 of epiproct ····· ***Zubovskya koeppeni parvula*** (p. 240)
3. Tegmina macropterous (Fig. 313) ····· 4
− Tegmina micropterous ····· 5
4. Tegmina unicolorous light brown, longer than abdominal apex; prozona as long as or shorter than metazona ····· ***Ognevia longipennis*** (p. 242)
− Tegmina brown with bright green in anal area, as long as abdominal apex; prozona longer than metazona ····· ***Ognevia sergii*** (p. 245)
5. Hind margin of pronotum rounded ····· 6
− Hind margin of pronotum concave or with distinct median notch ····· 7
6. Prozona longer than metazona; ♂ furcula absent ····· ***Parapodisma setouchiensis*** (p. 249)
− Prozona as long as metazona; ♂ furcula present ····· ***Podisma aberrans*** (p. 251)
7. ♂ subgenital plate apically swollen with distinctly thickened dorsal margin; ovipositor

pointed without denticles at apex ····· 8
– ♂ subgenital plate tapering conical, not swollen; ovipositor with two denticles at apex ··· 9
8. Tegmina ovoidal, three time longer than mid width; ♂ cercus strongly compressed apically, the apex obliquely truncated and rounded ····· ***Prumna halrasana*** (p. 252)
– Tegmina paralleled slender, four times longer than mid width; ♂ cercus conical, narrowed apically, the apex more or less pointed, slightly rounded ····· ***Prumna mandshurica*** (p. 254)
9. Tegmina black with yellow longitudinally (Fig. 314); hind femora with colorful pattern composed of black and red ····· ***Miramella solitaria*** (p. 256)
– Tegmina pink (Fig. 315); hind femora without colorful pattern ····· 10
10. ♂: valves of cingulum and apical valves of penis short, broad; apical valves of penis longer than valves of cingulum; anterior margin of lophi of epiphallus with distinct emargination (Fig. 285); ♀: mesosternal interspace about two times as long as broad ····· ····· ***Anapodisma beybienkoi*** (p. 258)
– ♂: valves of cingulum and apical valves of penis long, narrow; length of apical valves of penis almost equal to length of valves of cingulum; lophi of epiphallus with almost straight anterior margin (Fig. 286); ♀: mesosternal interspace 1.2–1.4 times as long as broad ····· ····· ***Anapodisma miramae*** (p. 260)

Genus *Zubovskya* Dovnar-Zapolskii 민날개밑들이메뚜기속

1933. Trudy Zoologitscheskogo Instituta, Akademiia Nauk SSSR, Leningrad, 1(3–4): 262. Type species: *Zubovskya parvula* Ikonnikov 1911.

Diagnosis. Tegmina apterous. Antennae in both sexes long, extending far beyond posterior pronotal margin. Apex of subgenital plate in male produced conically. Female ovipositor with two denticles on apex of valves. Nine species are known in the Palaearctic Region, the measurements of two Korean *Zubovskya* compared in Table 21.

100. *Zubovskya koreana* Mishchenko 1952 한국민날개밑들이메뚜기 (Figs. 293, 295–296, 316)

Zubovskya koreana Mishchenko 1952. The Fauna of Russia (= The USSR Fauna). New Series, 54: 352, Figs. 404a, f. "Korea: Seoul". Holotype ♂ in Zoological Institute of the Russian Academy of Sciences, St. Petersburg.

Korean records. ***Zubovskya koreana***: Lee and Lee 1983: 4 (taxonomy); Lee and Lee 1984: 65 (taxonomy); Storozhenko 1986: 290; Storozhenko 1986: 55, Figs. 49–53; Kwon and Huh 1994: 51 (Korean check list); Otte 1995: 443 (Orthoptera species file); Kwon et al. 1996:

105 (Korean species list); Yin et al. 1996: 759 (synonymic catalogue).

Specimens examined. **<RG>** 1♂, Mt. Pektusan Mupo brook Dehongdan, 20 vii 1977, O.Gy. Dely and A. Dely-Draskovits, No. 380 (Hungarian Natural History Museum, Budapest); **<GW>** 1♀, Lake Samilpo, 26 ix 1979, H. Steinmann and T. Vasarhelyi, No. 581 (Hungarian Natural History Museum, Budapest); 6♂10♀, Mt. Kumgangsan path to Manmulsang Rocks 800-1200 m, 27 ix 1979, H. Steinmann and T. Vasarhelyi, No. 588 (Hungarian Natural History Museum, Budapest); 1♂3♀, Mt. Kumgangsan, 28 ix 1979, H. Steinmann and T. Vasarhelyi, No. 593 (Hungarian Natural History Museum, Budapest); 1♀, Mt. Kumgangsan terrace of Hotel Kumgang, H. Steinmann and T. Vasarhelyi, No. 598 (Hungarian Natural History Museum, Budapest); 4♂2♀, Mt. Gachilbong, 5 x 1992, Moon TY; 1♂1♀, Mt. Geonbongsan, 18 ix 1967, Kim CW; 1♂, Gyodong Gangneung, 12 ix 1993, Park MY; 10♂7♀, Hyangnobong Goseong, 17 ix 1967, Kim CW et al.; 1♂6♀, ibid. 29 viii 1980, Kim JI; 15♂19♀, ibid. 1,000 m, 22-23 viii 1992, Moon TY; 1♂2♀, Okgye Myeongju, 13 ix, 1993, Jeong JR; 1♂1♀, Myeonon-ri Bongpyeong, 5 viii 2003, Rhee HW; 1♂4♀, Baekdamsa Mt. Seoraksan, 29-30 viii 1984, Nam SH and Park HC; 3♂2♀, Mt. Daeamsan Yanggu, 1 x 1967, Kim JI; 22♂2♀, ibid. 7-10 vii 2003, Kim JK and Kim TW; 1♂2♀, Mt. Dusolsan Dong-myeon Yanggu, 5 x 1972, Kim JI; 2♂2♀, 28 viii 2003, Kim JK; 4♀, Sinseonbong Mt. Seoraksan Toseong-myeon Yangyang, 26 viii 2002, Kim TW; 2♂1♀, Gwaneumsa Mt. Baekdeoksan Suju-myeon Yeongwol, 26 viii 2001, Kim SY and Kim AY; 4♂, Bukdaesa Mt. Odaesan, 18 ix 1971, Kim CW and Kim JI; 1♀, Guryongsa Mt. Chiaksan Wonseong, 29 vii 1975, Kim JI; 1♂1♀, Gombaeryeong Mt. Jeombongsan Guidun-ri Inje, 26 ix 1998, Kim TW; 1♂3♀, Jindong-1ri Bangdong-myeon Inje, 1 x 1995, Moon TY; 1♂1♀, Jogyeongdong Mt. Bangtaesan Inje, 16-19 viii 1995, Kim JI and Kim JK; 1♂, Songgye-ri Imgye-myeon Jeongseon, 5 viii 1977, Nam SH; 4♂3♀, light trap, Mt. Hambaeksan Taebaek, 11-12 viii 1999, Ku DS; 1♂, Mt. Sambangsan Gonggi-ri Pyeongchang, 18 ix 2001, Kim MA; 2♂, Mapyeong Jinbu Pyeongchang, 30 vi 1985, Chang KS and Cho HY; 1♂2♀, Soppulsan Duchon-myeon Hongcheon, 25 viii 2002, Kim TW; 3♂, Haesanryeong Hwacheon, 3 x 2006, Kim TW; **<GG>** 1♂2♀, Mt. Myeongjisan Gapyeong, 6 viii 1991, Kim JI; 1♂, Mt. Soyosan Dongducheon, 6 x 1981, Chang GS; 1♂, Mt. Yongmunsan Yangpyeong, 10 x 1970, Kim MD; 1♀, Mt. Godaesan Sinsseo-myeon Yeoncheon, 12 viii 1987, Yoo HJ; 1♂1♀, Mt. Cheonmasan Pyeongnae, 29 ix-7 x 1984, Kang BY and Chae MR; 1♀, Mt. Unaksan Pocheon, 29 ix-1 x 1971, Anonym; 1♂, Mt. Guryongsan Gaepodong Seoul, 15 ix 1990, Lee MS; **<CB>** 1♂1♀, Sinwon-ri Goesan, 25

vi 1986, Chang KS; 1♂, Mt. Sobaeksan Danyang, 31 ix 1994, Lee GI; 1♀, Euipung-ri Yeongchun-myeon Danyang, 3 viii 1994, Yeongnam Univ.; 1♀, Mt. Songnisan, 7 viii 1990, Kim BJ; 1♀, Mt. Cheondeungsan Sancheok-myeon Chungju, 28 viii 2002, Kim TW; **<CN>** 1♀, Onyang, 27 ix 1988, Jeon NY; **<GB>** 1♂1♀, Daehyeon Bonghwa, 25 vii 1986, Kim JI; 1♂2♀, Si대-dong Hwabuk Sangju, 9 viii 1990, Kim BJ and Park HC; 3♂2♀, Birobong Mt. Sobaeksan, 3 viii 1994, Moon TY; 1♀, Mt. Bohyeonsan Galcheon-ri Hyeonseo-myeon Yeongcheon, 4 ix 1998, Lee MG; 1♀, Mt. Baeksamsan Uljin, 11 viii 1999, Kim TW; 1♂, Mt. Juwangsan Cheongsong, 30 vii 1983, Park HK; 1♀, Bogeongsa Mt. Naeyeonsan Pohang, 1 viii 1983, Chang KS; **<GN>** 2♂1♀, Georim Mt. Jirisan 1,000 m Sicheon Sancheong, 12 x 2001, Jeon JB; **<JB>** 1♂, Deokdong Sannae Namwon, 6 viii 1983, Jeong SS; 1♂1♀, Mujugucheondong, 16-21 viii 1970, Kim KH; 1♂, Hyangjeokbong Mt. Deokyusan 1,614 m Seolcheon-myeon Muju, 5 x 2002, Song KH; **<JN>** 1♀, Mt. Jirisan Seungju, 2 x 1987, Kim MS.

Description. **<♂>** Body coloration green with longitudinal black strips on lateral sides. Head with blackish round vertex, frons moderately inclined; interocular distance narrower, as wide as a quarters of horizontal diameter of an eye; fastigium of vertex weakly depressed; foveola areas absent, rather punctated; antennae as long as a half of body length, its middle antennomeres 3.0-4.0 times longer than the middle width; scape as long as wide; antennal socket as wide as frontal ridge; frontal ridge diminished near clypeal suture; subocular groove as long as vertical diameter of an eye. Pronotum as long as, or a little shorter than fore femur, its anterior margin truncated, posterior margin weakly emarginated in mid; lateral longitudinal carinae indistinct, median carina only distinguished in metazona weakly punctated; prozona longer, nearly three times of metazona, three transverse sulci distinct; lateral lobe of pronotum as deep as pronotal length, its upper side black banded. Mesonotum sometimes blackish. Tegmina and wings apterous. First abdominal tergite with a small tympanum as large as three times of spiracle. Prosternum with a conical tubercle. Mesosternal interspace 1.5 times wider than long. Fore and middle femora short and thicker than female. Fore tibia with 3-4, middle tibia with 4-6 pairs of ventral spines apically. Hind femur with blackish genicular lobes and crescent. Hid tibia with 9-11 pairs of dorsal spines, basally blackish. Hind basitarsus shorter than remaining two tarsomeres combined length. Tarsal aroliums largely developed, as long as claws. Lateral sides of abdomen with black longitudinal strips. Last abdominal tergite with a pair of black furculae, its apex as long as basal width, diverged. Epiproct tongue-shaped, longer than basal width, its apex

roundly tapered; lateral sides blackish, rather incurve a thirds from the base; hind margin with a pair of small longitudinal projections; longitudinal three depressions present medially and laterally. Cercus compressed and tapered apically, most narrower three quarters form base, apically rather widened; the length three times longer than basal width, more projected posteriorly than epiproct, not reach subgenital plate. Subgenital plate roundly convex in base, shortly conical in apex, its hind margin darkish black. **<♀>** Larger and plump than male. Body coloration green or sometimes brown type present. Lateral longitudinal strips of body distinct from behind of eyes to abdominal tympanal area, but remaining abdominal parts without black strips. Interocular distance 2.5 times wider than horizontal diameter of an eye. Subgenital plate longer than wide, its hind margin triangularly projected. Ovipositor with serrated valves, its apice bidentated; dorsal valves as long as epiproct; ventral valves longer than basivalvular sclerite; lateral basivalvular sclerite with outer spine.

Distribution. Korean endemic regarded.

101a. *Zubovskya koeppeni koeppeni* (Zubovsky 1900) 백두산민날개밑들이메뚜기

Podisma koeppeni Zubovsky 1900. Trudy Russkago Entomologicheskago Obshchestva, 34: 20. "Russia: Altai, Transbaikalia". Lectotype ♂ in Zoological Institute of the Russian Academy of Sciences, St. Petersburg.

Korean records. ***Podisma koeppeni***: Bey-Bienko 1931: 675 (Mt. Baekdusan); Cho 1959: 176 (manual); Cho 1969: 733 (illustrated encyclopedia: 백두산밑드리메뚜기); ***Zubovskya koeppeni***: Bey-Bienko and Mishchenko 1951: 215; Mishchenko 1952: 354, Figs. 102, 103, 404e; Lee and Lee 1983: 4 (taxonomy); Lee and Lee 1984: 66 (taxonomy); Kwon and Huh 1994: 51 (Korean check list).

Distribution. Northeast China, Mongolia, East Russia.

101b. *Zubovskya koeppeni parvula* (Ikonnikov 1911) 민날개밑들이메뚜기 (Fig. 294)

Podisma parvula Ikonnikov 1911. Annuaire du Musée Zoologique de l'Académie Impériale des Sciences de St. Pétersbourg, 16: 260, pl. 5, Fig. 3. "Russia: Primorsky". Neotype ♂ in Zoological Institute of the Russian Academy of Sciences, St. Petersburg.

Korean records. ***Zubovskia parvula***: Lee and Lee 1983: 4 (taxonomy); Lee and Lee 1984: 65, Figs. 1-2 (taxonomy); ***Zubovskya koeppeni parvula***: Ju 1993: 287 (Mt. Baekdusan); Kwon and Huh 1994: 51 (Korean check list); Kwon et al. 1996: 105 (Korean species list);

Storozhenko 1998: 6.

Specimens examined. <RG> 9♂4♀, Mt. Baekdusan 2300−2600 m, 28 viii 1971, S. Horvatovich and J. Papp, No. 211 (Hungarian Natural History Museum, Budapest); 1♂1♀, Samjiyon, 4 x 1978, A. Vojnits and L. Zombori, No. 451 (Hungarian Natural History Museum, Budapest).

Description. <♂> Body coloration green with longitudinal black strips on lateral sides. Head with blackish round vertex and moderately inclined frons; interocular distance narrower, as wide as a quarters of horizontal diameter of an eye; antennae as long as a half of body length, reaching base of hind femur; scape as long as wide; antennal socket as wide as frontal ridge; frontal ridge diminished near clypeal suture; subocular groove as long as vertical diameter of an eye. Pronotum as long as, or a little shorter than fore femur, its anterior margin truncated, posterior margin weakly emarginated in mid; lateral longitudinal carinae indistinct, median carin only distinguished in metazona weakly punctated; prozona longer, 2.2−2.7 times of metazona, three transverse sulci distinct; lateral lobe of pronotum as deep as pronotal length, its upper side black banded. Tegmina and wings apterous. First abdominal tergite without tympanum. Prosternum with a conical tubercle. Mesosternal interspace as wide as long. Fore and middle femora short and thicker than female. Hind femur with blackish genicular lobes and crescent, ventrally reddish; Hid tibia yellowish, with 10−11 outer, 11−12 inner dorsal spines, basally blackish. Hind basitarsus shorter than remaining two tarsomeres combined length. Tarsal aroliums largely developed, as long as claws. Lateral sides of abdomen with black longitudinal strips. Last abdominal tergite with a pair of black furculae, reaching 1/6−1/5 length of epiproct. Epiproct tongue−shaped, longer than basal width, its apex roundly tapered; lateral sides blackish, rather incurve a thirds from the base; hind margin with a pair of small longitudinal projections; longitudinal three depressions present medially and laterally. Cercus compressed and tapered apically, most narrower three quarters form base, apically rather widened; the length 3.2−3.5 times longer than basal width, slightly extend beyond the apex of epiproct, not reach subgenital plate. Subgenital plate roundly convex in base, shortly conical in apex, its hind margin darkish black. **<♀>** Larger and plump than male. Lateral longitudinal strips of body slender than male, just distinct from behind of eyes to prozona of pronotum. Mesosternal interspace 1.2−1.5 times wider than long. Subgenital plate longer than wide, its hind margin triangularly projected. Ovipositor with serrated valves, its apice with two teeth; dorsal valves as long as epiproct; ventral valves longer than basivalvular sclerite; lateral

basivalvular sclerite with outer spine.

Distribution. North Korea, Japan (Hokkaido), Northeast China, Russian Far East.

Remarks. Since the morphometric comparison by Storozhenko (1986), the subspecific status has been regarded between *Z. koeppeni* and *Z. parvula*. I had studied North Korean specimens are assigned to the *parvula* which determinated by Dr. Kostia.

Table 21. Measurements of *Zubovskya* spp.

Species	BL	PL	HFL
Z. koreana	♂ 16.7−21.0 ♀ 20.8−30.2	♂ 3.5−4.4 ♀ 3.9−5.3	♂ 10.5−12.9 ♀ 11.0−15.1
Z. koeppeni parvula	♂ 13.5−18.5 ♀ 20.0−24.1	♂ 2.6−3.8 ♀ 3.6−4.4	♂ 7.8−11.2 ♀ 10.5−14.0

Genus *Ognevia* Ikonnikov 긴날개밑들이메뚜기속

1911. Annuaire du Musée Zoologique de l'Académie Impériale des Sciences de St. Pétersbourg, 16: 267. Type species: *Ognevia sergii* Ikonnikov 1911.

= *Eirenephilus* Ikonnikov 1911. Annuaire du Musée Zoologique de l'Académie Impériale des Sciences de St. Pétersbourg. 16: 264. Type species: *Eirenephilus debilis* Ikonnikov 1911. [Storozhenko and Kanô 1992]

Diagnosis. Eyes smaller, nearly rounded, their longitudinal diameter nearly equal to transverse diameter or slightly longer than short one. Tegmina and wings well developed, usually extending beyond the apex of hind femora. Only two species are known in the Manchurian Subregion, the measurements of two Korean *Ognevia* compared in Table 22.

102. *Ognevia longipennis* (Shiraki 1910) 긴날개밑들이메뚜기 (Figs. 298−299)

Podisma sapporense var. *longipenne* Shiraki 1910. Acrididen Japans: 77. "Japan: Sapporo". Syntype in Hokkaido University, Sapporo.

= *Eirenephilus debilis* Ikonnikov 1911. Annuaire du Musée Zoologique de l'Académie Impériale des Sciences de St. Pétersbourg, 16: 265, pl. 5, Figs. 5−6. "Russia: Ussuri". Lectotype ♂ in Zoological Museum, Moscow University. [Furukawa 1939]

= *Podisma alpina niphona* Furukawa 1929. Kontyû, 3(3): 171, pl. 5, Figs. 1−5. "Russia: Sakhalin". Type lost. [Furukawa 1939]

Korean records. ***Eirenephilus debilis***: Ikonnikov 1913: 19; Bey−Bienko 1931: 675; Cho 1959: 179 (manual); Cho 1969: 734 (illustrated encyclopedia: 고산밑드리메뚜기); ***Podisma alpina***

niphona: Furukawa 1929: 171 (Korea); *Podisma longipenne*: Wu 1935: 199 (Catalogus Insectorum Sinensium); *Eirenephilus longipennis*: Kamiya and Miyasaka 1938: 63; Furukawa 1939: 92, 166; Furukawa and Shiraki 1950: 24, Fig. 52; Bey-Bienko and Mishchenko 1951: 236, Figs. 517, 518; Mishchenko 1952: 432, Figs. 115, 125, 127, 131, 453, 454; Tsyplenkov 1970: 214 (North Korea); Cho 1959: 178, Fig. 61 (manual); Cho 1969: 734, pl. 78 (illustrated encyclopedia); Ju 1969: 23 (North Korean check list); Lee and Lee 1984: 72, Fig. 11 (taxonomy); Inoue 1985: 126, Figs. 20, 51, 82 (taxonomy with karyomorphology); Storozhenko 1986: 295, Figs. 138(4, 5), 149(2); Tadauchi 1989: 55 (Japanese check list); Kwon et al. 1996: 105 (Korean species list); Yin et al. 1996: 253 (synonymic catalogue); Hua 2000: 37 (Chinese list); *Ognevia longipennis*: Storozhenko and Kanô 1992: 7, Figs. 20-40; Kwon and Huh 1994: 51 (Korean check list); Huh and Kwon 1995: 10 (Is. Jejudo); *Ognevia longifennis* [!]: Bae 1998: 186.

Specimens examined. **<RG>** 1♀, river Karim 10 km NEE from Bochonbo 1100 m, 27 vii 1975, J. Papp and A. Vojnits, No. 297 (Hungarian Natural History Museum, Budapest); **<PB>** 1♀, Mt. Myohyangsan Hotel Myohyangsan and along the pathway in Manpoktong, 13 vii 1982, L. Forro and L. Ronkay, No. 781 (Hungarian Natural History Museum, Budapest); 2♀, Mt. Myohyangsan pathway Hwajangam, 19 vii 1982, L. Forro and L. Ronkay, No. 840 (Hungarian Natural History Museum, Budapest); **<PN>** 1♀, Zamosan 60 km NE from Pyongyang, 2 ix 1971, S. Horvatovich and J. Papp, No. 230 (Hungarian Natural History Museum, Budapest); 1♀, Pyongsung Beksungli Zamosan 60 km NE from Pyongyang, 1 viii 1975, J. Papp and A. Vojnits, No. 304 (Hungarian Natural History Museum, Budapest); **<GW>** 2♀, Geonbongsa Ganseong, 22 viii 1993, Moon TY (KU); 3♂4♀, Buyeongyegok Samsan-ri Yeongok Gangneung, 18 vi-20 viii 2001, Kim AY (SSU); 2♀, Gojindong Mt. Geonbongsan, 28 viii 1990, Kim JI (SSU); 1♂, Baekdamsa Mt. Seoraksan, 14 ix 2002, Kim JK (SSU); 2♀, Seorakdong Sokcho, 3 viii 1993, Lee SG (SSU); 1♂, Punch-ball Haean Yanggu, 30 viii 1967, Kim JI (KU); 1♀, Gwaneumsa Mt. Baekdeoksan Suju-myeon Yeongwol, 26 viii 2001, Kim SY and Kim AY (SSU); 4♂, Horyeongbong Mt. Odaesan, 19 ix 1971, Kim CW and Kim JI (KU); 1♀, Guryongsa Mt. Chiaksan Wonseong, 29 vii 1975, Kim JI (KU); 1♂4♀, Jindong-1ri Bangdong-myeon Inje, 1 x 1995, Moon TY and Kim JK (KU); 2♂5♀, Jogyeongdong Bangdong Mt. Bangtaesan Inje, 15-19 viii 1995, Kim JK (KU); 2♂, Deokgeo-ri Jangpyeong, 10 x 1988, Jeon NY (SSU); 1♀, Imgye Jeongseon, 6 viii 1991, Yoon SJ (EU); 1♂, Chugokyaksu Chunseong, 16 viii 1981, Kim JI (SSU); 1♀, Palmi-ri Sindong-myeon Chuncheon, 1 vii 2006, Kim TW (SSU); 4♂5♀, Baekildong

Daehwa Pyeongchang, 1–2 vii 1985, Chang KS et al. (SSU); 2♂2♀, Mapyeong Jinbu Pyeongchang, 30 vi 1985, Kim JI et al. (SSU); 2♂6♀, Noil–ri Hongcheon, 18–19 ix 1993, Kim SJ (SSU); 1♀, Haesanryeong Hwacheon, 3 x 2006, Kim TW (SSU); **<GG>** 8♂ 4♀, Mt. Myeongjisan Gapyeong, 23 ix 1989, Moon HJ et al. (SSU); 2♀, Mt. Daegeumsan Dumil–ri Ha–myeon Gapyeong, 2 ix 2006, Kim TW (SSU); 1♀, Gwangneung arboretum, 18 vii 1993, Kang YJ (SSU); 1♂2♀, Mt. Mugapsan Gwangju, 5 vii–15 ix 1991, Kim JI (SSU); 1♀, Hwajeop Namyangju, 11 ix 1993, Im JY (SSU); 3♀, Songnaeri Dongducheon, 11 viii 1991, Yoon SA (SSU); 1♀, Maseok, 12 viii 1987, Park JM (SSU); 1♂, Namhansanseong Seongnam, 1 viii 1993, Gwak EH (SSU); 2♂, Bogwangsa Paju, 21 vi 1997, Lee JB and Im YK (SSU); 4♀, Paldang, 3 x 1963, Lee JS and Lee MJ (SSU); 1♀, Sanjeonghosu Pocheon, 10 viii 1995, Lee HY (SSU); 2♀, Mt. Cheonggyesan Gangnam–gu Seoul, 6 xi 1986, Kim JI (SSU); 1♀, Mt. Dobongsan Dobong–gu Seoul, 14 vii 1984, Im HW (SSU); 1♂, Uiryeong Mt. Bukhansan, 15 ix 1994, Kim JK (SSU); **<CB>** 2♂1♀, Mt. Songnisan, 21 vi 1989, Moon JJ et al. (SSU); 1♂2♀, Gosa–ri Yeongpung, 22 vi 1989, Yang JO and Yoon JD (SSU); 1♀, Mt. Wolaksan, 5 viii 1994, Moon TY (KU); 1♀, Deokgok–ri Jecheon, 28 viii 1998, Jeon YS (SSU); 8♂21♀, Songmyeon–ri Cheongcheon–myeon, 23 vi 1989, Hwang JH et al. (SSU); 1♀, Mt. Namsan Chungju, 27 ix 2000, Kim AY (SSU); 2♀, Mt. Cheondeungsan Sancheok–myeon Chungju, 5–28 viii 2002, Kim TW (SSU); **<CN>** 1♂, Mt. Gyeryongsan Gongju, 5–7 vi 1997, Seon CH (SSU); 1♂, Onyang, 27 ix 1988, Jeon NY (SSU); **<GB>** 1♀, Mt. Naejuwangsan, 26 vii 1984, Kim MR (SSU); 3♂6♀, Daehyeon Seokpo Bonghwa, 24–25 vii 1986, Kim JI and Chang KS (SSU); 1♀, Huibangsa Mt. Sobaeksan Yeongpung, 31 vii 1986, Choi EY (SSU); 1♂1♀, Bulyeonggyegok Uljin, 24–26 vi 1990, Choi SH and Park JY (SSU); 1♀, Mt. Juwangsan Cheongsong, 16 viii 1990, Lee JA (SSU); 1♀, Dalgipokpo Mt. Taehaengsan, 24 vi 1988, Kim HJ (SSU); **<JB>** 1♀, Deokdong Sannae Namwon, 6 viii 1983, Jeong SS (SSU); 1♀, Mujugucheondong, 16 viii 1970, Kim KH (KU); **<JN>** 1♂, Mt. Mudeungsan Seo–gu Gwangju, 10 x 1988, Lee SE (SSU); 14♂10♀, Mt. Jirisan 10–26 vi 1986, Cho SI et al. (KU).

Description. **<♂>** Body elongated cylindrical, the coloration green with brownish tegmina, from behind the eyes along with lateral sides of pronotum a pair of black longitudinal strips present. Head with round vertex and slightly inclined frons; interocular distance narrower, as wide as three times of horizontal diameter of an eye; vertex apically depressed in median, foveolae absent; antennae as long as a half of body length, its middle antennomeres

four times longer than wide; scape as long as wide; frontal ridge as wide as antennal socket, diminished near clypeal suture; lateral facial carinae distinct; subocular groove shorter than vertical diameter of an eye. Pronotum as long as middle femur, anterior margin truncated, posterior margin angularly protruding; lateral carinae indistinct, median carina distinct only in metazona; three transverse sulci distinct; prozona as long as metazona finely punctated; lateral lobe of pronotum a little shorter than pronotal length. Tegmina macropterous, surpassing hind knee, monochromatic brown, its apex narrowly rounded. Hind wings as long as tegmina, transparent. Prosternum bearing a conical tubercle. Mesosternal interspace 1.5 times longer than wide. Fore and middle femora thickened than female. Fore tibia with four pairs of, middle tibia with four outer, five inner ventral spines apically. Hind femur with black knee. Hind tibia with nine pairs of dorsal spines. Hind barsitarsus shorter than remaining two tarsomeres combined length. Abdominal tympanum largely oval, 1.5 times longer than wide, without covering lobe or inner cavity. Last abdominal tergite with a pair of small furculae, its length as long as basal width, the apice blunt. Epiproct triangular, a little longer than basal width, its apex abruptly tapered forming a small triangular median lobe; dorsal surface longitudinally depressed in basal half and lateral sides; posterior a pair of projections present on hind margin. Cercus conical, three times longer than basal width, widened in base, much tapered apically; apex not protruding than epiproct. Subgenital plate semicircular, shorter than basal width, its apex narrowly conical. **<♀>** Larger and robuster than male. Interocular distance wider than male, as wide as 2.5 times of horizontal diameter of an eye, subocular groove as long as vertical diameter of an eye. Pronotum with metazona longer than prozona. Mesosternal interspace 1.2 times wider than long. Subgenital plate as long as wide. Ovipositor with indistinctly serrated valves; ventral valve as long as lateral basivalvular sclerite; basivalvular sclerite three times longer than wide.

Distribution. Korea, Japan, Northeast China, Mongolia, East Russia.

103. *Ognevia sergii* Ikonnikov 1911 원산밑들이메뚜기 (Figs. 297, 313)

Ognevia sergii Ikonnikov 1911. Annuaire du Musée Zoologique de l'Académie Impériale des Sciences de St. Pétersbourg, 16: 268, pl. 5, Fig. 7. "Russia: Ussuri". Lectotype ♀ in Zoological Museum, Moscow University.

= *Ognevia ikonnikovi* Rehn and Rehn 1939. Transactions of the American Entomological Society, 65: 79. "North Korea: Monastery Olchons". Holotype ♂ in Academy of Natural Sciences, Philadelphia. [Storozhenko and Kanô 1992]

= *Hieroglyphus seungmoi* Lee and Lee 1983. Nature and Life, 13(1): 8, Figs. 2–4. "Korea: Mt. Seoraksan". Holotype ♂ in GNU. [Storozhenko and Paik 2001]

Korean records. ***Ognevia sergii***: Ikonnikov 1913: 20; Storozhenko and Kanô 1992: 3, Figs. 1–19; Kwon et al. 1996: 105 (Korean species list); ***Ognevia sergii ikonnikovi***: Bey-Bienko and Mishchenko 1951: 235, Figs. 515, 516; Mishchenko 1952: 429, Figs. 451, 452; Tsyplenkov 1970: 214 (North Korea); Lee and Lee 1983: 5 (taxonomy); Lee and Lee 1984: 71 (taxonomy); Storozhenko 1986: 295, Fig. 148(18, 19); Kwon and Huh 1994: 51 (Korean check list); Hua 2000: 38 (Chinese list); ***Hieroglyphus seungmoi***: Kwon and Huh 1994: 51 (Korean check list); Kwon et al. 1996: 105 (Korean species list); Yin et al. 1996: 332 (synonymic catalogue).

Specimens examined. **<JG>** 1♂, Mt. Myohyangsan Hotel Myohyang, 12 ix 1980, L. Forro and GY. Topal, No. 637 (Hungarian Natural History Museum, Budapest); **<PB>** 1♀, Mt. Myohyangsan Hotel Myohyangsan and along the pathway in Manpoktong, 13 vii 1982, L. Forro and L. Ronkay, No. 781 (Hungarian Natural History Museum, Budapest); **<PN>** 1♀, Zamosan 60 km NE from Pyongyang, 2 ix 1971, S. Horvatovich and J. Papp, No. 230 (Hungarian Natural History Museum, Budapest); 1♀, Pyongsung Beksungli Zamosan 60 km NE from Pyongyang, 1 viii 1975, J. Papp and A. Vojnits, No. 304 (Hungarian Natural History Museum, Budapest); **<GW>** 2♀, Buyeongyegok Samsan-ri Yeongok Gangneung, 18 vi–20 viii 2001, Kim AY (SSU); 1♂1♀, Gojindong Mt. Geonbongsan Goseong, 28 viii 1990, Kim JI and Lee OJ (SSU); 1♀, Mundeungri Dutayeon, 18 vi 1982, Han YJ (SSU); 2♀, Baekdamsa Mt. Seoraksan, 24 ix 2000, Yeo JD and Kim WM (KU); 1♂1♀, Mt. Samyeongsan Wolmyeong-ri Yanggu, 8 vii 2003, Han KD (SSU); 1♀, Gwaneumsa Mt. Baekdeoksan Suju-myeon Yeongwol, 26 viii 2001, Kim SY and Kium AY (SSU); 1♀, Jingogae Mt. Odaesan, 19 ix 1971, Kim CW (KU); 1♂, Guryongsa Mt. Chiaksan Wonseong, 29 vii 1975, Kim JI (KU); 1♂4♀, Jindong-1ri Bangdong-myeon Inje, 1 x 1995, Moon TY and Kim JK (KU); 3♀, Mt. Bangtaesan Inje, 14–16 viii 1995, Kim JK (KU); 2♀, Garibong Mt. Seoraksan Inje, 22 vii 2004, Kim TW (SSU); 1♂1♀, Gombaeryeong Mt. Jeombongsan Inje, 26 ix 1998, Kim TW (SSU); 1♂, Jeungsan Nam-myeon Jeongseon, 19 ix 2004, Kim TW (SSU); 1♂, Hoedong-ri Jeongseon, 16 vii 1999, Yeo JD (KU); 3♂2♀, Mt. Myeongseongsan Galmal-eup Cheolwon, 3 vii–17 viii 1999, Kim TW (SSU); 1♀, Baekyang-ri Namsan-myeon Chuncheon, 1 vii 2006, Kim TW (SSU); 1♂3♀, Dongsan-ri Jinbu Pyeongchang, 2 vii 1985, Kim YS (SSU); 1♂, Hwacheon, 11 vi 1968, Kim JI (KU); **<GG>** 2♂2♀, Seungcheonsa Mt. Myeongjisan Gapyeong, 15 viii 2001, Kim AY (SSU); 2

♀, Mt. Unaksan Gapyeong, 18 viii 1987, Lee SR and Hwang SW (SSU); 1♀, Mt. Hwaaksan Hwaak-2ri Gapyeong, 16 viii 2001, Kim AY (SSU); 3♂2♀, Mt. Cheonmasan Namyangju, 8 viii-30 ix 1986, Kim EK and Im JS (SSU); 1♀, Mt. Godaesan Sinseo-myeon Yeoncheon, 12 viii 1987, Yoo HJ (SSU); 4♂, Mt. Yawolsan Yeoncheon, 26 vi 1987, Kim JI and Yoo HJ (SSU); 1♀, Bogwangsa Paju, 4 vii 1978, Jeon GH (KU); 2♀, Paldang, 3 x 1963, Choi MJ and Jeong DH (KU); 1♀, Mt. Jugeumsan Naechon-myeon Pocheon, 25 ix 2004, Kim TW (SSU); 1♂, Namhansanseong Hanam, 21 ix 1994, Hong SW (SSU); 1♀, Mt. Guryongsan Gaepo-dong Seoul, 15 ix 1990, Lee MS (SSU); **<CB>** 2♀, Sinwon-ri Goesan, 25 vi 1986, Chang KS (SSU); 1♂, Mt. Sobaeksan Danyang, 31 ix 1994, Lee KI (SSU); 1♀, Hwajangam Mt. Taehwasan Osa-ri Danyang, 27 viii 2001, Kim SY and Kim AY (SSU); 2♀, Daemok-ri Mt. Songnisan, 10 viii 1990, Park HC (SSU); 1♀, Gosa-ri Yeonpung, 22 vi 1989, Ku HK (SSU); 1♂2♀, Songmyeon-ri Cheoncheon-myeon, 22-23 vi 1989, Lee OJ et al. (SSU); 2♀, Yonggokmaeul Mt. Gyemyeongsan Chungju, 17 vi 2003, Han KD and Kim TW (SSU); 1♂2♀, Mt. Cheondeungsan Sancheok-myeon Chungju, 5 viii 2002, Kim TW (SSU); **<CN>** 1♂2♀, Mt. Gyeryongsan Gongju, 3-4 viii 1973, Kim CW and Nam SH (KU); 2♀, Muryangsa Mt. Mansusan Oesan-myeon Buyeo, 19 vii 1999, Kim TW (SSU); 1♂, Mt. Gwangdeoksan Cheonan, 16-18 vi 1994, Kim JI (SSU); **<GB>** 3♀, Joreyong Mungyeong, 22 vi 1989, Kim JI and Lee OJ (SSU); 1♂3♀, Daehyeon Seokpo Bonghwa, 24-25 vii 1986, Kim JI and Chang KS (SSU); 2♂, Mt. Cheongryangsan Bonghwa, 14 vi 1996, Hong GS and Kim JA (KU); 1♂1♀, Huibangsa Mt. Sobaeksan, 23 vii 1974, Kim CW and Kim JI (KU); 1♂1♀, Is. Ulleungdo, 5-9 vi 1963, Anonym (KU); 1♀, Dalgipokpo Cheongsong, 24 vi 1988, Byeon JE (SSU); 1♀, Mt. Taehaengsan, 27 vii 1984, Nam SH (KU); **<JB>** 2♂1♀, Deokdong-ri Namwon, 6 viii 1983, Jeong SS (SSU); 1♂, Mt. Deokyusan Muju, 9 viii 1984, Sohn JH (SSU); 2♂, Daea-ri Dongsan-myeon Wanju, 27 vii 2002, Kim TW (SSU); **<JN>** 3♂4♀, Piagol Mt. Jirisan, 23 vi 1987, Chang KS et al. (SSU).

Description. <♂> Body cylindrical, the coloration green with a pair of longitudinal black strips from behind the eyes pass along with lateral sides of pronotum. Head with round vertex and moderately inclined frons; antennae longer than pronotum and head combined length, its middle antennomeres four times longer than wide; scape as long as wide; frontal ridge as wide as antennal socket, reaching clypeal suture; lateral facial carinae distinct; subocular groove shorter than vertical diameter of an eye. Pronotum as long as middle femur, its anterior margin truncated, posterior margin angularly projected; three transverse sulci

distinctly black, prozona a little longer than metazona; lateral carinae indistinct, median carina blackish but only distinct in metazona finely punctated; lateral lobe of pronotum shorter than pronotal length. Tegmina macropterous, a little surpassing hind knee, its apex narrowly rounded; remigium brownish, vannus green. Hind wings transparent, as long as tegmina. Prosternum bearing a conical tubercle. Mesosternal interspace 1.2 times wider than long. Fore and middle femora thickened than female. Fore tibia with 4−6 pairs of, middle tibia with 5−6 pairs of ventral spines apically. Hind femur with darkened knee. Hind tibia with 10−11 pairs of dorsal spines. Hind barsitarsus shorter than remaining two tarsomeres combined length. Abdominal tympanum largely oval, 1.2 times longer than wide, without covering lobe or inner cavity. Last abdominal tergite with a pair of small furculae, its length shorter than basal width, the apice outwardly blunted. Epiproct pentagonal, as long as basal width, its apex triangular; dorsal surface longitudinally depressed in basal half, latero−subasally and posteriorly two pair of projections present. Cercus simply conical, 2.5 times longer than basal width, widened in base, much tapered apically, its apex not protruding than epiproct. Subgenital plate semicircular, shorter than basal width, its apex narrowly tapered. **<♀>** Larger and robuster than male. Interocular distance wider than male, as wide as two times of horizontal diameter of an eye, subocular groove as long as vertical diameter of an eye. Pronotum with metazona as long as prozona. Mesosternal interspace 1.5 times wider than long. Subgenital plate longer than wide, its hind margin triangularly projected. Ovipositor hook−shaped, with indistinctly serrated valves; ventral valve as long as lateral basivalvular sclerite; basivalvular sclerite two times longer than wide.

Distribution. Korea, Northeast China, Russian Far East.

Table 22. Measurements of *Ognevia* spp.

Species	BL	HTL	PL	TL	HFL
O. longipennis	♂ 20.8−26.0 ♀ 27.2−31.5	♂ 23.5−27.8 ♀ 29.0−35.1	♂ 4.2−5.7 ♀ 5.3−6.9	♂ 20.7−27.0 ♀ 25.7−31.3	♂ 10.5−12.9 ♀ 13.2−16.8
O. sergii	♂ 22.1−25.9 ♀ 27.2−32.4	same with BL	♂ 5.0−5.8 ♀ 5.5−7.4	♂ 14.7−19.5 ♀ 18.3−22.8	♂ 11.5−12.9 ♀ 13.6−15.8

Genus *Parapodisma* Mishchenko 제주밑들이메뚜기속

1947. Proceedings of the Royal Entomological Society of London, (B) 16(1/2): 10. Type species: *Pezotettix micado* Bolívar 1890.

Diagnosis. Pronotum narrow and convex, with its posterior margin rounded, lateral pronotal carinae absent. Dorsal carina of hind femur forming spine-like at apex. Male last abdominal tergite without furculae. Female ovipositor with pointed apices of valves (Mishchenko 1947). 13 species are known in the East Asia.

104. *Parapodisma setouchiensis* Inoue 1979 제주밑들이메뚜기 (Figs. 309-311)

Parapodisma setouchiensis Inoue 1979. Proceedings of the Japanese Society of Systematic Zoology, 16: 59, Fig. 1, pl. 2A. "Japan: Hiroshima". Holotype ♂ in Ehime Univ.

= *Parapodisma bandii* An and Lee 1986. Insecta Koreana, 6: 116, Figs. 1-2. "Korea: Mt. Hallasan". Holotype ♂ in GNU. [Kanô 1991]

Pezotettix mikado nec Bolívar 1890. Anales de la Sociedad Española de Historia Natural, 19: 323. "Japan: Yezo = Hokkaido". Holotype ♀ in Instituto Espanol de Entomologia, Madrid.

Korean records. ***Podisma mikado***: Ichikawa 1906: 183 ("Quelpart"); Cho et al. 1968: 240; ***Parapodisma bandii***: Kwon and Huh 1994: 51 (Korean check list: 반디밑들이메뚜기); Kwon et al. 1996: 105 (Korean species list); Yin et al. 1996: 512 (synonymic catalogue); ***Parapodisma setouchiensis***: Huh and Kwon 1995: 10 (Is. Jejudo).

Specimens examined. <JJ> 1♂2♀, Gwaneumsa, 2 viii 1955, Cho PS (KU); 1♀, ibid. 4 viii 1974, Kim JI (KU); 3♀, ibid. 30 vii 1998, Anonym (SSU); 1♀, Mt. Sanbangsan Sagye-ri Andeok-myeon Namjeju, 14 viii 2004, Kim JK and Kim TW (SSU); 1♂, Yeongsil Mt. Hallasan Namjeju, 11 viii 2004, Seung JB and Jeong BH (SSU); 1♂2♀, ibid. 17 vii 1990, Park HC et al. (NIAST); 1♂, Seongneoloreum Gyorae-ri Jocheon-eup Bukjeju, 24 vii 2003, An TH (GSU); 1♂, Sajebidongsan, 31 vii 1972, Kim JI (KU); 1♀, Eorimok, 15 vii 1990, Park HC (KU); 1♀, ibid. 27 ix 2000, Kim TW (SSU); 1♀, Eoseungsaengak, 29 vii 1972, Kim JI (KU); 1♂1♀, Yongjinkak, 1 viii 1972, Kim JI (KU); 1♂2♀, Jejudo 1100 m, 21 ix 1984, Kim YS (SSU); 1♂, Cheonwangsa to Dokkabi road Jeju-si, 10 vii 2002, Kim TW (SSU); 1♂1♀, Mt. Hallasan, 6 viii 1984, Lee SM.

Description. <♂> Body cylindrical, the coloration olive green, with reddish brown tegmina. Head with round vertex and inclined frons; interocular distance narrower, as wide as five times of horizontal diameter of an eye; scape as wide as long; middle antennoneres 4-5 times longer than wide; frontal ridge as wide as antennal socket, not reaching clypeal suture; lateral facial carinae distinct to meet with clypeal suture; subocular groove shorter than vertical diameter of an eye. Pronotum slightly longer than middle femur, its anterior margin truncated, posterior margin widely convex; lateral carinae indistinct, median

longitudinal carina only distinct on metazona; principle transverse sulcus cut medial carina behind the mid, prozona 1.5 times longer than metazona; metazona finely punctated; lateral lobe of pronotum shorter than pronotal length; dark strips behind the eyes not joined in pronotal sides, only present as black patches. Tegmina ovoidal, micropterous, not reaching third abdominal tergite, slightly shorter than pronotum, dorsally not overlapped each other, apically narrowed. Hind wings vestigial, as long as a half of tegmina. Prosternum bearing a conical tubercle. Mesosternal interspace as long as wide. Abdominal tympanum largely oval, 1.2 times wider than long, without covering lobe or inner cavity, mostly covered by tegmina. Fore and middle femora much thickened than female. Fore tibia with 4−5 pairs, middle tibia with three outer, six inner spines apically. Hind femur with black genicular lobes and crescent. Hind tibia pale bluish, with 9−11 dorsal spines, its base dark black. Last abdominal tergite without furculae, forming a pair of weakly rounded lobes. Epiproct triangular, as long as basal width, its lateral sides rather thickened in base; longitudinal basal half depressed in dorsal surface, without distinct projections. Cercus protruded behind as same as epiproct, basally widened, bent in mid, apically compressed finger−shape. Subgenital plate shortly conical, its apex darkish black. **<♀>** Larger than male. Interocular distance as wide as three times of horizontal diameter of an eye. Mesosternal interspace 1.2 times wider than long. Tegmina slightly surpassing second abdominal tergite. Subgenital plate longer than wide, its hind margin triangular. Ovipositor hook−shaped, with serrated valves, its apex pointed; dorsal valves as long as epiproct; ventral valves with weakly projected basal teeth; basivalvular sclerite three times longer than wide. **<Measurements>** BL ♂ 21.8−24.4, ♀ 27.5−33.3; PL ♂ 5.5−5.9, ♀ 7.3−8.3; TL ♂ 4.7−6.0, ♀ 5.7−7.6; HFL ♂ 12.2−13.4, ♀ 14.4−18.6.

Distribution. Korea (Is. Jejudo), Japan.

Genus *Podisma* Berthold 참밑들이메뚜기속

1827. In Latreille. Nat. Fam. Thierreich: 411. Type species: *Gryllus* (*Locusta*) *pedestris* Linnaeus 1758.

Diagnosis. Frontal ridge only sunken around ocellus. Fastigium of vertex about 1.5 times as wide as an eye seen from above. Hind margin of pronotum straight or slightly convex. Prozona same length as metazona or only slightly longer. Prozona smooth, with two transverse furrow. Metazona coarsely punctate. Tympanum uncovered. Ovipositor acute, without tooth. 18 species are known in the world.

105. *Podisma aberrans* Ikonnikov 1911 참밑들이메뚜기 (Figs. 303–304, 312)

Podisma aberrans Ikonnikov 1911. Annuaire du Musée Zoologique de l'Académie Impériale des Sciences de St. Pétersbourg, 16: 262. "Russia: Kamen–Rybolov". Lectotype ♀ in Zoological Museum, Moscow University.

Korean records. *Podisma aberrans*: Kim and Kim 2003: 89, Figs. 1, 3, 4, 7, 8, 10.

Specimens examined. <GW> 1♀, Mt. Gyebangsan Nae–myeon Hongcheon, 21 vii 1981, Nam SH (SSU); 1♀, Mt. Gwangdeoksan Gwangdeok–ri Naeseo–myeon Hwacheon, 4 vii 2000, Kim TW (SSU); 2♂1♀, Mt. Soppulsan Duchon–myeon Hongcheon, 25 viii 2002, Kim TW (SSU); **<GG>** 1♀, Mt. Gwangdeoksan Pocheon, 8 viii 1984, Park HC (SSU); 1♂, Mt. Cheonggyesan Gapyeong, 20 vi 1989, Lee JW (SSU); 1♂, Mt. Myeongjisan Gapyeong, 18 vii 1991, Lee OJ (SSU).

Description. <♂> Body cylindrical, the coloration yellowish brown with longitudinal black patches. Head with round vertex and weakly inclined frons; antennae as long as a half of body length, its middle antennomeres 3.0–3.5 times longer than wide; interocular distance narrower than an eye, the horizontal diameter of an eyes three times wider than the distance; scape as long as wide; frontal ridge as wide as antennal socket, diminished near clypeal suture; lateral facial carinae distinct; subocular groove shorter than vertical diameter of an eye. Pronotum a little longer than middle femur, its anterior and posterior margins weakly emarginated; three transverse sulci distinct and rather blackish, prozona 1.2 times longer than metazona; longitudinal lateral carinae indistinct, median carina distinct in metazona finely punctated; lateral lobe of pronotum shorter than pronotal length. Tegmina brownish ovoidal, micropterous, a half shorter than pronotal length, just covering tympanal area, its apex weakly acute. Hind wings vestigial. Prosternum bearing a thick conical tubercle. Mesosternal interspace 1.5 times wider than long. Fore and middle femora shorter and thickened than female. Fore tibia with 3–4, middle tibia with 4–5 pairs of ventral spines apically. Hind femur without colorful patterns, just knee darkened. Hind tibia pale bluish, with 10 outer, 11 inner dorsal spines. Hind barsitarsus shorter than remaining two tarsomeres combined length. Abdominal tympanum largely oval, 1.2 times longer than wide, without covering lobe or inner cavity. Abdominal tergum with black patches dorsally and laterally. Last abdominal tergite with a pair of black small furculae, its length longer than basal width, the apice diverged outwardly. Epiproct tongue–shaped, a little longer than basal width, its apex obtusely tapered; dorsal surface with smooth depressions in base,

lateral sides, and with a pair of small projections subapically. Cercus simply compressed conical, two times longer than basal width, its apex not surpassing epiproct. Subgenital plate semicircular and conical, shorter than basal width, its apex bluntly narrowed. **<♀>** Larger and robuster than male. Antennae shorter than male, as long as head and pronotum combined length. Interocular distance wider than male, as wide as horizontal diameter of an eye, subocular groove longer than vertical diameter of an eye. Mesosternal interspace 2.5 times wider than long. Tegmina shorter than male, as long as a thirds of pronotal length, not fully covering tympana. Abdominal tergum without black patches. Subgenital plate longer than wide, its hind margin triangularly projected. Ovipositor with indistinctly serrated valves, its apice sharply pointed; ventral valve weakly toothed basally; basivalvular sclerite as long as wide. **<Measurements>** BL ♂ 19.0−23.0, ♀ 25.0−28.0; PL ♂ 5.6−5.8, ♀ 7.5−8.0; TL ♂ 3.0−4.0, ♀ 4.0−5.5; HFL ♂ 11.7−13.0, ♀ 14.5−15.2.

Distribution. Korea, Northeast China, Russia Far East.

Genus *Prumna* Motschulsky 북방밑들이메뚜기속

1859. Etudes Entomologiques, 8: 11. Type species: *Podisma primnoa* Motschulsky 1846

= *Primnoa* Fischer von Waldheim 1846. Nouv. Mém. Soc. Imp. Natur. Moscou. 8: 248. Preoccupied name of Cnidaria Lamouroux 1812. [Ito 2003]

Diagnosis. Male subgenital plate not conical, apex elongated into wide and thick upper margin. Ovipositor with valves acuter at apex, without tooth. Tympanum developed. 25 species are known in the world, the measurements of two Korean *Prumna* compared in Table 23.

106. *Prumna halrasana* (Lee and Lee 1984) 한라북방밑들이메뚜기 (Figs. 291, 300−301)

Primnoa halrasana Lee and Lee 1984. Korean Journal of Entomology, 14: 69, Figs. 7−8. "Korea: Mt. Hallasan". Holotype ♂ in GNU.

= *Primnoa koreana* Storozhenko 1991. Zoologicheskii Zhurnal, 70(6): 137, Figs. 1−14. "North Korea: Monastery Olchons". Holotype ♂ in Institute of Biology and Pedology of the Far East Branch of the Russian Academy of Sciences, Vladivostok. [Storozhenko 1998]

Korean records. ***Primnoa halrasana***: Lee and Lee 1983; 5 (taxonomy); Kwon and Huh 1994: 51 (Korean check list); Huh and Kwon 1995: 10 (Is. Jejudo); Otte 1995: 438 (Orthoptera species file); Kwon et al. 1996: 105 (Korean species list); Yin et al. 1996: 570 (synonymic catalogue); Storozhenko 1998: 7; ***Primnoa koreana***: Kwon and Huh 1994: 51 (Korean check list: 우리북방밑들이메뚜기); Otte 1995: 438 (Orthoptera species file).

Specimens examined. <GW> 1♀, Buyeongyegok Samsan-ri Yeongok Gangneung, 18-19 vi 2001, Kim AY (SSU); 2♂2♀, Gojindong Mt. Geonbongsan, 28 viii 1990, Lee OJ et al. (SSU); 3♂, Hyangnobong Goseong, 23 viii 1992, Moon TY (KU); 1♂, Mt. Seoraksan, 16 ix 1971, Lee JK (KU); 2♂, Gwongeumseong Mt. Seoraksan, 22 vii 2004, Kim TW (SSU); 1♂1♀, Baekdamsa Mt. Seoraksan, 30 viii 1984, Nam SH and Park HC (KU); 1♀, Daeseungpokpo Jangsudae Mt. Seoraksan, 23 ix 2000, Kim JK (KU); 1♀, Mt. Jeombongsan Ogari Seomyeon Yangyang, 10 viii 1983, Moon TY (KU); 1♀, Sinseonbong Mt. Seoraksan Toseong Yangyang, 26 viii 2002, Kim TW (SSU); 1♂, Mt. Odaesan, 25 vii 1994, Choi JW (KU); 1♀, Jingogae Mt. Odaesan, 19 ix 1971, Kim CW (KU); 2♂, Mt. Chiaksan Wonju, 15 vi-15 viii 1999, Kim TW (SSU); 1♂, Jindari Gachilbong Inje, 12-13 vi 1997, Kim JI and Kim SY (SSU); 1♀, Hanamri Mt. Bangtaesan Inje, 26 vi 1996, Kim JI and Kim SY (SSU); 1♀, Hoedong-ri Jeongseon, 16 vii 1999, Yeo JD (KU); 3♂1♀, Baegildong Daehwa Pyeongchang, 1 vii 1985, Chang KS et al. (SSU); 1♂, Yongsan Doam Pyeongchang, 29 vi 1985, Kim OH (SSU); 2♂1♀, Donggnang riverbed Mitan Pyeongchang, 9 vii 1999, Kim TW (SSU); 3♂, Geomun-ri Jinbu Pyeongchang, 30 vi 1985, Kim JS (SSU); 2♂, Dongsan-ri Jinbu Pyeongchang, 2 vii 1985, Kim YS (SSU); 9♂6♀, Mapyeong Jinbu Pyeongchang, 30 vi 1985, Chang KS et al. (SSU); **<GG>** 3♂4♀, Mt. Myeongjisan Gapyeong, 18 vii-6 viii 1991, Kim JI and Moon TY (SSU); 1♂5♀, Mt. Unaksan Gapyeong, 18 viii 1987, Park EY et al. (SSU); 2♂2♀, Mt. Chukryeongsan Sudong, 12 vii-6 viii 1980, Chang KS and Park HK (SSU); 1♂2♀, Paldang, 3 x 1963, Lee JS and Jeong EH (KU); 1♀, Mt. Baekunsan Pocheon, 10 ix 1990, Lee MS (SSU); **<CB>** 3♂3♀, Mt. Gyemyeongsan Jongmin-dong Chungju, 16-17 vi 2003, Kim JI et al. (SSU); **<GB>** 1♀, Mt. Naejuwangsan, 26 vii 1984, Park HC (KU); 1♂, Mungyeongsaejae, 9 vii 1977, Han HY (KU); 1♂4♀, Daehyeon Seokpo Bonghwa, 24-25 vii 1986, Kim JI and Chang KS (SSU); 1♂, Mt. Cheongryangsan Bonghwa, 20 viii 1998, Choi SK (SSU); 1♂, Huibangsa Mt. Sobaeksan, 23 vii 1974, Kim CW (KU); 1♂, Bulyeonggyegok Sogwang-ri Uljin, 1 viii 1999, Ku DS (NIAST); 1♂, Mt. Juwangsan Cheongsong, 30 vii 1983, Park HK (SSU); 1♀, Mt. Taehaengsan Cheongsong, 27 vii 1984, Nam SH (SSU); 1♂, Dalgipokpo Mt. Taehaengsan, 24 vi 1988, Sim HJ (SSU); **<JJ>** 5♂3♀, Baeknokdam, 31 vii-1 viii 1972, Kim JI (KU); 1♂10♀, Eorimoksanjang, 30 vii 1972, Kim JI (KU); 1♂, Wanggwanneung, 1 viii 1972, Kim JI (KU); 4♀, Yongjingak, 1 viii 1972, Kim JI (KU); 1♀, Mt. Hallasan Yeongsil, 27 ix 2000, Kim MA (NIAST).

Description. <♂> Body cylindrical, the coloration darkish brown. Head with round vertex and

moderately inclined frons; foveola absent, the areas punctated; interocular distance narrower, as wide as 3.5 times of horizontal diameter of an eye; scape as wide as long; middle antennomers three times longer than wide; frontal ridge rather wider than antennal socket, not reaching clypeal suture; lateral facial carinae distinct to clypeal suture; subocular groove shorter than vertical diameter of an eye. Pronotum longer than wide in dorsal view, as long as middle femur, its anterior margin weakly convex, posterior margin weakly emarginated in mid; lateral carinae indistinct, median longitudinal carina distinct in anterior a thirds and metazona; three transverse sulci distinct, prozona two times longer than metazona finely punctated; lateral lobe of pronotum shorter than pronotal length, lower posterior margin and anterior smaller area bright yellowish. Tegmina monochromatic brown, elongated elliptical, micropterous, shorter than pronotum, just reaching tympanal area. Abdominal tympanum largely oval, 1.2 times longer than wide, without covering lobe and inner concavity. Prosternum bearing a short conical tubercle. Mesosternal interspace 1.2 times longer than wide. Fore and middle femora much thicken than female. Fore tibia with 3−4, middle tibia with 4−5 pairs of ventral spines apically. Hind femur with outer darkish surface, and dorsally two black bands. Hind tibia with 9−11 dorsal spines. Last abdominal tergite with a pair of small furculae, its length longer than basal width. Epiproct pentagonal, its lateral margins sinuated, posterior margin with a roundly pointed median lobe; lateral posterior angle angulated, the median posterior lobe upraised with apical carinae. Cercus two times longer than basal width, basally widened, narrowed in two thirds, apically blunted, compressed. Subgenital plate apically swollen, its lateral posterior margins forming widely protruding lobes. **<♀>** Larger and plump than male. Interocular distance as wide as 1.5 times of horizontal diameter of an eye, subocular groove slightly longer than vertical diameter of an eye. Pronotum as long as wide in dorsal view, posteriorly much widened than male. Mesoternal interspace two times wider than long. Subgenital plate longer than wide, its hind margin laterally obtusely projected, medially triangular. Ovipositor with thick valves indistinctly serrated; ventral valves with basal teeth on outer margins; basivalvular sclerite two times longer than wide; lateral basivalvular sclerite with an outer tooth.

Distribution. Korean endemic regarded. It was described from Is. Jejudo, but widely distributes in the Korean peninsula.

107. *Prumna mandshurica* Ramme 1939 참북방밑들이메뚜기 (Figs. 292, 302, 317)

Prumna mandshurica Ramme 1939. Mitteilungen aus dem Zoologischen Museum in Berlin, 24:

137, Figs. 55m, tab. 2, Fig. 5. "China: Manchoukuo". Holotype ♂ in Museum für Naturkunde der Humbolt Universitat, Berlin.

Korean records. ***Primnoa mandshrica*** [!]: Won et al. 1990: 96 (Mt. Changbaishan); ***Primnoa mandshuria*** [!]: Kwon et al. 1996: 105 (Korean species list).

Specimens examined. <GW> 1♀, Gachilbong, 5 x 1992, Moon TY; 3♂2♀, Mt. Daeamsan Dong-myeon Yanggu, 7-8 vii 2003, Kim JK and Kim TW; 7♂6♀, Mt. Samyeongsan Chugok-ri Buksan-myeon Chuncheon, 25 vii 2003, Kim TW; 1♂, Mt. Baekamsan Gwangam-ri Naechon-myeon Hongcheon, 9 vi 2002, Kim TW; 1♂1♀, Mt. Soyosan Dongducheon, 11 vii 2002, Rhee HW; 2♀, Mt. Godaesan Sintan-ri Sinseo-myeon Yeoncheon, 28 viii 2002, Jeong MP.

Description. <♂> Body cylindrical, the coloration dark brown with yellowish patterns. Head with round vertex and moderately inclined frons; interocular distance narrower, as wide as three times of horizontal diameter of an eye; fastigium of vertex longitudinally weakly depressed in anterior margin; scape as long as wide; antennae as long as a half of body length, its middle antennomeres 4-5 times longer than wide; frontal ridge as wide as antennal socket, diminished near clypeal suture; subocular groove shorter than vertical diameter of an eye. Pronotum as long as middle femur, its anterior margin weakly emarginated, posterior margin widely emarginated in mid; median longitudinal carina only distinct in metazona finely punctated; lateral carinae indistinct, inwardly yellowish strips distinct; tree transverse sulci distinct, prozona two times longer than metazona; lateral lobe of pronotum shorter than pronotal length. Tegmina micropterous, just covering tympana, with nearly parallel margins, its apex narrowly rounded; inner margin yellowish joining with pronotal yellowish strips. Prosternum with a conical tubercle. Mesosternal interspace 1.2 times wider than long. Fore and middle femora much thickened than female. Fore tibia with 3-4, middle tibia with 4-6 pairs of ventral spines apically. Hind tibia with 9-11 pairs of dorsal spines. Abdominal tympanum largely oval, 1.5 times longer than wide, without covering lobe or inner cavity. Last abdominal tergite with a pair of small furculae, its length shorter than basal width. Epiproct triangular, with a pair of convex areas behind the mid. Cercus shortly conical, two times longer than basal width, its apex rather blunted. Subgenital plate circular, large phallium compressed in mid apically, lateral sides weakly projected. **<♀>** Larger and robuster than male. Subocular groove as long as vertical diameter of an eye. Mesosternal interspace two times wider than long. Subgenital plate longer than wide. Ovipositor with thick valves indistinctly serrated; ventral valves with

basal teeth on outer margins; basivalvular sclerite two times longer than wide; lateral basivalvular sclerite with an outer tooth.

Distribution. Korea, Northeast China.

Table 23. Measurements of *Prumna* spp.

Species	BL	PL	TL	HFL
P. halrasana	♂ 24.0−29.5 ♀ 26.2−38.8	♂ 5.5−6.0 ♀ 6.4−7.8	♂ 3.3−5.5 ♀ 5.1−5.6	♂ 13.2−15.3 ♀ 17.0−18.5
P. mandshurica	♂ 23.4−30.0 ♀ 28.6−36.4	♂ 5.4−6.4 ♀ 5.9−6.9	♂ 4.4−5.9 ♀ 4.7−6.1	♂ 14.6−17.2 ♀ 15.4−18.9

Genus *Miramella* Dovnar−Zapolskii 고산밑들이메뚜기속

1933. Trudy Zoologitscheskogo Instituta, Akademiia Nauk SSSR, Leningrad, 1(3−4): 266. Type species: *Podisma solitaria* Ikonnikov 1911.

Diagnosis. Pronotum with long prozona usually 1.4−2.0 times longer than metazona. Ovipositor with valves distinctly split into two teeth at apex. Nine species are known in the Palaearctic Region.

108. *Miramella solitaria* (Ikonnikov 1911) 고산밑들이메뚜기 (Figs. 307−308, 314)

Podisma solitaria Ikonnikov 1911. Annuaire du Musée Zoologique de l'Académie Impériale des Sciences de St. Pétersbourg, 16: 263, pl. 5, Fig. 4. "Russia: Evsejevka". Lectotype ♂ in Zoological Museum, Moscow University.

Korean records. *Miramella solitaria*: Kim and Kim 2003: 91, Figs. 2, 5, 6, 9.

Specimens examined. **<GW>** 1♀, Sangwonsa Mt. Odaesan Dongsan−ri Jinbu−myeon Pyeongchang, 18 ix 1971, Kim CW (SSU); 1♀, Mt. Hambaeksan Taebaek, 14 viii 1999, Kim TW (SSU); 1♀, ibid. altitude 1573 m, 18 ix 2001, Kim TW (SSU); 1♂1♀, ibid. 6−26 vii 2005, Kim TW (SSU); 7♂5♀ (gynandromphs 3♂ included), Mt. Daeamsan Dong−myeon Yanggu, 7−8 vii 2003, Kim JK and Kim TW (SSU); 9♂11♀, Samyangchuksan Daegwanryeong pasture, Mt. Odaesan Doam Pyeongchang, 22 vi 2005, Kim TW (SSU); **<GB>** 1♂, Is. Ulleungdo, 5−9 vi 1963, Anonym (KU).

Description. **<♂>** Body cylindrical, the coloration deep green with longitudinal black strips and patches. Head with round vertex and moderately inclined frons; antennae as long as a half of body length, its middle antennomeres 2.5−3.0 times longer than wide; interocular distance narrower, as wide as 2.2 times of horizontal diameter of an eyes. scape as long as

wide; frontal ridge as wide as antennal socket, diminished near clypeal suture; lateral facial carinae distinct; subocular groove as long as vertical diameter of an eye. Pronotum as long as middle femur, its anterior and posterior margins weakly emarginated; three transverse sulci black and distinct, prozona 1.7 times longer than metazona; longitudinal lateral carinae indistinct, median carina distinct and blackish; metazona finely punctated; lateral lobe of pronotum shorter than pronotal length. Tegmina ovoidal, micropterous, shorter than pronotal length, a little surpassing tympanal area, its apex narrowly rounded; lateral remigium dark black, dorsal vannus greenish. Hind wings vestigial. Prosternum bearing a short conical tubercle. Mesosternal interspace 1.5 times wider than long. Fore and middle femora thickened than female. Fore tibia with five pairs of, middle tibia with 4 outer, 6 inner ventral spines apically. Hind femur with colorful patterns, in outer surface with blackish dorsal and ventral carinulae, ventrally bright red, in inner surface basally dark black three quarters, subapically bright banded, knee darkened. Hind tibia dark black, with 8−9 outer, 11 inner dorsal spines. Hind barsitarsus shorter than remaining two tarsomeres combined length. Abdominal tympanum largely oval, 1.2 times longer than wide, without covering lobe or inner cavity. Last abdominal tergite with a pair of furculae, its length shorter than basal width, the apice blunted. Epiproct triangular, as long as basal width, its apex obtusely tapered; dorsal surface with smooth depressions in base, lateral sides, and apical aspect. Cercus simply conical, 2.5 times longer than basal width, widened in base, much tapered apically, its apex not surpassing epiproct. Subgenital plate elongated conical, longer than basal width, its apex much narrowly tapered. **<♀>** Larger and robuster than male. Antennae shorter than male, as long as head and pronotum combined length. Interocular distance wider than male, as wide as 1.5 times of horizontal diameter of an eye, subocular groove longer than vertical diameter of an eye. Mesosternal interspace 2.2 times wider than long. Subgenital plate longer than wide, its hind margin triangularly projected. Ovipositor with indistinctly serrated valves, its apice denticulated with two teeth; ventral valve as long as lateral basivalvular sclerite; basivalvular sclerite two times longer than wide. **<Measurements>** BL ♂ 17.8−22.4, ♀ 24.6−28.1; PL ♂ 4.6−5.1, ♀ 6.4−6.5; TL ♂ 4.0−4.9, ♀ 5.0−5.5; HFL ♂ 10.2−11.8, ♀ 13.5−14.5.

Distribution. Korea, Northeast China, Russian Far East.

Remarks. I had collected three grasshoppers looked like to undescribed *Miramella* sp. at glimpse because of some different shapes of the body. All were must males with roundly conical subgenital plate, but fore and mid femora were not thicken as different with normal

males, as well as mesosternal interspace two times wider than long that is similar to female. But the characters of internal genitalia were same with typical *solitaira,* those are considered with the gynandromorphs.

Genus *Anapodisma* Dovnar-Zapolskii 밑들이메뚜기속

1933. Trudy Zoologitscheskogo Instituta, Akademiia Nauk SSSR, Leningrad, 1(3-4): 256. Type species: *Anapodisma miramae* Dovnar-Zapolskii 1933.

Diagnosis. Longitudinal diameter of eye slightly more than the transverse one in length, nearly equal to the length of subocular groove. Tegmina short, not reaching tympanum. Three species are known in Manchurian Subregion.

109. *Anapodisma beybienkoi* Rentz and Miller 1971 팔공산밑들이메뚜기 (Fig. 285, 315)

Anapodisma beybienkoi Rentz and Miller 1971. Entomological News, 82: 257, Figs. 3-8. "Korea: Mt. Palgongsan". Holotype ♂ in Academy of Natural Sciences, Philadelphia.

Korean records. *Anapodisma beybienkoi*: Lee and Lee 1983: 5 (taxonomy); Lee and Lee 1984: 68, Figs. 5-6 (taxonomy); Storozhenko 1986: 290; Storozhenko 1993: 22, Figs. 8-13; Kwon and Huh 1994: 51 (Korean check list); Otte 1995: 418 (Orthoptera species file); Kwon et al. 1996: 105 (Korean species list); Bae 1998: 184.

Specimens examined. <GB> 1♂, Jikjisa Gimcheon, 4 vi 1978, Park ER (KU); 4♂, Joryeong Mungyeong, 22 vi 1989, Lee OJ et al. (SSU); 4♂, Daehyeon Seokpo Bonghwa, 24-25 vii 1986, Chang KS (SSU); 1♂, Sieodong Hwabuk Sangju, 9 viii 1990, Park HC (SSU); 1♂, Seonginbong Is. Ulreungdo, 9 vii 1986, Kim YS (SSU); 1♂, Icheon-ri Sangbuk-myeon Ulju Ulsan, 11 viii 2004, Park JS (GSU); 1♂, Dalgipokpo Cheongsong, 24 vi 1988, Byeon JE (SSU); 1♂, Mt. Taehaengsan Cheongsong, 24 vi 1988, Kwon MK (SSU); **<GN>** 1♂, Mt. Mangwunsan Namsang-ri Seo-myeon Namhae, 12 vii 2002, Jeon JS (GSU); 1♂, Georim Mt. Jirisan 1,000 m Sicheon Sancheong, 12 x 2001, Jeon JB (SSU); 1♂, Yeongsan Changnyeong, 28 vi 1987, Yoon HY (SSU); 1♂, Hyeongjebong Deungchon-ri Akyang-myeon Hadong, 8 x 2002, Shin JS (GSU); 1♂, Jeilbong Namsan Hapcheon, 2 viii 1989, Han KD (SSU); **<JB>** 1♂, Buan Gochang, 11 ix 1992, Choi HJ (SSU); 1♂, Mt. Seonwunsan Gochang, 25 vi 1991, Yoon SJ (SSU); 2♂, Deokdong Sannae Namwon, 6 viii 1983, Jeong SS (SSU); 2♂, Mt. Naejangsan, 3 viii 1974, Nam SH (KU); 2♂, ibid. 4 vii 1985, Lee SK and Kim DI (SSU); 2♂, Gucheondong Seolcheon-myeon Muju, 16-21 viii 1970, Kim KH (KU); 3♂, ibid. 22 viii 1977, Kim CW and Nam SH (KU); 1♂,

Naebyeonsan-myeon Buan, 25 vi 1991, Sohn YH (SSU); 2♂, Naesosa Buan, 30 vii 1984, Chang KS (SSU); 2♂, Baemsagol Mt. Jirisan, 3 viii 1984, Chang KS (SSU); **<JN>** 2♂, Dapgok-ri Gwangyang, 11-16 viii 1993, Jeong SH (SSU); 2♂, Mt. Baekwunsan Gwangyang, 13-20 viii 1994, Choi HS (SSU); 1♂, Yeongoksa Mt. Jirisan Toji-myeon Gorye, 8 vii 1976, Kim CW (KU); 1♂, Piagol Mt. Jirisan Toji-myeon Gurye, 18 vi 1982, Kim MR (KU); 3♂, ibid. 23 vi 1987, Chang KS et al. (SSU); 2♂, Mt. Baekyangsan, 4-5 viii 1974, Kim JI and Nam SH (KU); 1♂, Dogapsa Yeongam, 28 vii 1988, Kim JK (KU); 1♂, Mangchuk Wando, 6 vii 1982, Shin GH (SSU); 1♂, Baekyangsa Mt. Naejangsan Bukha-myeon Jangseong, 11-12 ix 2004, Kim TW (SSU); 4♂, Mt. Jirisan, 23-25 vi 1986, Hwang YK et al. (SSU); 1♂, Mt. Duryunsan Haenam, 23 vi 1993, Kim MY (SSU); **<JJ>** 1♂, Mansedongsan, 31 vii 1972, Kim JI (KU); 6♂, Baeknokdamm 31 vii-1 viii 1972, Kim JI (KU); 3♂, Sangumburi Gyorae-ri Jocheon-eup Bukjeju, 9 vii 2002, Kim TW (SSU); 3♂, Eorimoksanjang, 15 vii 1983, Kim JI and Chang KS (SSU); 1♂, Eoseungsaengak, 29 vii 1972, Kim JI (KU); 3♂, Yongjingak, 1 viii 1972, Kim JI (KU); 4♂, Cheongwangsa to Dokkabi road Jeju, 10 vii 2002, Kim TW (SSU); 1♂, Seongpanak Jocheon, 12 vii 1983, Jang BY (SSU); 1♂, Gwaneumsa Mt. Hallasan, 30 vii 1998, Anonym (SSU).

Description. <♂> Body cylindrical, the coloration green with a pair of longitudinal black strips from behind eyes along with lateral sides of pronotum, pinkish tegmina. Head with round vertex and moderately inclined frons; interocular distance narrower than an eye, the horizontal diameter of an eyes four times wider than the distance; scape as long as wide; fastigium of vertex shorter than basal width, longitudinally depressed in front; frontal ridge as wide as antennal socket, barely reaching to clypeal suture; lateral facial carinae distinct; subocular groove shorter than vertical diameter of an eye. Pronotum a little longer than middle femur, its anterior margin truncated, posterior margin weakly emarginated; three transverse sulci distinct, prozona 2.2 times longer than metazona; longitudinal lateral carinae indistinct, median carina rather distinct in metazona finely punctated; lateral lobe of pronotum shorter than pronotal length. Tegmina pinkish elliptical, micropterous, a half shorter than pronotal length, barely covering tympanal area, its apex narrowly rounded. Hind wings vestigial. Prosternum bearing a short conical tubercle. Mesosternal interspace 1.5 times wider than long. Fore and middle femora shorter and thickened than female. Fore tibia with 3-4 pairs of, middle tibia with four outer, six inner ventral spines apically. Hind femur with darkish genicular lobes and crescent. Hind tibia with 10-11 pairs of dorsal

spines. Hind barsitarsus shorter than remaining two tarsomeres combined length. Abdominal tympanum largely oval, 1.5 times longer than wide, without covering lobe or inner cavity. Last abdominal tergite with a pair of large black furculae, its length longer than basal width, the apice blunted. Epiproct triangular, a little longer than basal width; dorsal surface with a longitudinal depressions in mid and with subasal and subapical projections on lateral sides. Cercus simply conical, 2.5 times longer than basal width, its apex narrowly tapered, not surpassing hind margin of epiproct. Subgenital plate cone-shaped, as long as basal width, its apex narrowly tapered, darkened. **<♀>** Larger and robuster than male. Interocular distance wider than male, as wide as a half of horizontal diameter of an eye, subocular groove longer than vertical diameter of an eye. Mesosternal interspace two times wider than long. Tegmina shorter than male, not covering tympana or slightly touching it. Subgenital plate longer than wide, its hind margin triangularly projected. Ovipositor with narrow and slender valves, its apice toothed with two teeth; dorsal valves longer than epiproct; ventral valve longer than lateral basivalvular sclerite. **<Measurements>** BL ♂ 18.1-21.5, ♀ 22.5-28.4; PL ♂ 4.0-4.5, ♀ 4.8-6.5; TL 2.6-3.2; HFL ♂ 10.0-10.8, ♀ 12.3-13.4.

Distribution. Korean endemic regarded (southern province).

Remarks. This was considered to the synonym of following *A. miramae* by Kanô (1988), but subsequently revised by Storozhenko (1993). Owing to the hardly separable external morphology of both, I had studied detailed character of male genitalia dividing as the specimen's localities. At glimpse resulting the difference was clear, ie. the valves of cingulum and penis are relatively long and narrower in northern parts (*A. miramae*), whereas those are short and wider in southern parts (*A. beybienkoi*). But the distinction was sometimes not easy whether it belong to which one owing to the obscurity raised from the intermediate forms along with longitudinal axis of the peninsula. In this study those are regarded to closely related parapatric species showing the tendency of the character.

110. *Anapodisma miramae* Dovnar-Zapolskii 1933 밑들이메뚜기 (Figs. 286, 305-306)

Anapodisma miramae Dovnar-Zapolskii 1933. Trudy Zoologitscheskogo Instituta, Akademiia Nauk SSSR, Leningrad, 1(3-4): 256. "Russia: Primorskii". Holotype ♂ in Zoological Institute of the Russian Academy of Sciences, St. Petersburg.

= *Miramella sinense* Chang 1940. Notes d'Entomologie Chinoise, Musée Heude, 7: 54, pl. 1, Figs. 6, 8, pl. 2, Figs. 3, 9, 14. "China: Manchuria". Type lost. [Storozhenko 1993]

Podisma dairisama nec Scudder 1898. Proceedings of the United States National Museum, 20: 114, pl. 8, Fig. 7. "Japan". Holotype ♂ in National Museum of USA, Washington.

Podisma sapporense [!] nec Shiraki 1910. Acrididen Japans: 76, pl. 2, Fig. 5a–c. "Japan: Sapporo". Type in ?

Korean records. ***Podisma dairisama***: Ikonnokov 1913: 20; ***Podisma sapporense***: Doi 1932: 35; Ju 1969: 25 (North Korean check list); ***Anapodisma miramae***: Bey-Bienko and Mishchenko 1951: 218; Mishchenko 1952: 367, Fig. 108; Lee and Lee 1983: 5 (taxonomy); Lee and Lee 1984: 67, Figs. 3–4 (taxonomy); Kanô 1988: Figs. 1–17; Storozhenko 1993: 22, Figs. 1–7; Kwon and Huh 1994: 51 (Korean check list); Huh and Kwon 1995: 9 (Is. Jejudo); Moon and Yoon 1996: 52 (KEI); Kwon et al. 1996: 105 (Korean species list); Bae 1998: 183; ***Podisma sapporensis***: Cho 1959: 175, Fig. 58 (manual: 밑드리메뚜기); Cho and Lee 1959; 9 (Gwangneung: 좀밑드리메뚜기); Kang and Son 1959: 16 (chromosome); Cho 1969: 732, pl. 48 (illustrated encyclopedia); ***Miramella sinense***: Won et al. 1990: 96 (Mt. Changbaishan).

Specimens examined. **<RG>** 1♂1♀, Hyesan Mt. Ze-dong 1,150 m, 22 vii 1975, J. Papp and A. Vojnits, No. 275 (Hungarian Natural History Museum, Budapest); **<PN>** 3♀, Zamo san 60 km NE from Pyongyan, 2 ix 1971, S. Horvatovich and J. Papp, No. 230 (Hungarian Natural History Museum, Budapest); **<GW>** 1♂, Geonbongsa Ganseong Gosoeng, 22 viii 1993, Moon TY (KU); 1♂, Madal-ri Gosoeng, 10 vii 1990, Park HC (KU); 8♂, Mt. Daeamsan Dong-myeon Yanggu, 7–8 vii 2003, Kim JK and Kim TW (SSU); 5♂, Daewusan Dong-myeon Yanggu, 10 vii 2003, Kim TW (SSU); 3♂, Dusolsan Dong-myeon Yanggu, 9 vii–28 viii 2003, Kim JK and Kim TW (SSU); 1♂, Mt. Taehwasan Gunggol Heungwol-ri Yeongwol, 28 viii 2001, Kim SY and Kim AY (SSU); 1♂, Mindungsan Imgye-myeon Jeongseon, 18 ix 2004, Kim TW (SSU); 1♂, Gangchon Chunseong, 18 vi 1983, Chang KS (SSU); 2♂, Palmi-ri Singdong-myeon Chuncheon, 1 vii 2006, Kim TW (SSU); 1♂, Mt. Baekseoksan Daehwa Pyeongchang, 21 viii 2006, Kim AY (SSU); 2♂, Haesanryeong Hwacheon, 8 vii–3 x 2006, Kim TW (SSU); **<GG>** 1♀, beating, Kaesong: Mt. Pakyon Pakyon Pokpo 27 km NE from Kaesong, 8 ix 1971, S. Horvatovich and J. Papp, No. 246 (Hungarian Natural History Museum, Budapest); 3♂3♀, Mt. Pakyon Pakyon pokpo 27 km NE from Kaesong 500 m, 9 ix 1971, S. Horvatovich and J. Papp, No. 250 (Hungarian Natural History Museum, Budapest); 1♀, Mt. Pakyon 20 km NE from Kaesong both sides of and near to the road between Kaesong and Pakyon pokpo, 10 ix 1971, S. Horvatovich and J. Papp, No. 254 (Hungarian Natural History Museum, Budapest); 1♂2♀, Mt. Pakyon

20−21 km NE from Kaesong both sides of and near to the road between Kaesong and Pakyon pokpo, 11 ix 1971, S. Horvatovich and J. Papp, No. 260 (Hungarian Natural History Museum, Budapest); 2♂, Mt. Myeongjisan Gapyeong, 1 viii 1996, Choi HS (SSU); 2♂, Mt. Cheonggyesan Gapyeong, 27 vi−18 vii 1991, Kim JI (SSU); 3♂, Mt. Daegeumsan Dumil−ri Ha−myeon Gapyeong, 2 ix 2006, Kim TW (SSU); 1♂, Nakgasan Is. Seokmodo Ganghwa, 22 vi 1992, Park HC (SSU); 1♂, Gwangneung, 22 ix 1990, No SA (SSU); 1♂, Mt. Surisan Gunpo, 8 vi 2003, Kim TW (SSU); 4♂, Mt. Chukryeongsan Sudong Namyangju, 11−18 vi 1983, Lee KM et al. (SSU); 8♂, Mt. Cheonmasan Namyangju, 18 v−10 ix 1983, Chang KS et al. (SSU); 1♂, Mt. Soyosan Dongducheon, 11 viii 1990, Kwon HK (SSU); 1♂, Mt. Suraksan, 26 vi 1984, Hwang SS (SSU); 1♂, Mt. Gamaksan Sinam−ri Nam−myeon Yangju, 10 ix 2006, Kim TW (SSU); 1♂, Wondang reservoir Bongam−myeon Yangju, 4 viii 1993, Im KN (SSU); 1♂, Songchu Yangju, 28 vii 1983, Jang YA (SSU); 3♂, Mt. Godaesan Sinseo−myeon Yeoncheon, 12 viii 1987, Kim JI and Yoo HJ (SSU); 1♂, Mt. Cheondeoksan Yeoncheon, 26 vi−12 viii 1987, Kim JI and Yoo HJ (SSU); 1♂, Is. Baekryeongdo Ongjin Incheon, 26 vii 1987, Yoo HJ (SSU); 1♂, Bugok−ri Jangheung, 26 ix 1998, Dan HJ (SSU); 1♂, Mt. Cheonggyesan, 27 vi 1985, Kim WO (SSU); 7♂, Mt. Gamaksan Paju, 8 ix 1984, Kim YS (SSU); 5♂, Bogwangsa Gwangtan Paju, 19 vi−4 vii 1978, Kim ES et al. (KU); 1♂, Seolma−ri Jeokseong Paju, 28 vii 1984, Kim JI (SSU); 3♂, Mt. Gwangdeoksan Pocheon, 8 viii 1984, Nam SH and Park HC (KU); 2♂, Mt. Baekwunsan Pocheon, 6 viii 1984, Park HC and Kim MR (KU); 1♂, Idong Pocheon, 21 viii 1994, Kwon YJ (SSU); 1♂, Mt. Suraksan Nowon−gu Seoul, 7 ix 1997, Im KM (SSU); 13♂, Mt. Donbongsan Seoul, 19 vi−16 ix 1982, Kim Y et al. (SSU); 1♂, Jeongneung Seoul, 5 vii 1982, Jeon BB (SSU).

Description. **<♂>** Body cylindrical, the coloration green with a pair of longitudinal black strips from behind eyes along with lateral sides of pronotum, pinkish tegmina. Head with round vertex and moderately inclined frons; interocular distance narrower than an eye, the horizontal diameter of an eyes 4.5 times wider than the distance; scape as long as wide; fastigium of vertex shorter than basal width, longitudinally depressed in front; frontal ridge as wide as antennal socket, barely reaching to clypeal suture; lateral facial carinae distinct; subocular groove shorter than vertical diameter of an eye. Pronotum a little longer than middle femur, its anterior margin truncated, posterior margin weakly emarginated; three transverse sulci distinct, prozona 2.2 times longer than metazona; longitudinal lateral carinae indistinct, median carina rather distinct in metazona finely punctated; lateral lobe of pronotum shorter than pronotal length. Tegmina pinkish elliptical, micropterous, a half

shorter than pronotal length, barely covering tympanal area, its apex narrowly rounded. Hind wings vestigial. Prosternum bearing a short conical tubercle. Mesosternal interspace 1.2 times wider than long. Fore and middle femora shorter and thickened than female. Fore tibia with 3−4 pairs of, middle tibia with four outer, six inner ventral spines apically. Hind femur with darkish genicular lobes and crescent. Hind tibia with 10−11 pairs of dorsal spines. Hind barsitarsus shorter than remaining two tarsomeres combined length. Abdominal tympanum largely oval, 1.5 times longer than wide, without covering lobe or inner cavity. Last abdominal tergite with a pair of large black furculae, its length longer than basal width, the apice blunted. Epiproct triangular, a little longer than basal width; dorsal surface with a longitudinal depressions in mid and with a pair of lateral projections subasally. Cercus simply conical, 2.5 times longer than basal width, its apex narrowly tapered, not surpassing hind margin of epiproct. Subgenital plate cone−shaped, as long as basal width, its apex narrowly tapered, darkened. **<♀>** Larger and robuster than male. Interocular distance wider than male, as wide as a half of horizontal diameter of an eye, subocular groove longer than vertical diameter of an eye. Mesosternal interspace two times wider than long. Tegmina shorter than male, not covering tympana or slightly touching it. Subgenital plate longer than wide, its hind margin triangularly projected. Ovipositor with narrow and slender valves, its apice toothed with two teeth; dorsal valves longer than epiproct; ventral valve longer than lateral basivalvular sclerite.

Distribution. Korea, Northeast China, Russian Far East.

Remarks. Except for the male's genitalia, remaining characters including measurements are in the scope of above *A. beybienkoi.* However, the range seems rather resided to northern part of the Korean peninsula. In this context, the *A. miramae* reported from Is. Tsushima by Kanô (1988) is suspected to the *A. beybienkoi,* thus further detailed examination for that is needed.

Subfamily Cyrtacanthacridinae 각시메뚜기아과

Generally large sized locusts. Prosternal tubercle often recurved backwards and pointed. Lateral lobes of mesosternum relatively narrower, inner margin nearly right angle, or lower angle at inner margin acute. external apical spine of hind tibiae always absent. No stridulatory specialization is present. Most members are found in the Old World.

Genus *Nomadacris* Uvarov 각시메뚜기속

1923. Annals and Magazine of Natural History, London, (9)11: 143. Type species: *Acrydium septemfasciatum* Audinet-Serville 1839.

?= *Patanga* Uvarov 1923. Annals and Magazine of Natural History, London. (9)11: 143. Type species: *Gryllus* (*Locusta*) *succinctus* Linnaeus 1763. [Key 1986] (Synonymic issue see Key and Rentz 1994)

Diagnosis. Body yellowish brown, with light yellow longitudinal stripe in the middle of dorsum. Cross vein almost perpendicular to longitudinal veins on the apical part of tegmen; reticulation of the basal half of elytra unusually fine and dense, the cells elongate (Uvarov 1923). Male cerci wider at base, gradually narrowed to apex, slightly compressed. Seven species are known in the world.

111. *Nomadacris japonica* (Bolívar 1898) 각시메뚜기 (Figs. 279-280, 284)

Acridium japonicum Bolívar 1898. Annali del Museo Civico di Storia Naturale 'Giacomo Doria', Genova, 39(19): 98. "Japan: Yokohama". Holotype ♂ in Museo Civico di Storia Naturale, Genova.

Gryllus (*Locusta*) *succinctus* nec Linnaeus 1763. Centuria Insectorum Rariorum, 6: 15, No. 31. "Java". Neotype ♂ in The Natural History Museum, London.

Korean records. ***Acridium japonicum***: Burr 1898: 29 ("Port Hamilton"); Okamoto 1924: 55 ("Quelpart"); ***Patanga japonica***: Doi 1932: 35; Bey-Bienko and Mishchenko 1951: 247; Mishchenko 1952: 493, Figs. 140, 141, 144, 145, 147; Cho and Lee 1959: 11 (Gwangneung); Cho 1963: 162 (Is. Jejudo); Ju 1969: 25 (North Korean check list); Seok 1970: 176 (Is. Jejudo); Lee and Lee 1983: 5 (taxonomy); Inoue 1985: 108, Figs. 27, 58, 89 (taxonomy with karyomorphology); Tadauchi 1989: 56 (Japanese check list); Kwon and Huh 1994: 51 (Korean check list); Huh and Kwon 1995: 11 (Is. Jejudo); Moon and Yoon 1996: 52 (KEI); Kwon et al. 1996: 105 (Korean species list); Bae 1998: 198; Hua 2000: 39 (Chinese list); ***Patanga succincta***: Haku 1937: 73 (Daegu); Cho et al. 1968: 240; Ju 1969: 25 (North Korean check list).

Specimens examined. **<GW>** 2♂2♀, rearing, Gilgokcheon Nogok-3ri Wondeok Samcheok, 24 ix-31 xii 2005, Kim TW (SSU); **<GG>** 1♀, Is. Baegado Ongjin Incheon, 29 vii 1956, Kim HK (EU); **<CB>** 3♀, Santoji Sojeong-ri Gunbuk Okcheon, 29 v 1991, Kim JI and Jeon SH (SSU); **<CN>** 1♀, Mt. Gyeryongsan Gongju, 23 iv 1973, Yeom BH (EU); 1♀, Singwan-dong Gongju, 6 vi 2003, Han JH (SSU); 1♂, Mt. Cheontaesan Geumsan, 23 iv

1972, Lee NS (EU); 1♀, Biin Seocheon, 22 vii 1971, Kim CS (EU); 1♀, Yeondo Taean, 22 vii 1971, Park JH (EU); 1♀, Baramarae beach Taean, 30 ix 2006, Kim TW (SSU); **<GB>** 1♀, Jikjisa Gimcheon, 22 x 1972, Cho AH (EU); 1♀, Uljin, 30 vi 1972, Han IW (EU); 1♀, Geumhogang riverbed Mutae Daegu, 27 i 2002, Cho BJ (SSU); **<GN>** 1♀, Banwol-dong Masan, 28 iv 2004, Yoo IS (SSU); 1♂, Yongdang-ri Wondong-myeon Yangsan, 21 x 1994, Anonym (SSU); 1♀, Is. Galdo Tongyeong, 21 vii 1978, Nam SH (KU); 1♂, Is. Yokjido Tongyeong, 4 vi 1978, Yoon SJ (EU); 1♀, Mt. Gudeoksan Busan, 4 viii 1971, Kim SA (EU); 1♂, Daeyeon-dong Busan, 22 iv 1972, Lee NS (KU); **<JB>** 6♂ 2♀, Bongeun-ri Buan, 10 x 1981, Chang KS (SSU); 1♀, Sannae-myeon Buan, 28 vi 1990, Lee EJ (SSU); **<JN>** 1♀, Mt. Baekwunsan Gwangyang, 19 v 1991, Jeon YP (SSU); 1♂, Piagol Mt. Jirisan Toji-myeon Gurye, 29 ix 2001, Kim TW (SSU); 1♀, Mt. Yudalsan Mokpo, 17 x 2004, Kim TW (SSU); 1♀, Is. Bigeumdo Sinan-gun, 4 iii 2006, Anonym (SSU); 1♂, Mt. Gubongsan Yeosu, 22 v 1998, An EK (SSU); 3♂2♀, Is. Geomundo Yeocheon, 13 vii 1984, Kim JI and Chang KS (SSU); 8♂3♀, Dongsan Jangseong, 30 iii 1974, Kim JH (KU); 1♀, Is. Sangjodo Jindo, 26 vii 1983, Kim JI (SSU); **<JJ>** 1♂, Gwaneumsa, 9 vii 1965, Lee SD (EU); 1♂3♀, Andeokgyegok Gamsan-ri Andeok-myeon Namjeju, 21 iv-13 vi 2004, Kim JK and Kim TW (SSU); 2♂, Mt. Sanbangsan Sagye-ri Andeok-myeon Namjeju, 20-22 iv 2004, Kim JK and Kim TW (SSU); 2♂, Donnaeko, 16 ii 1986, Chang KS (SSU); 9♂5♀, Is. Saeseom, 16 ii 1976, No BJ et al. (EU); 1♂1♀, Jeongbangpokpo Dongheungdong Seoguipo, 9 vii 2002, Kim TW (SSU); 1♂3♀, Paradise Hotel Bomokdong Seoguipo, 14 i 2003, Rhee HW (SSU); 5♂3♀, Seongsan, 22 xi 1999, Yoon SJ (EU); 2♂1♀, Jungmun, 4 v 1978, Nam SH and Lee JW (KU); 1♀, Pyoseon, 14 vii 1987, Yoon SJ (EU); 1♀, Baeknokdam Mt. Hallasan, 11 vii 1979, Kim HJ (EU).

Description. **<♂>** Body coloration reddish or bright brown, a yellowish bright median longitudinal stipe present on dorsum from vertex, pass along pronotum to overlapping tegmina, but rarely it absent. Head rounded, below eyes black vertical stripe present; interocular distance narrower as wide as a half of horizontal diameter of an eye; vertex depressed anteriorly, lateral carinulae diverged; foveolae indistinct, pitted; scape wider than long; antennal socket as wide as frontal ridge; facial carina distinct meet with clypeal suture; subocular groove shorter than vertical diameter of an eye. Pronotum a little longer than middle femur, with weakly convex anterior margin and widely protruding posterior margin; integument coarsely punctated; median longitudinal carina cut by three transverse sulci, prozona a little shorter than metazona; lateral carinae absent; lateral lobe of pronotum

as deep as pronotal length, with bright coloration on mid and lower margin. Tegmina macropterous, surpassing hind knee, its apex rather truncated dorsally; precostal area with bright coloration in base; radial, medial and cubital areas with black maculae. Hind wings tinged with pink in basal half. Head and pronotum, ventral part of body with white hairs developed. Prosternum with a strong conical tubercle. Mesosternal interspace rectangular, 1.2 times longer than width. Fore and middle femora short and thicker than female. Fore tibia with 4−6, middle tibia with 5−7 pairs of ventral spines apically. Hind femur with denticulated dorsal and ventral carinae; outer dorsal carinular denticualted, darkish in basal half. Hind tibia with eight outer, 11 inner dorsal spines, its apex black, base white. Tarsal aroilum largely rounded, longer than claws. Abdominal tympanum largely ovoid, 1.2 times longer than wide, subtympanal lobe not noticeable. Epiproct longer than basal width, posteriorly narrowed, its hind margin triangularly pointed with a pair of lateral projected lobes; median longitudinal furrow present in basal half. Cercus 4.5 times longer than middle width, compressed horn−shaped, surpassing epiproct, its apex tapered dorsally. Subgenital plate elongated cone−shape. **<♀>** Larger than male. Subgenital plate longer than wide. Ovipositor hook−shaped with strongly curved valves, the serration unclear; ventral valves as long as epiproct; lower valves with basal teeth; basal plate three times longer than wide. **<Measurements>** BL ♂ 30.0−40.0, ♀ 38.2−50.5 (HTL ♂ 34.0−46.0, ♀ 45.5−60.5); PL ♂ 6.8−9.0, ♀ 8.7−11.0; TL ♂ 26.6−36.7, ♀ 35.4−47.8; HFL ♂ 17.0−21.4, ♀ 21.2−29.2.

Distribution. Korea, Japan, East China, Taiwan, North India.

Subfamily Calliptaminae 땅딸보메뚜기아과

Sexual difference clear, males much smaller than females. Hind legs robust, femora deep. Male cerci form narrow elongate, bilaterally flattened, apically bi− or trilobes claspers. Temporal foveolae absent; lateral pronotal carinae present. Prosternal tubercle present. Outer external apical spine of hind tibiae absent. Epiphallus disc−shaped, lophi absent. Lack any specialized sound−producing organs. This subfamily found only in the Old World.

Genus *Calliptamus* Audinet−Serville 땅딸보메뚜기속

1831. Annales des Sciences Naturelles, Paris, 22(86): 284. Type species: *Gryllus* (*Locusta*) *italicus* Linnaeus 1758.

Diagnosis. Surface of pronotum relatively flat, carinae distinct. Male cercus trilobed apically, upper lobe broad and laminar, lower lobe smaller, middle lobe bearing an inwardly directed hook; lower pair of lobes show progressive fusion giving a bilobed apex. 15 species are known in the Palaearctic Region.

112. *Calliptamus abbreviatus* Ikonnikov 1913 땅딸보메뚜기 (Figs. 277-278, 287)

Calliptamus abbreviatus Ikonnikov 1913. Korea Acrid.: 21. "Russia: Primorskiy". Holotype ♂ in Zoological Institute of the Russian Academy of Sciences, St. Petersburg.

= *Calliptamus doii* Lee and Lee 1985. Korean Journal of Entomology, 15: 24, Figs. 2-3. "Korea: Mt. Naeyeonsan". Holotype ♂ in GBU. **syn. nov.**

Gryllus (*Locusta*) *italicus* nec Linnaeus 1758. Systema Naturae per Regna tria naturae (10th ed.), 1: 432. No. 49. "Italy". Neotype ♂ in The Natural History Museum, London.

Korean records. ***Caloptenus italicus***: Burr 1898: 29 ("Port Lazareff"); ***Calliptamus abbreviatus***: Ikonnikov 1913: 21 ("Fusan"); ***Calliptamus italicus***: Furukawa 1930: 291 ("Fusan, Kwainei"); Doi 1932: 35; ***Calliptamus abbreviatus***: Furukawa 1939: 102, 171; Bey-Bienko and Mishchenko 1951: 254, Fig. 529; Mishchenko 1952: 531, Fig. 496; Cho and Lee 1959; 13 (Gwangneung: 쪄리메뚜기); Mishchenko 1968: 489; Tsyplenkov 1970: 214 (North Korea); Lee and Lee 1983: 5 (taxonomy); Lee and Lee 1985: 22, Fig. 1 (taxonomy); Storozhenko 1986: 296, Figs. 136(7), 137(7), 138(12); Kwon and Huh 1994: 52 (Korean check list: 한국땅딸보메뚜기); Kwon et al. 1996: 105 (Korean species list); Yin et al. 1996: 119 (synonymic catalogue); ***Calliptamus doii***: Lee and Lee 1983: 5 (taxonomy); Kwon and Huh 1994: 52 (Korean check list: 도이땅딸보메뚜기); Otte 1995: 155 (Orthoptera species file); Kwon et al. 1996: 105 (Korean species list); Yin et al. 1996: 120 (synonymic catalogue).

Specimens examined. **<HN>** 1♂, Mt. Suyong-san, 27 ix 1978, A. Vojnits and L. Zombori, No. 413 (Hungarian Natural History Museum, Budapest); 1♀, Haeju Mt. Suyongsan, 31 vii 1982, L. Forro and L. Ronkay, No. 893 (Hungarian Natural History Museum, Budapest); **<RG>** 4♂4♀, Hyesan cemetery, 8 x 1978, A. Vojnits and L. Zombori, No. 474 (Hungarian Natural History Museum, Budapest); **<PN>** 1♀, De-sang san 12 km NE from Pyongyan, 8 viii 1971, S. Horvatovich and J. Papp, No. 223 (Hungarian Natural History Museum, Budapest); 1♂, Lyong-ak san 25 km W from Pyongyan, 31 viii 1971, S. Horvatovich and J. Papp, No. 223 (Hungarian Natural History Museum, Budapest); 3♀, Pyongyang city: Mt. Daesong-san 10 km NE of Pyongyang, 23 ix 1978, A. Vojnits and L. Zombori, No. 389

(Hungarian Natural History Museum, Budapest); 1♀, Pyongyang city Mt. Daesongsan, 20 ix 1979, H. Steinmann and T. Vasarhelyi, No. 553 (Hungarian Natural History Museum, Budapest); **<GW>** 1♂, Samhwasa Donghae, 26 viii 1997, Kim JI et al. (SSU); 1♀, Sogeumgang Myeongju, 16 ix 1971, Kim JI (SSU); 2♂, Choenmi-ri Yanggu, 6 x 1972, Kim JI (SSU); 1♂, Ssangyong Yeongwol, 7 ix 1998, Anonym (NIAST); 1♂, Nakcheon-ri Imgye-myeon Jeongseon, 5 viii 1977, Yoo SH (SSU); 1♀, Gangchon, 4 ix 1982, Min HK (SSU); 1♂1♀, Haesanryeong Hwacheon, 3 x 2006, Kim TW (SSU); **<GG>** 1♂6♀, Mt. Pakyon 20 km NE from Kaesong both sides of and near to the road between Kaesong and Pakyon pokpo, 10 ix 1971, S. Horvatovich and J. Papp, No. 254 (Hungarian Natural History Museum, Budapest); 1♂4♀, Mt. Pakyon 20-21 km NE from Kaesong both sides of and near to the road between Kaesong and Pakyon pokpo, S. Horvatovich and J. Papp, 11 ix 1971, No. 260 (Hungarian Natural History Museum, Budapest); 1♀, Nogok Gapyeong, 24 vii 1985, Kwon HJ (SSU); 1♂, Sangpan-ri Gapyeong, 7 viii 1982, Choi YH (SSU); 2♀, Eommi-ri Gwangju, 23 x 1982, Chang KS (SSU); 1♂, Hwajeop Jinjeop Namyangju, 5 ix 1982, Kim JI (SSU); 1♀, Namhansanseong, 17 x 1980, Kim YH (SSU); 1♀, Daeseong-ri, 10 viii 1959, Kim HK (EU); 1♀, Mt. Soyosan Dongducheon, 1 ix 1985, Kim MA (SSU); 1♂1♀, ibid. 21 x 1980, Kim YH and Choi DS (SSU); 2♂, Munsan Paju, 10 x 1972, Kim JI (SSU); 1♂, Mt. Baekwunsan, 6 viii 1984, Kim ML (KU); 1♂1♀, Byeokje, 12 ix 1982, Jeong HJ (SSU); 1♀, Yangsu-ri, 16 ix 1972, Jeong YN (EU); 1♀, Gwangneung Yangju, 21 viii 1975, Kim JH (SSU); 1♀, Mt. Yongmunsan Yangpyeong, 13 ix 1987, Kang JY (SSU); 1♀, ibid. 10 x 1970, Kim MD (KU); 5♂5♀, Mt. Godaesan Yeoncheon, 31 viii 1967, Kim JI and Oh JK (SSU); 1♀, ibid. 12 viii 1987, Yoo HJ (SSU); 1♂, Is. Guleopdo Ongjin, 5 viii 1982, Kim JI (SSU); 1♂1♀, Is. Seongapdo Ongjin, 4 viii 1982, Kim JI and Chang KS (SSU); 1♀, Yongin, 8 x 1987, Yoon JH (SSU); 1♀, Wondang, 23 viii 1972, Oh SH (EU); 7♂15♀, Eungogae Gwangju, 23-30 x 1982, Park HM et al. (SSU); 1♂, Ilyeong, 25 ix 1981, Seo YM (SSU); 1♂1♀, Mt. Cheonmasan Namyangju, 30 viii 1970, Park JS and Kim JI (SSU); 1♀, Mt. Gamaksan Paju, 24 viii 1967, Kim JI (SSU); 1♀, Rodriguez shooting range Yeongpyeong Pocheon, 21 ix 1996, Kim JI and Park HC (SSU); 3♂1♀, Mt. Achasan Seoul, 5-19 ix 1971, Kim JI et al. (SSU); 3♂3♀, Mt. Yongmasan Seoul, 5-22 ix 1971, Kim JI et al. (SSU); 1♀, Is. Mueuido Incheon, 4 x 2006, Kim TW (SSU); 1♀, Is. Yongyudo Incheon, 19 xi 2006, Kim TW (SSU); **<CB>** 2♀, Sinwon-ri Goesan, 25 vi 1986, Chang KS (SSU); 2♂4♀, Daemok-ri Mt. Songnisan, 9-10 viii 1990, Kim JI et al. (SSU); 1♀, Yongam-ri Hwanggan Yeongdong, 4-5 viii 2001, Kim AY (SSU); 2♂1♀,

Sojeong-ri Gunbuk Okcheon, 23 x 1990, Park HC (SSU); 2♂, Mt. Jangryongsan Geumsan-ri Gunseo-myeon Okcheon, 26 vii 2002, Kim TW (SSU); 1♀, Deokgok-ri Jecheon, 22 x 1995, Jeon YS (SSU); 1♀, Mt. Cheondeungsan Sancheok-myeon Chungju, 5 viii 2002, Kim TW (SSU); **<CN>** 1♀, Mt. Gyeryongsan Gongju, 20 viii 1993, Lee KA (SSU); **<GB>** 1♀, Seonginbong Is. Ulleungdo, 9 vii 1986, Kim YS (SSU); 4♂1♀, Mt. Juwangsan Cheongsong, 30 vii 1983, Chang KS and Park HK (SSU); 1♂, Dowon-dong Dalseo-gu Daegu, 30 viii 1998, Choi JS (SSU); **<JB>** 1♂1♀, Mt. Naejangsan Jeongeup, 17 ix 2000, Kim SS (SSU); **<JN>** 1♂1♀, Mt. Baekyangsan, 4-5 viii 1974, Kim JI and Nam SH (SSU); 1♂1♀, Baekpo-ri Yeocheon, 19 viii 1998, An EK (SSU); 1♀, Jukpo-ri Yeocheon, 4 viii 1998, An EK (SSU); 1♂, Dokcheon Yeongam, 21 vii 1997, Kim HJ (SSU); **<JJ>** 2♂, Donnaeko, 15 vii 1990, Park HC and Yoon TJ (SSU); 1♀, Seoguipo, 8 viii 1973, Kim BH (KU); 1♂, Seongsan, 22 xi 1999, Yoon SJ (EU); 3♀, Dokkabi road Nohyeong-dong Jeju, 11 viii 2004, Seung JB and Jeong BH (SSU); 1♀, Is. Jejudo, 2 viii 1959, Lee KR (KU).

Description. <♂> Body coloration basically brown, occasionally lateral sides of pronotum and vannal fold of tegmina forming a pair of bright longitudinal stripes (f. *marginellus* sensu Jago 1963). Head with round vertex and large eyes; interocular distance narrower, as wide as a thirds of horizontal diameter of an eye; vertex with feeble median longitudinal carinular in mid and a pair distinct lateral carinular between eyes anteriorly, between them depressed and merging with frontal ridge; scape as long as wide; antennal socket narrower than frontal ridge; middle antennomeres two times longer than middle width; vertical diameter of an eye three times longer than subocular groove. Pronotum as long as middle femur, with distinct median and lateral carinae; three transverse sulci clearly cut the longitudinal carinae; prozona as long as metazona; metazona with numerous punctation; lateral lobe of pronotum deeper than pronotal length; anterior margin truncated, posterior margin obtusely triangular. Tegmina mesopterous, slightly shorter than abdominal end, narrowly tapered towards apex, its apex small rounded; darkish maculae scattered. Hind wings transparent. Prosternum with a large tubercle, its apex rounded. Mesosternal interspace 1.5 times wider than long. Fore tibia with six, middle tibia with 7-8 pairs of ventral spines apically. Hind tibia with nine pairs of dorsal spines. Hind femur much thicker, three times longer than the greatest width, its dorsal carina with small denticulations; hind knee with black crescent; hind tibia and ventum of hind femora reddish. Abdominal tympanum large ovoidal, 1.5 times wider than long, with small subtympanal lobe. Terminalia

largely developed. Last abdominal tergite thicker and longer than prior abdominal tergite. Epiproct triangular, longer than basal width, its apex pointed; dorsal surface with longitudinal median and lateral furrows, in mid cut by transverse furrow. Cercus compressed finger-shape, five times longer than middle width, surpassing subgenital plate; apical part bilobed, upper one larger than longer than lower one; lower lobe shallowly splitted with two denticles. Subgenital plate short conical. **<♀>** Much larger than male. Vertical diameter of an eye 1.5 times longer than subocular groove. Mesosternal interspace two times wider than long. Subgenital plate two times longer than wide. Ovipositor hook-shaped with thick valves with not distinct marginal serration; dorsal valves as long as epiproct; ventral valves with basal teeth; basal plate 1.5 times longer than wide. **<Measurements>** BL ♂ 17.6-23.0, ♀ 26.8-33.5; PL ♂ 3.6-5.2, ♀ 5.2-7.8; TL ♂ 8.5-13.2, ♀ 16.6-22.3; HFL ♂ 10.0-13.2, ♀ 15.5-19.2.

Distribution. Korea, Northeast China, Russian Far East, Mongolia.

Remarks. I had studied one of the type presumed of *Calliptamus doii* (GB: Mt. Naeyeonsan, 30 ix 1979) deposited in DCU, but the male's abdominal part was lost, probably not kept with body after the dissection. The distinguished characters of *doii*, ie. 1) the apical shapes of male cercus were rather variable things are just considered in the scope of small individual variations. See the other examples of *Calliptamus* spp. presented by Jago (1963), 2) hind wing's colorlessness is the same character with this *C. abbreviatus*. Moreover, male's genitalic characters are not clearly distinguished between both, thus above new synonymy is established.

Subfamily Eyprepocneminae 등검은메뚜기아과

Rather similar to the Calliptaminae, but differ having more slender hind femora; apical third to two-fifths slender and lengthened. Male cerci variable: conical, hook-like, flattened and leaf-like. Pronotum with usually black velvet stripe on dorsal surface. No stridulatory specialization. This subfamily confined to the Old World.

Genus *Shirakiacris* Dirsh 등검은메뚜기속

1958. Annals and Magazine of Natural History, London, 12(10): 861. Type species: *Euprepocnemis shirakii* Bolívar 1914.

Diagnosis. Vertex without median carina. Male cerci compressed, basal and apical part all

wider, narrowed in the middle, apex widely rounded. Three species are known in the East Asia.

113. *Shirakiacris shirakii* (Bolívar 1914) 등검은메뚜기 (Figs. 275–276, 288)

Euprepocnemis shirakii Bolívar 1914. Trabajos del Museo de Ciencias naturales, Madrid (Serie Zoologia), 20: 11. "Japan: Yokohama". Syntype in Instituto Espanol de Entomologia, Madrid.

Gryllus plorans nec Charpentier 1825. Horae entomologicae, adjectis tabulis novem coloratis: 134. "Spain: Barcelona". Neotype ♂ in Museum d'Histoire Naturelle, Geneva.

Korean records. ***Euprepocnemis*** [!] ***plorans***: Ikonnikov 1913: 22; ***Euprepocnemis*** [!] ***shirakii***: Bey-Bienko 1929: 107; Doi 1932: 35; Haku 1937: 73 (Daegu); Bey-Bienko and Mishchenko 1951: 269, Fig. 235; Mishchenko 1952: 587, Fig. 170; Kang and Son 1958: 21 (chromosomes); Cho 1959: 174, Fig. 55 (manual); Cho 1965: 10 ("Dagelet"); Cho 1969: 730, pl. 48 (illustrated encyclopedia); Tsyplenkov 1970: 214 (North Korea); Lee and Ko 1988: 204 (Is. Oeyondo); ***Eyprepocnemis shirakii***: Wu 1935: 203 (Catalogus Insectorum Sinensium); Inoue 1985: 132, Figs. 26, 57, 88 (taxonomy with karyomorphology); Lee and Lee 1985: 27, Fig. 4 (taxonomy); Tadauchi 1989: 54 (Japanese check list); Park 1997: 207 (development); Hua 2000: 37 (Chinese list); ***Euprepocnemis shiraki*** [!]: Kamiya and Miyasaka 1938: 66; Cho and Lee 1959; 7 (Gwangneung: 시라끼메뚜기); Ju 1969: 24 (North Korean check list); ***Shirakiacris shirakii***: Dirsh 1958: 862, Figs. 8, 9; Storozhenko 1986: 296, Figs. 137(6), 138(13); Kwon and Huh 1994: 52 (Korean check list); Huh and Kwon 1995: 11 (Is. Jejudo); Moon and Yoon 1996: 52 (KEI); Kwon et al. 1996: 105 (Korean species list); Yoo et al. 1996: 82 (karyotype); Bae 1998: 194; Hua 2000: 39 (Chinese list).

Specimens examined. <HN> 1♂, Mt. Suyongsan, 27 ix 1978, A. Vojnits and L. Zombori, No. 413 (Hungarian Natural History Museum, Budapest); 1♂1♀, Songhwa 50 m, 17 ix 1979, H. Steinmann and T. Vasarhelyi, No. 540 (Hungarian Natural History Museum, Budapest); **<RG>** 1♀, river Karim 10 km NEE from Bochonbo 1100 m, 27 vii 1975, J. Papp and A. Vojnits, No. 297 (Hungarian Natural History Museum, Budapest); **<JG>** 1♀, Mt. Myohyangsan river Chongchon-gang valley, 12 ix 1980, L. Forro and GY. Topal, No. 640 (Hungarian Natural History Museum, Budapest); **<PN>** 5♂1♀, Lake Taesongho, 13 ix 1979, H. Steinmann and T. Vasarhelyi, No. 525, 528 (Hungarian Natural History Museum, Budapest); **<GW>** 1♀, Gugokpokpo Gangchon, 18 ix 1982, Park HM (SSU); 1♀, Mt. Seoraksan Sokcho, 20 vii 1998, Nam MA (SSU); 1♀, Myeongryun-dong Wonju, 8 ix 1991,

Kim HY (SSU); 1♂, Micheongol Inje, 8 viii 1996, Paik JE (SSU); 1♂1♀, Punch bowl Seohwa Inje, 30 ix 1967, Kim JI (KU); 1♂, Jinburyeong, 3 viii 1991, Cho HJ (SSU); 1♂, Haesanryeong Hwacheon, 3 x 2006, Kim TW (SSU); 1♀, Nam-myeon Hongcheon, 9 ix 1990, Lee EJ (SSU); **<GG>** 3♂2♀, Mt. Myeongjisan Gapyeong, 23 vii-23 ix 1989, Lee OJ et al. (SSU); 1♂, Is. Boleumdo Ganghwa, 18 viii 1987, Yoo HJ (SSU); 1♂, Is. Ganghwado Gimpo, 20 x 2004, Kim TW (SSU); 1♂, Munsan, 9 x 1972, Kim CW (KU); 1♀, Seohyeon Bundang Seongnam, 3 viii 1998, Kim MK (SSU); 1♂1♀, Sajanggol Dori Jeomdong-myeon Yeoju, 29 viii 2003, Yeo JD (KU); 1♀, Yongin Everland Dogok Yongin, 22 viii 2006, Kim AY (SSU); 1♂, Munbal-ri Paju, 7 ix 1998, Im SY (SSU); 1♂, Huigok-ri Pyeongtaek, 9 viii 1989, Lee HS (SSU); 1♀, Rodriguez shooting range Yeongpyeong Pocheon, 21 ix 1996, Kim JI and Park HC (SSU); 1♂2♀, Mt. Dobongsan Dobong-gu Seoul, 8 x 1996, Lee SY (SSU); 1♀, Is. Yongyudo Incheon, 19 xi 2006, Kim TW (SSU); **<CB>** 1♂, Yongam-ri Hwanggan-myeon Yeongdong, 4-5 viii 2001, Kim AY (SSU); 1♀, Sojeong-ri Gunbuk Okcheon, 23 x 1990, Kim JI (SSU); 1♂, Dongi-myeon Okcheon, 29 ix 1993, Lee KA (SSU); 1♀, Baekwun-ri Okcheon, 13 ix 1981, Park MY (SSU); 1♀, Onyang, 27 ix 1988, Jeon NY (SSU); 1♀, Jecheon, 22 viii 1984, Han YS (SSU); 1♀, Deokgok-ri Jecheon, 15 ix 1996, Jeon YS (SSU); 1♀, Mipyeong Cheongju, 18 x 1992, Park HH (SSU); 1♀, Mt. Gyemyeongsan Chungju, 24 viii 2000, Kim JI (SSU); 1♀, Danwol-dong Chungju, 14 ix 1996, Jeon YH (SSU); **<CN>** 1♂, Cheondong Dong-gu Daejeon, 8 viii 1997, Im HJ (SSU); 1♂, Mt. Gyeryongsan Gongju, 3 viii 1973, Kim JI (KU); 1♂, Magoksa Gongju, 26 vii 1981, Oh KH (SSU); 1♀, Mt. Seongjusan Boryeong, 19 ix 1998, Yoo JS (SSU); 1♀, Wungcheon Boryeong, 15 viii 1989, Jang EJ (KU); 1♀, Seosan, 21 viii 1968, Hong TS (KU); 1♂, Onseok-dong Seosan, 12 ix 1997, Choi KJ (SSU); 1♀, Yeongin Asan, 15 viii 1987, Ha SH (SSU); 1♂, Hyudae-ri Asan, 20 ix 1992, Kim HJ (SSU); 1♀, Hongseong, 23 x 1983, No YM (KU); **<GB>** 1♂, Bogyeongsa Pohang, 31 vii 1983, Park HK (SSU); 1♀, Wonri Gyeongsan, 19 x 1994, Anonym (SSU); 2♂1♀, Is. Ulleungdo, 12 viii 1971, Kim CW and Kim JI (KU); 2♂2♀, ibid. 12 viii 1976, Yoon IB (KU); 1♀, ibid. 15 viii 1997, Lee HJ (SSU); 1♀, Mt. Juwangsan Cheongsong, 5 viii 1994, Choi BH (SSU); 1♂, Hyeonseo Cheongsong, 22 ix 1991, Kim YA (SSU); 1♀, Mowon-dong Dalseo-gu Daegu, 31 viii 1998, Choi SS (SSU); **<GN>** 1♂, Jangseungpo Is. Geojedo, 25 ix 1983, Kim MR (KU); 2♂, Namsang Geochang, 3 ix 1989, Jeong GD (SSU); 1♀, Jinyeong Gimhae, 26 ix 1996, An EK (SSU); 1♂, Deokgye, 18 viii 1996, Park EK (SSU); 1♂, Jungri Masan, 3 viii 1994, Cho SJ (SSU); 1♂, Yongseong-ri Samryangjin

Milyang, 20 x 1994, Anonym (KU); 1♂, Yeonsan-dong Busan, 20 viii 1985, Kim HS (SSU); 1♀, Kaebatgol Yaeum Ulsan, 22 ix 1991, Shim SJ (SSU); 3♀, Burim Euiryong, 5-11 viii 1982, Im CS (SSU); 1♂, Cheonggoksa Galcheon-ri Geumsan-myeon Jinyang, 24 ix 1994, Jeon HJ (SSU); 1♀, Goajoa-dong Jinju, 20 viii 1992, Kim KY (SSU); 1♀, Banrim-dong Changwon, 23 viii 1994, Kim AR (SSU); 1♀, Donam-dong Chungmu, 11 ix 1992, Shin MJ (SSU); 1♀, Daechi Haman, 17 ix 1983, Kim MR (SSU); **<JB>** 1♂, Mt. Naejangsan, 18 x 1980, Woo KS (SNU); 1♂2♀, Bongeun-ri Buan, 10 x 1981, Chang KS (SSU); 1♂, Mt. Maisan Jeonju, 18 viii 1992, Kwak YK (SSU); 1♀, Sanoe-myeon Jeongeup, 1 ix 1998, Park HY (SSU); 1♀, Yongdong Jeongeup, 5 x 1998, Jeong YW (SSU); 1♂, Jeongju Jeongeup, 17 viii 1989, Bae HS (SSU); **<JN>** 1♀, Mt. Mudeungsan Gwangju, 29 ix 1984, Chang KS (SSU); 1♀, Taein Donggwangyang, 20 ix 1994, Jeong HJ (SSU); 1♂, Songgwangsa, 9 viii 1976, Nam SH (KU); 1♀, Hakdong Yeocheon, 15 viii 1990, Jeon HJ (SSU); 2♀, Is. Hoengdo Yeonggwang, 19 viii 1989, Kim JI and Lee OJ (SSU); 2♀, Wolgok-ri Yeongam, 19 viii 1986, Park SY (SSU); 1♂, Hwangryong-myeon Jangseong, 9 viii 1996, Kim MJ (SSU); 2♂, Is. Heuksando, 16 viii 1977, Anonym (DCU); **<JJ>** 1♀, Gwaneumsa, 4 viii 1955, Lee BJ (KU); 1♂, Seoguipo, 25 vii 1985, Anonym (KU); 1♂, Seondol, 10 viii 1988, Lee OJ (SSU); 1♂, Is. Jejudo 900 m, 22 ix 1984, Kim YS (SSU); 1♀, Mt. Hallasan Northern slope, 4 viii 1955, Park SU (KU).

Description. <♂> Body coloration dark brown. Head with round vertex and moderately inclined, punctated frons; eyes with longitudinal seven strips; antenna longer than head and pronotum combined length; middle antennomeres three times longer than middle width; interocular distance narrower, as wide as a thirds of horizontal diameter of an eye; scape as wide as long; frontal ridge more obscure towards clypeus; subocular groove blackish, as short as a thirds of vertical diameter of an eye. Pronotum as long as middle femur, with distinct median carina; lateral carinae bright yellowish, distinct on prozona, diminished on metazona; three transverse sulci cut longitudinal carinae, prozona as long as metazona punctated; anterior margin truncated, posterior margin obtusely protruding, its dorsal disk always darkish brown; lateral lobe of pronotum slightly deeper than pronotal length. Tegmina macropterous surpassing hind knee, with longitudinal dark speckles, its apex rounded. Hind wings transparent. Prosternum with a large tubercle, its apex round and rather swollen apically. Mesosternal interspace narrower, five times longer than wide, mesosternal lobe rectangular, as wide as long. Fore and middle femora much thicker than female. Fore tibia with 4-5, middle tibia with 6-7 pairs of ventral spines apically. Hind

femur with denticulated dorsal carina, hind knee with black crescent. Hind tibia with 9–10 pairs of dorsal spines, apically reddish, proximally black and white banded. Tarsal arolium rounded and much larger, longer than claws. Abdominal tympanum largely oval, 1.2 times wider than long, without subtympanal lobe. Epiproct widely triangular, longer than basal width, its lateral margins angular in mid, dorsal surface with longitudinal furrow in basal half. Cercus elongated scoop–shape, surpassing epiproct, compressed and slender in mid, its apex rounded and widened. Subgenital plate short conical. **<♀>** Larger than male. Vertical diameter of an eye two times longer than subocular groove. Mesosternal interspace 1.5 times longer than wide. Subgenital plate 1.5 times longer than wide, its hind margin undulated, and a pair of small lobe–like projection laterally. Ovipositor hook–shaped, thick in base, the serration unclear; ventral valves without basal tooth; basal plate three times longer than wide. **<Measurements>** BL ♂ 21.8–30.8, ♀ 31.6–38.5 (HTL ♂ 25.0–32.0, ♀ 36.8–40.7); PL ♂ 4.6–5.9, ♀ 6.0–6.8; TL ♂ 18.2–25.0, ♀ 27.2–32.8; HFL ♂ 13.0–17.5, ♀ 18.5–23.1.

Distribution. Korea, Japan, China, Taiwan, Russian Far East, Vietnam, India.

Subfamily Gomphocerinae 삽사리아과

Usually small grasshoppers, but remarkable stridulation produced by hind femora against tegmina. Sexual dimorphism distinct. Head with frons strongly slanted to vertical. Antennae filiform, lateral foveolae usually distinct. Stridulatory pegs on inner surface of hind femur. Tegmina rounded at apex, without raised intercalary vein. Hind wings usually transparent, without prominent cross bands. More than 1,100 species are known in the world.

Key to Tribes of Gomphocerinae

1. Foveloae absent ····· **Chrysochraontini** (p. 274)
– Foveloae distinct, largely visible from above ····· **Gomphocerini** (p. 284)

Tribe Chrysochraontini 삽사리족

Head without lateral foveloae on fastigium of vertex.

Key to Species and Subspecies of Chrysochraontini

1. Antennae filiform; pronotum with slightly incurved lateral carinae, diverging in metazona 2

– Antennae distinctly widened near the base; pronotum with parallel lateral carinae 3

2. ♂ tegmina with wide costal area, its greatest width two times of subcostal area; ovipositor with short and stouter valves, its dorsal valve with a notch on dorso–outer margin, ventral valve with a sharp tooth at the base on ventro–outer margin (Fig. 289) ..... ***Podismopsis genicularibus*** (p. 276)

– ♂ tegmina with narrow costal area, its greatest width 1.5 times of subcostal area; ovipositor with long and narrower valves, its dorsal valve without a notch on dorso–outer margin, ventral valve straight without a tooth at the base on ventro–outer margin (Fig. 289) ..... ***Podismopsis ussuriensis*** (p. 278)

3. Pronotum with distinct lateral carinae; ♂ tegminal apex round; ovipositor with short and stouter valves, its dorsal valve with a distinct rounded notch on dorso–outer margin ..... ***Chrysochraon dispar major*** (p. 279)

– Pronotum with indistinct lateral carinae than median carina; ♂ tegminal apex obliquely truncated or notched (Fig. 330); ovipositor with long and narrower valves, its dorsal valve without notch on dorso–outer margin 4

4. Antennae longer, ♂ 1.5, ♀ 1.2 times of the combined length of head and pronotum; length of middle antennomeres two times of the width; mesosternal interspace narrower than the length ..... ***Mongolotettix japonicus japonicus*** (p. 280)

– Antennae shorter, ♂ 1.2, ♀ 1.0 times of the combined length of head and pronotum; length of middle antennomeres 1.5 times of the width; mesosternal interspace as wide as the length ..... ***Mongolotettix japonicus vittatus*** (p. 284)

Genus *Podismopsis* Zubovsky 검정무릎삽사리속

1899. Trudy Russkago Entomologicheskago Obshchestva, 34: 2 (pro subgenus *Chrysochraon*). Type species: *Chrysochraon* (*Podismopsis*) *altaica* Zubovsky 1899.

= *Podismacris* Bei–Bienko 1932. Eos, Revista española de Entomologia. 8: 51, 70 (subgenus). Type species: *Podismopsis ussuriensis* Ikonnikov 1911. [Jago 1971]

Diagnosis. Vertex short, without foveolae. Antennae filiform or hardly flattened, but not widened at the base. Pronotum with distinctly roundly concave lateral carinae; median carina

intersected by only one posterior transverse groove. Male tegmina with obliquely trimmed or notched apex, usually extending beyond the middle of the hind femur and being contiguous on the medio-dorsal line. Female tegmina short and wide, 1.25-2.0 times longer than wide. 31 species are known in the Palaearctic Region, the measurements of tw Korean *Podismopsis* compared in Table 24.

114. *Podismopsis genicularibus* (Shiraki 1910) 검정무릎삽사리 (Figs. 289, 325-326, 332)

Chrysochraon genicularibus Shiraki 1910. Acrididen Japans: 17. "Japan: Sapporo". Holotype ♂ in Taiwan University, Taipei.

Korean records. ***Chloealtis genicularibus***: Doi 1932: 36 (Musanryeong); ***Chrysochraon genicularifus*** [!]: Doi 1933: 88; Ju 1969: 23 (North Korean check list); ***Chrysochraon genicularibus***: Cho 1959: 183, Fig. 69 (manual: 검정물팍삽사리); Cho and Lee 1959; 5 (Gwangneung: 반날개삽사리); Cho 1969: 738, pl. 48 (illustrated encyclopedia); ***Podismopsis (Podismopsis) genicularibus***: Kwon and Huh 1994: 52 (Korean check list); ***Podismopsis genicularibus***: Kwon et al. 1996: 105 (Korean species list); Kim and Kim 2005: 102 (taxonomy).

Specimens examined. **<RG>** 2♂, Hyesan Hotel garden Hyesan, 23 viii 1971, S. Horvatovich S. and J. Papp, No. 194 (Hungarian Natural History Museum, Budapest); 1♂, Chann-Pay plateau 1500 m Samjiyeon, 24 viii 1971, S. Horvatovich S. and J. Papp, No. 195 (Hungarian Natural History Museum, Budapest); 1♀, Mt. Baekdusan 2-6 ㎞ from Samjiyeon Hotel, 18 vii 1977, O.Gy. Dely and A. Dely-Draskovits, No. 372 (Hungarian Natural History Museum, Budapest); **<GW>** 1♂1♀, Hyangnobong Goseong, 23 viii 1992, Moon TY (KU); 2♂1♀, Myeonon-ri Bongpyeong, 5 viii 2003, Rhee HW (SSU); 1♂, Mt. Seoraksan Inje, 13 viii 1977, Yoon SJ (EU); 28♂21♀, Mt. Daeamsan Dong-myeon Yanggu, 7-8 vii 2003 Kim JK and Kim TW (SSU); 1♂, ibid. 27 viii 2003, Kim JK (SSU); 6♂1♀, Mt. Daeusan Dong-myeon Yanggu, 10 vii 2003, Kim TW (SSU); 1♂, Dusolsan Yanggu, 5 x 1972, Kim JI (KU); 2♂, Mt. Odaesan Pyeongchang, 18 ix 1971, Kim CW and Kim JI (KU); 1♂, Mt. Taebaeksan Taebaek, 23 vii 1986, Kim JI (SSU); 1♂, Mapyeong-ri Jinbu Pyeongchang, 30 vi 1985, Kim YS (SSU); 1♂, Mt. Gyebangsan Hongcheon, 17 vii 1993, Kim JI (SSU); 6♂1♀, Mt. Gwangdeoksan Naeseo-myeon Hwacheon, 4 vii 2000, Kim TW (SSU); 1♀, Mt. Heungjeongsan Bongpyeong Pyeongchang, 5 viii 1993, Park SW (SNU); **<GG>** 1♂, Silim-dong Gwanak-gu Seoul, 4 vii 1993, Yoon EY (SSU); 1♀, Mt. Umyeonsan Seocho-gu Seoul, 10 vii 1994, Shim MJ (SSU); **<GB>** 2♂, Mt. Sobaeksan

Birobong, 3 viii 1994, Moon TY (KU); 1♂, Is. Ulleungdo, 5−9 vi 1963, Anonym (SSU).

Description. **<♂>** Body coloration dark brown. Head with anteriorly projected vertex, without foveolae; frons strongly inclined; frontal ridge diminished near clypeal suture, facial carinae meet with clypeal suture; scape shorter than wide; antennal socket as wide as frontal ridge; vertical diameter of an eye a little longer than subocular groove; interocular distance two times wider than horizontal diameter of an eye in dorsal view; antennae filiform, longer than head and pronotum combined length; middle antennomeres 3.0−3.5 times longer than wide. Pronotum longer than head, as long as middle femur; anterior margin truncated, posterior margin weakly convex with a small median emargination; median longitudinal carina distinct, lateral carinae diminished on metazona, nearly parallel, slightly diverged on metazona; principle transverse sulcus distinctly cut longitudinal carinae behind of mid, prozona 1.2 times longer than metazona; metazona punctated; lateral lobe of pronotum as deep as pronotal length. Lateral outsides blackish from behind eyes pass lateral carinae of pronotum to precostal area of tegmina. Tegmina mesopterous, not reaching abdominal end, its apex dorsally truncated or with slightly concave hind margin; costal area wider, two times wider than subcostal area. Hind wings vestigial, reduced a form of small lobe−like. Prosterum with a small projection. Mesosternal interspace tow times wider than longer. For tibia with 5−6, middle tibia with six pairs of ventral spines apically. Hind femur with black knee, base of tibia black. Hind tibia with 11−12 dorsal spines. Abdominal tympanum largely ovoidal, without covering lobe. Epiproct triangular, as long as basal width, with a median transverse folding. Cercus simply conical, 2.5 times longer than basal width, as protrude as epiproct. Subgenital plate elongated conical. Epiphallus with narrow, arched bridge; ancorae moderately large; lobiform lophi with anteriorly fine denticualtion. **<♀>** Larger than male. Antennae as long as head and pronotum combined length; middle antennomeres 2.0−2.5 times longer than wide. Subocular groove 1.2 times longer than vertical diameter of an eye. Mesosternal interspace three times wider than long. Pronotum with lateral carinae incurved on prozona, widely diverged on metazona. Tegmina micropterous, ovoidal, not overlapping dorsally; its apex pointed, a little surpassing second abdominal tergite. Hind femur with black inner surface in basal half, ventral aspects reddish. Lateral sides of abdomen black darkish. Subgenital plate longer than wide, with triangular lobe on hind margin. Ovipositor thick, hook−shaped; dorsal valves with a concavity on outer dorsal margin in subase; ventral valves shorter than subgenital plate, with teeth on ventral outer base; basal plate 1.5 times longer than wide.

Distribution. Korea, Japan (Hokkaido), Northeast China, Russian Far East.

115. *Podismopsis ussuriensis ussuriensis* Ikonnikov 1911 백두산삽사리 (Figs. 290, 324)

Podismopsis ussuriensis Ikonnikov 1911. Annuaire du Musée Zoologique de l'Académie Impériale des Sciences de St. Pétersbourg, 16: 246. "Russia: Ussuri". Lectotype ♂ in Zoological Museum, Moscow University.

= *Podismopsis shareiensis* Shiraki 1930. Trans. Nat. Soc. Formosa, 20: 327. "China: Manchuria". Holotype ♂ in Taiwan University, Taipei. [Bey-Bienko 1932]

Korean records. ***Podismopsis ussuriensis***: Ikonnikov 1913: 11 ("Koredj to Dore"); Mori and Cho 1939: 4 (Chailbong); Cho 1959: 185 (manual); Cho 1969: 741 (illustrated encyclopedia); Ju 1969: 26 (North Korean check list); Kwon et al. 1996: 105 (Korean species list); Kim and Kim 2005: 103 (taxonomy); ***Podismopsis* (*Podismacris*) *ussuriensis***: Bey-Bienko 1931: 674; Bey-Bienko 1932: 71; Wu 1935: 137 (Catalogus Insectorum Sinensium); Bey-Bienko and Mishchenko 1951: 425, Fig. 948; Storozhenko 1986: 310, Fig. 157(9-11), 158(15), 159(5); Kwon and Huh 1994: 52 (Korean check list); ***Podismopsis shareinsis*** [!]: Doi 1933: 88; Ju 1969: 26 (North Korean check list); ***Podismopsis shareiensis***: Mori and Cho 1940: 19 (Mt. Geumgangsan); Cho 1959: 184, Fig. 73 (manual); Cho 1969: 740, pl. 79 (illustrated encyclopedia: 산삽사리).

Specimens examined. **<RG>** 1♂1♀, Mt. Baekdusan 2-6 ㎞ from Samjiyeon Hotel, 18 vii 1977, O.Gy. Dely and A. Dely-Draskovits, No. 372 (Hungarian Natural History Museum, Budapest); **<PN>** 1♂, Pyeongyang City Park between the river Daedonggang and Pyeongyang Hotel, 4 viii 1971, S. Horvatovich and J. Papp, No. 137 (Hungarian Natural History Museum, Budapest); 1♂, Mt. Lyongaksan 14 ㎞ W from Pyeongyang, 11 viii 1971, S. Horvatovich and J. Papp, No. 159 (Hungarian Natural History Museum, Budapest).

Description. **<♂>** Body coloration dark brown, laterally yellowish. Head subconical with inclined frons; antennae longer than head and pronotum combined length; middle antennomeres 2.5-3.0 times longer than wide; fastigium of vertex with median longitudinal carinula anteriorly; foveolae absent; subocular groove as long as vertical diameter of an eye. Pronotum as long as middle femur, its anterior and posterior margin truncated; median and lateral carinae distinct; principle transverse sulcus cut longitudonal carinae behind the mid, prozona 1.2 times longer than metazona; lateral lobe of pronotum as deep as pronotal length. Tegmina mesopterous, not reaching abdominal end, its apex rather rounded; costal area narrower, 1.5 times wider than subcostal area. Hind wings vestigial, reduced to small

lobe. Fore tibia with 4−5, middle tibia with 5−6 pairs of ventral spines. Hind femur with black knee, base of tibia black. Hind tibia with 10−12 pairs of dorsal spines. Prosternum smooth, mesosternal interspace two times wider than long. Epiproct triangular, as long as basal width, with a pair of lateral carinula on dorsal surface distally. Cercus simply conical, three times longer than basal width. Subgenital plate elongated conical. Epiphallus with narrow bridge, ancorae smaller. **<♀>** Larger and body almost blackish brown than male. Antennae as long as head and pronotum combined length. Interspace between lower margin of fastigium of vertex and antennal socket shining black. Pronotum with long prozona, 1.5 times longer than metazona. Mesosternal interspace 2.5 times wider than long. Tegmina micropterous, ovoidal, a little surpassing second abdominal tergite. Hind tibia and ventum of hind femur reddish. Subgenital plate with a triangular lobe on hind margin. Ovipositor with thick dorsal and slender ventral valves as long as subgenital plate; basal plate smaller, 1.5 times longer than wide.

Distribution. North Korea, Northeast China, Russian Far East (ssp. *micra*: Russian Far East).

Table 24. Measurements of *Podismopsis* spp.

Species	BL	PL	TL	HFL
P. genicularibus	♂ 18.4−22.8 ♀ 23.8−30.1	♂ 3.8−4.5 ♀ 5.5−6.7	♂ 10.1−13.5 ♀ 5.4−6.4	♂ 11.4−14.8 ♀ 13.7−17.2
P. ussuriensis	♂ 17.5−20.0 ♀ 23.5−31.0	♂ 3.5−4.2 ♀ 5.0−6.0	♂ 9.2−13.0 ♀ 4.0−5.0	♂ 11.0−13.6 ♀ 13.0−15.5

Genus *Chrysochraon* Fischer von Waldheim 금빛삽사리속

1853. Orthoptera Europaea: 296, 307. Type species: *Podisma dispar* Germar 1831.

Diagnosis. Foveloae absent. Antennae filiform. Lateral carinae of pronotum weakly developed and practically straight. Male's tegminal apex rounded. Valves of ovipositor short and thick, non−denticulate, upper valves with distinct concavity. Subgenital plate in male pointed and conical in shape. four species are known in the world.

116. *Chrysochraon dispar major* (Uvarov 1925) 금빛삽사리 (Fig. 323)

Chrysochraon major Uvarov 1925. Journal of the Bombay Natural History Society, 30: 260. "Uzbekistan". Holotype ♂ in Zoological Institute of the Russian Academy of Sciences, St. Petersburg.

Korean records. ***Chrysochraon dispar major***: Kim and Kim 2005: 104, Fig. 10 (taxonomy).

Specimens examined. <RG> 1♂, Malaise trap, the river Karim 10 ㎞ NEE from Bochonbo 1100 m, 27 vii 1975, J. Papp and A. Vojnits, No. 297 (Hungarian Natural History Museum, Budapest).

Description. <♂> Body coloration bright metallic yellow. Head conical, with strongly inclined frons; antennae two times longer than head and pronotum combined length; fastigium of vertex a little wider than long. Pronotum slightly slonger than head, with rugose metazona a little longer than prozona; lateral lobe of pronotum shorter than pronotal length. Tegmina hyaline, mesopterous, not reaching abdominal end (macropterous form present), its apex rounded; apical a thirds with a spot of irregular and dense veinlets. Hind wings vestigial. Hind femur and tibia pale yellowish, knees partly darkened. Cercus nearly half as long as subgenital plate. Subgenital plate strongly elongated conical. **<Measurements>** BL 22.0; PL 3.5; TL 14.5; HFL 13.0.

Distribution. North Korea, Northeast China, East Russia (ssp. *dispar*: Europe, West Russia; *giganteus*: Albania; *longipteron*: China): Transpalaearctic.

Remarks. By size difference the smaller *C. dispar dispar* (BL ♂ 16−19.5, ♀ 19−26) and the larger *C. dispar major* (BL ♂ 21−24, ♀ 32−38), two subspecies considered (Bey−Bienko 1932; Bey−Bienko and Mishchenko 1951; Storozhenko 1986).

Genus *Mongolotettix* Rehn 삽사리속

1928. Proceedings of the Academy of Natural Sciences, Philadelphia, 80: 200. Type species: *Chrysochraon japonicus* Bolívar 1898.

Diagnosis. Lateral carinae of pronotum indistinct in prozona. Fastigium of vertex as wide as long. Male's tegmina with regularly right angle or square cell. Hind basitarsus almost equal to third one in length. Six species are known in the East Asia. According to the authors (Bey−Bienko 1964; Bellmann 1988; Pomares 2002), the genera *Chrysochraon, Euthystira,* and *Mongolotettix* are seemed to homogeneous hardly separable by a little difference, only *Chrysochraon* is representative, while the others are subgeneric or even synonymic positions are considered.

117a. *Mongolotettix japonicus japonicus* (Bolívar 1898) 삽사리 (Figs. 327−328, 330)

Chrysochraon japonicus Bolívar 1898. Annali del Museo Civico di Storia Naturale 'Giacomo Doria', Genova, 34: 82. "Japan". Holotype ♂ in Museo Civico di Storia Naturale, Genova.

= *Euthystira pavlovskii* Bey−Bienko 1954. Zoologicheskii Zhurnal, 33(2): 461, Fig. 1. "North

Korea: Nunchi". Holotype ♀ in Zoological Institute of the Russian Academy of Sciences, St. Petersburg. [Kim and Kim 2005]

Korean records. ***Chrysochraon japonicus***: Ikonnikov 1913: 11; Doi 1932: 36; Cho 1959: 183, Fig. 70 (manual); Cho 1969: 739, pl. 48 (illustrated encyclopedia); Ju 1969: 23 (North Korean check list); ***Mongolotettix japonicus***: Bey-Bienko 1931: 674; Bey-Bienko 1932: 83, Fig. 17; Wu 1935: 139 (Catalogus Insectorum Sinensium); Bey-Bienko and Mishchenko 1951: 419; Cho 1959: 174 (manual); Cho 1969: 731 (illustrated encyclopedia: 섬나라메뚜기); Tsyplenkov 1970: 214 (North Korea); Rentz and Miller 1971: 264 (Mt. Palgongsan); Inoue 1985: 123, Figs. 15, 47, 78 (taxonomy with karyomorphology); Storozhenko 1986: 314, Figs. 139(2), 142(5-8), 159(8); Tadauchi 1989: 55 (Japanese check list); Kwon and Huh 1994: 52 (Korean check list); Huh and Kwon 1995: 14 (Is. Jejudo); Moon and Yoon 1996: 53 (KEI); Kwon et al. 1996: 105 (Korean species list); Bae 1998: 189; Hua 2000: 47 (Chinese list); Kim and Kim 2005: 104, Figs. 1-6 (taxonomy); ***Euthystira pavlovskii***: Storozhenko 1986: 314; Otte 1995: 165 (Orthoptera species file); Yin et al. 1996: 286 (synonymic catalogue).

Specimens examined. **<GW>** 1♀ (macroptera), Gachilbong, 21-23 vi 1984, Lee MH (SSU); 1♀, Nagok-dong Gangneung, 17 v 2003, Hong HM (SSU); 1♂, Buyrongyegok Samsan-ri Yeongok Gangneung, 18-19 viii 2001, Kim JI (SSU); 33♂10♀, Samhwasa Bukpyeong, 26-27 vi 1984, Chang KS et al. (SSU); 1♂, Baekdamsa Mt. Seoraksan, 31 vii 2002, Kim JK (SSU); 1♂4♀, Mt. Daeamsan Dong-myeon Yanggu, 7-8 vii 2003, Kim JK and Kim TW (SSU); 1♂ (macroptera), Guryongryeong Seo-myeon Yangyang, 14 ix 2004, Jeong BH (SSU); 1♂2♀, Wonju, 31 v-1 vi 2003, Moon HK (SSU); 2♂1♀, Guryongsa Mt. Chiaksan Wonju, 15 vi 1999, Kim TW (SSU); 6♂1♀, Garibong Mt. Seoraksan Inje, 24 vii 2004, Kim TW (SSU); 2♂, Mt. Mindungsan Imgye-myeon Jeongseon, 18 ix 2004, Kim TW (SSU); 5♂5♀, Baekildong Daehwa Pyeongchang, 1-2 vii 1985, Chang KS et al. (SSU); 7♂4♀, Yongsan Doam Pyeongchang, 29 vi 1985, Chang KS et al. (SSU); 1♀, Mt. Cheongoksan Mitan-myeon Pyeongchang, 21 viii 2006, Kim AY (SSU); 2♂, Hoenggye Pyeongchang, 10 viii 1987, Lee YR (SSU); 1♂1♀ (macroptera), Mt. Baekamsan Gwangam-ri Naechon-myeon Hongcheon, 9 vi 2002, Kim TW (SSU); **<GG>** 3♂6♀, Mt. Myeongjisan Gapyeong, 18 vii-6 viii 1991, Kim JI et al. (SSU); 1♂1♀, Goyang, 7 vi 1996, Choi JH (SSU); 1♀ (macroptera), Gwangneung, 21 v 1960, Kim HC (SSU); 1♂2♀, Mt. Mugapsan Gwangju, 5 viii 1991, Kim JI and Park HC (SSU); 1♂, Mt. Surisan Gunpo, 8 vi 2003, Seo BM (SSU); 1♂1♀, Maseok Namyangju, 13 vi 1981, Shin GH (SSU); 6♂1♀,

Mt. Cheonmasan Namyangju, 13 v–22 vii 1981, Seo YM et al. (SSU); 1♂, Namhansanseong, 17 vii 1980, Lee YM (SSU); 2♂, Is. Baekryeongdo, 26–31 vii 1987, Kim JI and Yoo HJ (SSU); 12♂3♀, Mt. Chukryeongsan Sudong, 12 vii–6 ix 1980, Kim JI et al. (SSU); 1♂, Mt. Gwanggyosan Suwon, 13 vii 1991, Na JY (SSU); 4♂4♀, Yeonsu-ri Yongmun Yangpyeong, 5 vi–5 vii 1983, Chang KS (SSU); 3♂, Mt. Godaesan Sinseo-myeon Yeoncheon, 12 viii 1987, Kim JI and Yoo HJ (SSU); 2♂1♀, Mt. Yawolsan Yeoncheon, 26 vi 1987, Kim JI (SSU); 2♀, Songwu-ri Pocheon, 24–26 vii 1998, Park JH (SSU); 7♂, Mt. Cheonggyesan Wonji-dong Gangnam-gu Seoul, 7–8 vi 1986, Jegal S et al. (SSU); 2♂, Mt. Bukhansan Bulgwang-dong Eunpyeong-gu Seoul, 28 v 1998, Kim TW (SSU); 1♀, Seopo-ri Is. Deokjeokdo Incheon, 7 vii 1981, Eom MY (SSU); **<CB>** 1♀, Cheongan Goesan, 8 vi 2003, Park SH (SSU); 2♂, Mt. Songnisan, 21 vi 1989, Cho HS and Ku HK (SSU); 1♂, Sojeong-ri Gunbuk Okcheon, 29 v 1991, Kim JI (SSU); 1♂, Mt. Wolaksan Jecheon, 10 vii 1991, Lee HJ (SSU); 2♂2♀, Yeomchigogae Hoebuk Cheongwon, 28 v 1991, Kim JI (SSU); 4♂1♀, Songmyeon-ri Cheongcheon, 23 vi 1989, Ku HK et al. (SSU); 2♂1♀, Mt. Cheondeungsan Sancheok Chungju, 5–28 viii 2002, Kim TW (SSU); 1♂1♀, Mt. Gyemyeongsan Yonggokmaeul Chungju, 17 vi 2003, Han KD and Kim TW (SSU); **<CN>** 1♀, Singwan-dong Gongju, 6 vi 2003, Han JH (SSU); 1♂, Jewon Geumsan, 7 vi 2003, Hwang HK (SSU); 1♂, Dohwadamri Boryeong, 22 vii 1989, Chang EJ (SSU); 2♂, Muryangsa Mt. Masusan Buyeo, 11 vi–19 vii 1999, Kim TW (SSU); 2♂1♀, Mt. Gwangdeoksan Cheonan, 16–18 vi 1994, Kim JI (SSU); 1♀, Anmyeon-eup Seosan, 3 viii 1993, Lee YE (SSU); 1♂ (macroptera), Naengjeonggol Mt. Baekhwasan Taean, 22 vi 2001, Lee HA (SSU); 1♀, Baekripo Sowon-myeon Taean, 22 vii 2006, Kim TW (SSU); 1♂, Sindu-ri Wonbuk Taean, 18 vii 2002, Kim TW (SSU); 1♂1♀, Mt. Oseosan Hongseong, 11 vi 1999, Kim TW (SSU); **<GB>** 2♂1♀, Daehyeon-ri Bonghwa, 25 vii 1986, Chang KS (SSU); 1♂1♀, Sieo-dong Hwabuk Sangju, 9 viii 1990, Kim BJ and Park HC (KU); 1♂1♀, Bulyeonggyegok Sogwang-ri Uljin, 29 v 1999, Kim TW (SSU); 1♀, Dalgipokpo Cheongsong, 24 vi 1988, Byeon JE (SSU); 1♂2♀, Mt. Juwangsan Cheongsong, 30 vii 1983, Chang KS and Park HK (SSU); 1♀, Mt. Palgongsan Hayang, 8 viii 1997, Chang HS (SSU); **<GN>** 1♀, Hyangnobong Dongsan-ri Sangri-myeon Goseong, 5 viii 1999, Park JS (GSU); 1♀, Yeonsan-dong Dongnae-gu Busan, 21 viii 1985, Kim HS (SSU); 1♂5♀, Jungsan-ri Mt. Jirisan, 30–31 vii 1981, Kim JI and Han HY (KU); 1♂1♀, Ssanggyesa Mt. Jirisan Hwagae Hadong, 31 vi 2001, Kim TW (SSU); 1♂, Hansingyegok Baekmubong Mt. Jirisan Hamyang, 7 vi 2002, Kim SY (SSU); 1♂1♀, Taejongdae Busan, 1 viii 2006, Kim

TW (SSU); **<JB>** 1♀, Gochang, 23 viii 1996, Choi JH (SSU); 1♂, Baemsagol Mt. Jirisan Namwon, 3 viii 1984, Chang KS (SSU); 2♂, Mt. Naejangsan, 18 x 1980, Oh MY (SSU); 2♀, Naesosa Buan, 30 vii 1984, Chang KS (SSU); 2♂, Naebyeonsan Buan, 26 vi 1991, Park MR and Ku HJ (SSU); 1♂, Daebul-ri Seolcheon Muju, 26 v 1993, Jeong GE (SSU); 1♀, Oknyeobong Wunsan-ri Hwasan-myeon Wanju, 22 vii 1997, Kim JI (SSU); **<JN>** 1♂, Mt. Gayasan Gwangyeong-dong Gwangyang, 15 v 1999, Sohn JH (SSU); 2♂, Is. Sangnakwoldo Yeonggwang, 15 viii 1989, Kim JI and Lee OJ (SSU); 1♂, Dokcheon Yeongam, 21 vii 1997, Kim HJ (SSU); 1♂1♀, Mangchuk Is. Wando, 6 vii 1982, Lee EM and Shin GH (SSU); 3♀, Piagol Mt. Jirisan, 1 viii 1984, Chang KS (SSU); **<JJ>** 3♂, Mt. Sambangsan Sagye-ri Andeok-myeon Namjeju, 12 vi 2004, Kim JK and Kim TW (SSU); 1♀, Gwaneumsa Yeongpyeong-dong Bukjeju, 18 vii 2001, Lee HS (SSU); 2♂, Sangumburi Gyorae-ri Jocheon Bukjeju, 9 vii 2002, Kim TW (SSU); 3♂2♀, Hamdeok-ri Jocheon-myeon Bukjeju, 8 vii 2002, Kim TW (SSU); 1♂ (macroptera), Bijarim forest, 13 vii 1983, Ko MH (SSU); 3♂1♀, Topyeong-ri Seogui-eup, 12 vii 1983, Kim JI and Chang KS (SSU); 1♂, Dokkabi road to Cheonwangsa Jeju, 10 vii 2002, Kim TW (SSU).

Description. <♂> Body coloration yellowish bright brown. Head conical, with strongly inclined frons; fastigium of vertex roundly triangular, a little wider than long; interocular distance two times wider than horizontal diameter of an eye; vertex with median longitudinal carinular; antennae filiform, rather widened and depressed basally, longer than head and pronotum combined length, middle antennomeres 2.0-2.5 times longer than wide; antennal socket wider than frontal ridge; frontal ridge and facial carinae meet with clypeal suture; subocular groove slightly shorter than vertical diameter of an eye. Pronotum as long as middle femur, with truncated anterior and posterior margins; median longitudinal carina distinct, lateral carinae paralleled, diminished on metazona; principle transverse sulcus cut longitudinal carinae behind the mid, prozona 1.2 times longer than metazona; lateral lobe of pronotum shorter than pronotal length. Tegmina mesopterous, not reaching abdominal end, its apex truncated dorsally and hind margin concave (sometime macropterous form present); costal area with bright yellow coloration in base; radial vein brown. Hind wings vestigial. Abdominal tympanum largely oval without covering lobe. Prosternum with a indistinct tubercle. Mesosternal interspace narrower, four times longer than wide. Fore tibia with five, middle tibia with 5-6 pairs of ventral spines apically. Last abdominal tergite with dorsal furculae, small roundly protruded. Epiproct triangular, a little longer than basal width, subapically abruptly tapered. Cercus simply conical, 2.5 times longer than basal width, the

apex as protrude as epiproct. Subgenital plate elongated conical. **<♀>** Larger than male. Fastigium of vertex two times wider than long. Vertical diameter of an eye 1.5 times longer than subocular groove. Mesosternal interspace as long as wide. Tegmina micropterous, as long as pronotum, slightly surpassing second abdominal tergite, its apex roundly truncated or slightly pointed (sometimes macropterous form present). Subgenital plate longer than wide, its hind margin triangularly projected. Ovipositor with slender valves weakly serrated; dorsal valves narrowed basally; ventral valves without basal teeth; basal plate three times longer than wide. **<Measurements>** BL ♂ 18.5−23.0, ♀ 24.0−32.0; PL ♂ 3.5−3.8, ♀ 4.8−6.0; TL ♂ 10.5−13.0, ♀ 4.7−5.5; HFL ♂ 10.5−12.0, ♀ 13.0−16.5.

Distribution. Korea, Japan, Russian Far East.

117b. *Mongolotettix japonicus vittatus* (Uvarov 1914)

Chrysochraon vittatus Uvarov 1914. Annuaire du Musée Zoologique de l'Acad. des Sciences de l'URSS, 19(1): 168. "Russia: Transbaikal". Lectotype ♀ in Zoological Institute of the Russian Academy of Sciences, St. Petersburg.

Korean records. ***Mongolotettix japonicus vittatus***: Won et al. 1990: 96 (Mt. Changbaishan); Kim and Kim 2005: 104, Figs. 7−8 (taxonomy).

Specimens examined. <JJ> 2♀, Eorimok, 15 vii 1983, Kim JI (SSU); 1♀, Jejudo, 22 ix 1984, Kim YS (SSU); 2♂1♀, Mt. Hallasan, 6 viii 1984, Lee SM (SSU); 5♂4♀, Mt. Hallasan Yeongsil, 27 ix 2000, Kim TW et al. (SSU); 2♀, Baeknokdam, 8 ix 1992, Im DJ (NIAST).

Diagnosis. As in the key, except for the difference of antennal lengths and mesosternal interspace of female, nearly similar with nominal subspecies *japonicus*.

Distribution. Korea (Is. Jejudo), Northeast China, North Mongolia, East Russia.

Tribe Gomphocerini 애메뚜기족

Head with distinct lateral foveloae on fastigium of vertex, largely visible from above.

Key to Species of Gomphocerini

1. Tegmina with cubital area wider than median area (Fig. 329) ..... ***Arcyptera coreana*** (p. 286)

− Tegmina with cubital area narrower than median area ····· 2

2. Tegmina with straight anterior margin; tympanal opening narrower, slit−like ····· 3

− Tegmina with distinct precostal bulge; tympanal opening wider, oval−shaped ····· 4

3. Eyes larger, its vertical diameter longer than subocular groove; ♂ abdominal end with red coloration; ovipositor shorter, its valves shorter than subgenital plate ····· ***Omocestus haemorrhoidalis*** (p. 289)

− Eyes smaller, its vertical diameter as long as subocular groove; ♂ abdominal end without red coloration; ovipositor longer, its valves as long as subgenital plate ····· ***Omocestus viridulus*** (p. 291)

4. Antennae clubate at apex; ♂ fore tibia greatly swollen ····· ***Gomphocerus kudia*** (p. 292)

− Antennae filiform; ♂ fore tibia simple ····· 5

5. ♂ tegmina with strongly curved costal and subcostal veins as S−shape; hind wings dark black ····· 6

− ♂ tegmina with straight or very slightly curved costal and subcostal veins; hind wings hyaline ····· 7

6. Antennae longer, two times more than head and pronotum combined length; middle antennomeres 4.1−5.2 times longer than the width; ♂ stridulatory pegs number less than 165; ♀ tegmina longer, surpassing abdominal end or hind knee ····· ***Megaulacobothrus aethalinus*** (p. 294)

− Antennae shorter, less than two times of head and pronotum combined length; middle antennomeres 3.0−3.5 times longer than the width; ♂ stridulatory pegs number more than 185; ♀ tegmina shorter, not reaching abdominal end or hind knee ····· ***Megaulacobothrus jejuensis*** **sp. nov.** (p. 297)

7. Lateral carinae almost parallel; tarsal claws asymmetrical ····· ***Euchorthippus unicolor*** (p. 303)

− Lateral carinae incurved; tarsal claws symmetrical ····· 8

8. Lateral carinae of pronotum angularly incurved in prozona, highly divergent in metazona; tympanal opening narrower, 4−10 times longer than wide ····· 9

− Lateral carinae of pronotum slightly incurved or slightly diverging behind prozona; tympanal opening wider, 1.7−3 times longer than wide ····· 10

9. ♂ tegmina with bright stigma located 7−8 ㎜ from tegminal apex; ♂ stridulatory pegs number more than 140; ♀ tegmina just surpassing hind knee; mesosternal interspace 1.2−1.5 times wider than long ····· ***Glyptobothrus maritimus*** (p. 298)

– ♂ tegmina with bright stigma located 4–5 ㎜ from tegminal apex; ♂ stridulatory pegs number less than 135; ♀ tegmina not reaching hind knee; mesosternal interspace two times wider than long ····· ***Glyptobothrus tamna*** **sp. nov.** (p. 302)

10. Tegmina longer than hind knee, ♂ 4.75–5.2, ♀ 5.0–5.9 times longer than wide (Fig. 333); tympanal opening 1.7–1.9 times longer than wide ····· ***Schmidtiacris schmidti*** (p. 306)

– Tegmina shorter than hind knee, less than four times longer than wide (Fig. 331); tympanal opening ♂ 1.7–3, ♀ 2.2–3 times longer than wide ····· 11

11. Prozona slightly longer than metazona; ♀ mesosternal interspace narrower, as long as wide ····· ***Chorthippus hammarstroemi*** (p. 309)

– Prozona as long as metazona; ♀ mesosternal interspace wider, more than 1.5 times wider than long ····· 12

12. ♂ frontal ridge barely projecting forward; ♀ pronotum with wide posterior margin, lateral carinae strongly diverge toward posterior margin ····· ***Chorthippus fallax*** (p. 311)

– ♂ frontal ridge strongly projecting forward; ♀ pronotum with narrow posterior margin, lateral carinae slightly diverge in posterior margin, nearly parallel to each other ····· ····· ***Chorthippus montanus*** (p. 311)

Genus *Arcyptera* Audinet–Serville 참어리삽사리속

1839. Histoire naturelle des insectes. Orthoptères: 743 (pro subgenus *Oedipoda*). Type species: *Gryllus* (*Locusta*) *fuscus* Pallas 1773.

Diagnosis. Temporal foveolae incised to shallow, smooth to pitted. Pronotum with weakly concave, nearly straight lateral carinae. Enormous to considerable of Cubital filed, its resonator cells being deeper than wide, in male four, in female twice times more than the narrowest part of the median filed. Wings almost all darkened. Five species are known in the Palaearctic Region.

118. *Arcyptera coreana* Shiraki 1930 참어리삽사리 (Figs. 329, 344–345)

Arcyptera coreana Shiraki 1930. Trans. Nat. Hist. Soc. Formosa, 20(111): 328. "Korea". Syntype in Taiwan University, Taipei.

Korean records. ***Arcyptera coreana***: Doi 1932: 35; Haku 1937: 73 (Daegu); Furukawa 1940: 61, Fig. 1A; Bey–Bienko and Mishchenko 1951: 430, Fig. 960; Cho 1959: 180, Fig. 63 (manual); Cho 1969: 735, pl. 78 (illustrated encyclopedia); Ju 1969: 22 (North Korean check list); Tsyplenkov 1970: 214 (North Korea); Rentz and Miller 1971: 263 (Mt.

Palgongsan); Storozhenko 1986: 297, Fig. 150(4, 5); Storozhenko 1988: 51, Figs. 12–15; Kwon and Huh 1994: 52 (Korean check list); Huh and Kwon 1995: 13 (Is. Jejudo); Otte 1995: 106 (Orthoptera species file); Moon and Yoon 1996: 53 (KEI); Kwon et al. 1996: 105 (Korean species list); Yin et al. 1996: 68 (synonymic catalogue); Yoo et al. 1996: 82 (karyotype); Zheng and Xia 1998: 319, Fig. 174; Hua 2000: 43 (Chinese list); ***Acryptera*** [!] ***coreana***: Kim et al. 1987: 216 (cytotaxonomy); Bae 1998: 192.

Specimens examined. **<GW>** 1♂, Gachilbong, 21–23 vi 1984, Lee MH (KU); 1♂1♀, Gangchon, 6 vi 1984, Park GJ (SSU); 1♀, Mt. Samaksan Chuncheon, 6 vi 1984, Park BR (SSU); 2♂1♀, Mt. Daeamsan Dong-myeon Yanggu, 7–8 vii 2003, Kim JK and Kim TW (SSU); 1♂, Mt. Daewusan Dong-myeon Yanggu, 10 vii 2003, Kim JK and Kim TW (SSU); 3♂, Guryongsa Mt. Chiaksan Wonseong, 30 vii 1975, Kim JI (KU); 1♀, Wontong Inje, 2 viii 1984, Yang SI (KU); 1♂, Sincheolwon Cheolwon, 8 vii 1987, Kang JY (SSU); 1♂, Palmi-ri Sindong-myeon Chuncheon, 1 vii 2006, Kim TW (SSU); 8♂, Baekildong Daehwa Pyeongchang, 1–2 vii 1985, Kwon et al. (SSU); 3♂2♀, Yongsan-ri Doam Pyeongchang, 29 vi 1985, Chang KS et al. (SSU); 6♂5♀, Mapyeong-ri Jinbu Pyeongchang, 30 vi 1985, Chang KS et al. (SSU); 1♂, Haesanryeong Hwacheon, 8 vii 2006, Kim TW (SSU); **<GG>** 2♂2♀, Mt. Myeongjisan Gapyeong, 19 vii–6 viii 1991, Kim JI (SSU); 1♀, Is. Boleumdo Ganghwa, 18 vii 1987, Yoo HJ (SSU); 1♂, Mt. Manisan Is. Ganghwado, 16 viii 1996, Kim JY (SSU); 2♂1♀, Mt. Godongsan, 12–19 vi 1977, Park HK et al. (KU); 3♂, Gwangneungnae, 15–18 vi 1983, Oh MK and Ko HJ (KU); 1♂, Mt. Mugapsan Gwangju, 5 viii 1991, Kim JI (SSU); 1♂, Eommi-ri Gwangju, 20 vi 1981, Kim HM (SSU); 4♂, Mt. Munjusan Wolgot Gimpo, 1 vii 1987, Kim JI and Yoo HJ (SSU); 3♂, Mt. Cheonmasan Namyangju, 7 vi 1986, Lee KJ and Jang MK (SSU); 2♂, Mt. Chukryeongsan Namyangju, 6 vi 1984, Yoo HJ (SSU); 1♂, Mt. Soyosan Dongducheon, 6 vii 1985, Choi YH (SSU); 2♂, Is. Baekryeongdo, 25–31 vii 1987, Yoo HJ (SSU); 3♂, Jogaegol Mt. Yongmunsan Yangpyeong, 31 v 1986, Chang KS (SSU); 2♂1♀, Mt. Cheondeoksan Sinseo-myeon Yeoncheon, 12 viii 1987, Kim JI and Yoo HJ (SSU); 1♀, Daecheong-ri Ongjin, 14 vii 1990, Cho EJ (SSU); 1♂, Byeopwon Paju, 5 vii 1998, Kim TW (SSU); 3♂3♀, Seolma-ri Jeockseong Paju, 28 vii 1984, Kim JI (SSU); 2♀, Songwu-ri Pocheon, 24 vii 1996, Park JH (SSU); 1♂, Mt. Daemosan Gangnam-gu Seoul, 6 vi 1996, Kim JE (SSU); 3♂1♀, Wonji-dong Gangnam-gu Seoul, 7–8 vi 1986, Kim HJ et al. (SSU); 1♀, Mt. Gwanaksan Seoul, 15 ix 1990, Park HJ (SSU); 1♂1♀, Mt. Bukhansan Jongno-gu Seoul, 20 viii 1996, Park HS and Paik JE (SSU); **<CB>** 1♂, Sinwon-ri Goesan, 25 vi 1986, Chang KS (SSU);

2♂, Wonpung-ri Yeonpung Goesan, 25 vi 1986, Kim JI and Lee JH (SSU); 1♂2♀, Daemok-ri Mt. Songnisan, 9-10 viii 1990, Lee OJ (SSU); 1♂, Gosa-ri Yeonpung, 22 vi 1989, Lee HS (SSU); 1♂, Sojeong-ri Gunbuk Okcheon, 25 v 1991, Kim JI (SSU); 1♀, Mt. Wolaksan Jecheon, 5 viii 1994, Moon TY (KU); 1♂1♀, Miwon-myeon Cheongwon, 15 vii 1990, Lee EJ (SSU); 7♂5♀, Songmyeon-ri Cheongcheon, 23 vi 1989, Kim JI et al. (SSU); 2♂2♀, Mt. Cheondeungsan Sancheok-myeon Chungju, 5 viii 2002, Kim TW (SSU); 2♂, Mt. Gyemyeongsan Jongmin-dong Chungju, 16-17 vi 2003, Kim JI et al. (SSU); **<CN>** 1♂, Gongju, 16 viii 1996, Kim PS (SSU); 1♂, Mt. Gwangdeoksan Cheonan, 16-18 vi 1994, Kim JI (SSU); 1♂, Taeeulam Taean, 2 vi 2001, Kim SY (SSU); **<GB>** 1♀, Senamsa Apgokam Gaap-ri Goro-myeon Gunwui-myeon, 20 vii 1998, An TH (GSU); 7♂1♀, Joryeong Mungyeong, 22 vi 1989, Moon JJ et al. (SSU); 1♂, Mt. Cheongryangsan Bonghwa, 29 vii 1990, Kim KM (KU); 2♂, Birosa Mt. Sobaeksan, 4 viii 1994, Moon TY (KU); 1♂1♀, Mt. Juwangsan Cheongsong, 23-24 vi 1986, Chang KS (SSU); 2♂, Dalgipokpo Mt. Taehaengsan, 24 vi 1988, Kim HM and Kim JH (SSU); 1♂, Mt. Hwanghaksan, 4 vi 1978, Lee YS (KU); **<GN>** 1♂, Gidaebong Subalsa Bongam-ri Jinjeon-myeon Happo-gu Masan, 21 vii 1999, Park JS (GSU); 1♂, Busan, 16 v 1997, Kim HJ (SSU); **<JB>** 1♂, Mt. Naejangsan, 3 viii 1974, Kim CW (KU); 1♀, Naesosa Buan, 30 vii 1984, Chang KS (SSU); 1♂, Mt. Daedunsan Wanju, 9 vii 2000, Park HC (NIAST); **<JN>** 1♂3♀, Hwangryong-myeon Jangseong, 9 viii 1996, Kim MJ (SSU); 2♂1♀, Piagol Mt. Jirisan, 23 vi 1987, Chang KS and Kim SA (SSU); **<JJ>** 1♀, Gwaneumsa, 4 viii 1974, Kim JI (KU); 2♂4♀, Hamdeok-ri Jocheon-myeon Bukjeju, 8 vii 2002, Kim TW (SSU); 1♂1♀, Eorimok, 15 vii 1983, Kim JI and Chang KS (SSU); 2♀, Mt. Hallasan Northern slope, 4 viii 1955, Cho PS and Lee BJ (KU).

Description. <♂> Body coloration bright grayish brown. Head subconical, with rectangular foveolae weakly marked, three times longer than wide, small pits present in it; interocular distance two times wider than horizontal diameter of an eye; scape as long as wide; middle antennomeres three times longer than middle width; antennal socket a little narrower than frontal ridge; frontal ridge diminished in mid, never reaching clypeal suture; facial carinae indistinct; subocular groove slightly shorter than vertical diameter of an eye. Pronotum as long as middle femur, anterior margin truncated, posterior margin obtusely projected; median longitudinal carina distinct, lateral carinae indistinct with incurved bright longitudinal patterns; principle transverse sulcus cut median carina in mid, prozona as long as metazona; lateral lobe of pronotum the height a little longer than pronotal length; integument coarsely

punctated. Tegmina macropterous, surpassing hind knees, its apex widely rounded and obliquely truncated dorsally, more blackish; costal area widest; cubital area wider than radial or medial areas. Hind wing dark blackish. Prosternum weakly convex, mesosternal interspace 1.2 times wider than long. Fore tibia with six, middle tibia with 7−8 pairs of ventral spines apically. Hind femora with inner three dorsal bands, ventrally pinkish, hind knees blackish; dorsal and ventral carinae smooth. Hind tibiae with 12−13 pairs of dorsal spines, apically pinkish, proximally black and white banded. Abdominal tympanum largely semicircular, without covering bulge. Epiproct triangular, lateral margins with basal folding. Cercus simply conical, three times longer than basal width. Subgenital plate elongated conical, upraised. **<♀>** Larger and stouter than male. Subocular groove as long as, or slightly shorter than vertical diameter of an eye. Mesosternal interspace 1.5 times wider than long. Tegmina mesopterous, slightly shorter than abdominal end or barely reaching it; black maculae scattered. Hind wings with black veins on remigium. Subgenital plate longer than wide, with triangular median lobe on hind margin. Ovipositor with short and thick valves; dorsal valves shorter than epiproct; ventral valves without basal teeth; basal plate shorter than wide. **<Measurements>** BL ♂ 25.3−31.4 (HTL 30.0−32.8), ♀ 31.0−41.5; PL ♂ 5.6−6.8, ♀ 7.4−8.8; TL ♂ 21.8−27.5, ♀ 23.0−28.0; HFL ♂ 15.1−19.8, ♀ 19.0−25.2.

Distribution. Korea, Northeast China.

Genus *Omocestus* Bolívar 대륙메뚜기속

1878. Anales de la Sociedad Española de Historia Natural, 7: 427 (pro subgenus *Gomphocerus*). Type species: *Gryllus* (*Locusta*) *viridulus* Linnaeus 1758.

= *Dirshius* Harz 1975. Series Entomologica, 11: 710 (subgenus). Type species: *Gryllus haemorrhoidalis* Charpentier 1825. [Ragge 1986]

Diagnosis. Foveolae narrow and rectangular. Antennae filiform. Leading edge of fore wings straight, without widening towards the base. Medial area of tegmina not extended. Lateral carinae of pronotum more or less angularly introflexed. Valves of ovipositor non−denticulate. 46 species are known in the world, the measurements of two Korean *Omocestus* compared in Table 25.

119. *Omocestus haemorrhoidalis haemorrhoidalis* (Charpentier 1825) 대륙메뚜기 (Figs. 346−347)

Gryllus haemorrhoidalis Charpentier 1825. Horae entomologicae, adjectis tabulis novem coloratis: 165. "Poland, Czechoslovakia". Holotype ♂ in Museum für Naturkunde der Humbolt Universitat, Berlin.

Korean records. ***Omocestus haemorrhoidalis***: Ikonnikov 1913: 12 ("Chictet to Choanso"); Bey-Bienko and Mishchenko 1951: 476; Mishchenko 1968: 490; Storozhenko 1986: 299, Figs. 139(12), 140(3), 141(6), 143(1), 150(11); Ju 1993: 287 (Mt. Baekdusan); Kwon and Huh 1994: 52 (Korean check list); Kwon et al. 1996: 105 (Korean species list); Ragge and Reynolds 1998: 309, Figs. 828-836; Hua 2000: 45 (Chinese list); ***Omocestus (Dirshius) haemorrhoidalis***: Harz 1975: 711, Figs. 2127, 2128, 2591, 2609, 2619, 2625, 2626, 2647-2654.

Specimens examined. **<RG>** 5♀, Hyesan cemetery, 8 x 1978, A. Vojnits and L. Zombori, No. 474 (Hungarian Natural History Museum, Budapest); **<GG>** 1♀, Suwon (= Suigen), 11 viii 1925, Muramatst S. (NIAST); **<GW>** 2♂3♀, Mt. Cheongoksan Hajang-myeon Samcheok, 30 vii 2006, Kim TW and Rhee HW; 2♀, Mt. Odaesan, 16 x 1973, Lee HN and Oh HA; **<JJ>** 1♀, Eoseungsaengak, 29 vii 1972, Kim JI; 1♂, Yeongsil Mt. Hallasan, 27 ix 2000, Kim MA; 1♀, Jejudo, 3 viii 1959, Cho PS; 1♀, Mt. Hallasan, 6 viii 1984, Lee SM.

Description. **<♂>** Body coloration green or brown, variably mixed. Head with weakly convex vertex, frons moderately inclined; interocular distance as wide as horizontal diameter of an eye; fastigium of vertex as long as basal width; foveola rectangular, 2.5 times longer than wide; antennae filiform, a little longer than head and pronotum combined length; scape a little wider than long; middle antennomeres 2.5 times longer than wide; frontal ridge wider than antennal socket, barely reaching to clypeal suture; vertical diameter of an eye slightly longer than subocular groove. Pronotum as long as middle femur, its anterior margin truncated, posterior margin obtusely projected; median longitudinal carina distinct, cut by principle transverse sulcus in mid, prozona as long as metazona; lateral carinae incurved in prozona, diverged in metazona, its narrowest distance as wide as a half of hind margin; lateral lobe of pronotum a little deeper than pronotal length. Tegmina macropterous, just reaching abdominal end or hind knee, its apex rounded; precostal bulge absent, radial area narrower, its width near apex of median area nearly equal to or slightly less than greatest width of subcostal area. Hind wings transparent. Prosternum smooth, mesosternal interspace two times wider than long. Fore tibia with 4-5, middle tibia with 6-7 pairs of ventral spines apically. Hind femur ventrally reddish, knee darkened. Hind tibia with 11-12 pairs of dorsal spines. Abdominal tympanum slit-shaped, over five times longer than wide.

Abdominal end with orange or red colouration. Epiproct triangular, as long as basal width. Cercus simply conical, three times longer than basal width. Subgenital plate shortly conical. **<♀>** Larger than male. Mesosternal interspace 1.5 times wider than long. Subgenital plate two times longer than wide, its hind margin with triangular median lobe. Ovipositor with short and thick valves; dorsal valves shorter than epiproct; ventral valves with basal teeth; basal plate 1.5 times longer than wide.

Distribution. Korea, China, Mongolia, Russia, Europe (ssp. *ciscaucasicus*: Caucasus; *fantinus*: Central Europe; *sjostedti*: China): Transpalaearctic.

Remarks. Wide, but discontinuous distribution of this grasshoppers in the Palaearctic Region suggests that presence of this glacial relict from the Boreal period (l.c. Ander 1949).

120. *Omocestus viridulus viridulus* (Linnaeus 1758) 구대륙메뚜기 (Fig. 348)

Gryllus (*Locusta*) *viridulus* Linnaeus 1758. Systema Naturae per Regna tria naturae (10th ed.), 1: 433, No. 55. "Sweden". Lectotype ♂ in Linnean Society, London.

Korean records. ***Omocestus riridulus*** [!]: Ju 1993: 287 (Mt. Baekdusan); ***Omocestus viridulus***: Kwon et al. 1996: 105 (Korean species list).

Specimens examined. <RG> 1♂2♀, Chann-Pay plateau Samziyon 1,500-1,600 m, 24-25 viii 1971, S. Horvatovich and J. Papp, No. 195, 197 (Hungarian Natural History Museum, Budapest); 1♂1♀, Malaise trap, river Karim 10 ㎞ NEE from Bochonbo 1,100 m, 27 vii 1975, J. Papp and A. Vojnits, No. 297 (Hungarian Natural History Museum, Budapest); **<PN>** 1♀, Mt. Lyongaksan 14 ㎞ W from Pyeongyang, 11 viii 1971, S. Horvatovich and J. Papp, No. 159 (Hungarian Natural History Museum, Budapest).

Description. <♂> Body coloration variable green with brown to yellow sides. Head subconical; fastigium of vertex as long as basal width, with a longitudinal feeble carinular apically; foveolae rectangular; interocular distance slightly wider than horizontal diameter of an eye; eyes smaller, vertical diameter of an eye shorter than subocular groove; antennal socket narrower than frontal ridge. Pronotum with truncated anterior margin and angularly projected posterior margin; medial longitudinal carin distinct, cut by principle transverse sulcus before the mid, prozona a little shorter than metazona; lateral carinae rather weakly incurved in prozona, diverged in metazona; lateral lobe of pronotum the height a little shorter than pronotal length. Tegmina macropterous, surpassing hind knee, its apex rounded; radial area wider, its width near apex of median area considerably greater than greatest width of subcostal area; precostal bulge absent. Hind wings transparent. Hind knee

darkened. Abdominal end without remarkable coloration. Epiproct triangular, slightly wider than long. Cercus simply conical, three times longer than basal width. Subgenital plate shortly conical. **<♀>** Larger than male. Ovipositor hook-shaped, with long valves, its dorsal valves longer than epiproct, as long as subgenital plate; ventral valves with basal teeth on outer ventral sides.

Distribution. North Korea, China, Mongolia, Russia, Europe (ssp. *kaestneri*: Spain): Transpalaearctic.

Table 25. Measurements of *Omocestus* spp.

Species	BL	PL	TL	HFL
O. haemorrhoidalis	♂ 16.0 ♀ 19.0-22.0	♂ 3.7 ♀ 4.0-4.4	♂ 10.8 ♀ 12.2-14.8	♂ 10.0 ♀ 12.5-14.0
O. viridulus	♂ 12.6-17.0 ♀ 19.7-24.0	♂ 3.1-3.7 ♀ 3.8-4.7	♂ 11.5-14.5 ♀ 15.0-18.2	♂ 10.0-10.5 ♀ 13.0-13.5

Genus *Gomphocerus* Thunberg 북채수염수중다리메뚜기속

1815. Mémoires de l'Académie Impériale des Sciences de St. Pétersbourg, 5: 221. Type species: *Gryllus* (*Locusta*) *sibiricus* Linnaeus 1767.

= *Aeropus* Gistel 1848. Naturgesch. Thierreichs Hoh. Schulen, Stuttgart: 9. Type species: *Gryllus* (*Locusta*) *sibiricus* Linnaeus 1767. [Roberts 1941]

Diagnosis. Tegmina with distinctly converging anterior and posterior cubital veins which are sometimes fused with each other here and there; cubital field very narrow, its width at the middle of the median field 4-7 times less than the greatest width of the median field, sometimes the cubital field almost absent. Fore tibia of male strongly pyriformly swollen. Eight species are known in the Palaearctic Region.

121. *Gomphocerus kudia* Caudell 1927 북채수염수중다리메뚜기 (Fig. 349)

Gomphocerus sibericus var. *kudia* Caudell 1927. Proceedings of the United States National Museum, 71(7): 2. "Russia: Kudia river". Holotype ♂ in National Museum of USA, Washington.

Gryllus (*Locusta*) *sibiricus* nec Linnaeus 1767. Systema Naturae per Regna tria naturae (12th ed.), 1(2): 701, No. 51. "Russia: Yakutsk". Neotype ♂ in Museum d'Histoire Naturelle, Geneva.

Korean records. ***Gomphocerus sibirica kudia***: Mori and Cho 1939: 4, pl. 1, Figs. 6-7

(Chailbong); ***Gomphocerus sibiricus***: Cho 1959: 185, Fig. 75 (manual); Cho 1969: 742, pl. 79 (illustrated encyclopedia); Ju 1969: 24 (North Korean check list); ***Aeropus kudia***: Ju 1993: 286 (Mt. Baekdusan); Kwon et al. 1996: 104 (Korean species list); ***Aeropus sibiricus***: Kwon and Huh 1994: 52 (Korean check list); Moon and Yoon 1996: 52 (KEI).

Specimens examined. **<RG>** 10♂14♀, Chann-Pay plateau Samziyon 1,600 m, 25 viii 1971, S. Horvatovich and J. Papp, No. 197 (Hungarian Natural History Museum, Budapest).

Description. **<♂>** Body coloration darkish brown, nearly black. Head with frons strongly slanted; frontal ridge distinctly sulcate; fastigium of vertex rectangular; foveloae rectangular, five times longer than wide; antennae club-shaped, weakly swollen at apical eight antennomeres, more darkened distally; scape as long as wide; vertical diameter of an eye as long as subocular groove; facial carina not reaching clypeal suture. Pronotum as long as middle femur, almost flat laterally, feebly convex in prozona; anterior margin weakly convex, posterior margin angularly projected; median longitudinal carina distinct, lateral cainae obliterate except in metazona; principle transverse sulcus cut longitudinal carinae behind the mid, prozona 1.5 times longer than metazona; lateral lobe of pronotum as deep as pronotal length. Tegmina broadly macropterous, fairly longer than abdominal end, surpassing hind knee, its apex rounded; medial area widest than costal, radial areas. Hind wings slightly smoky apically. Fore tibia moderately swollen as pear-shape with siex pairs of ventral spines. Hind femur yellowish brown, knees darkened. Epiproct triangular, as long as basal width. Cercus shortly conical, two times longer than basal width. Subgenital plate shortly conical, upraised. **<♀>** Larger than male. Pronotum nearly flat in lateral view. Fore tibia not swollen. Ovipostior with short and thick valves; basal plate 1.5 times longer than wide. **<Measurements>** BL ♂ 21.1-24.0, ♀ 26.1-27.0; PL ♂ 5.5, ♀ 6.0; TL ♂ 15.9-20.0, ♀ 16.6-19.0; HFL ♂ 12.0, ♀ 14.0.

Distribution. North Korea, Russian Far East.

Remarks. Since Uvarov (1931) and Storozhenko (1983), the *G. sibiricus* and *G. kudia* are morphologically and geographically clearly separated from the subspecific consideration.

Genus *Megaulacobothrus* Caudell 폭날개애메뚜기속

1921. Proceedings of the Entomological Society of Washington, 23(2): 27. Type species: *Megaulacobothrus fuscipennis* Caudell 1921.

Diagnosis. Male with wide tegmen with distinctly S-curved costa and subcosta veins, and darkish hind wings. Sexual dimorphism remarkable. Far Eastern Asian genus composed of

11 species distribute through China, Russia, Korea and Japan (Storozhenko 2002). The measurements of two Korean *Megaulacobothrus* compared in Table 26.

122. *Megaulacobothrus aethalinus* (Zubovsky 1899) 청날개애메뚜기 (Figs. 358-359)

Stenobothrus aethalinus Zubovsky 1899. Trudy Russkago Entomologicheskago Obshchestva, 32: 600. Substitute name of *Stenobothrus fuliginosus* Zubovsky 1898. Ann. Mus. St. Petersb. 3: 87. "Russia: Kolyvan". Syntype in ?Zoological Institute of the Russian Academy of Sciences, St. Petersburg.

= *Chorthippus aethalinus koreanus* Mishchenko in Bey-Bienko and Mishchenko 1951. Locusts and Grasshoppers of the U.S.S.R. and Adjacent Countries, 2: 505, Fig. 1124. "Korea: Pungtung". Syntype in Zoological Institute of the Russian Academy of Sciences, St. Petersburg. [Storozhenko 1986]

Korean records. ***Stauroderus aethalinus***: Ikonnikov 1913: 13; ***Megaulacobothrus aethalinus***: Bey-Bienko 1931: 675; Mori and Cho 1939: 4 (Chailbong); Cho 1959: 174 (manual); Cho 1969: 731 (illustrated encyclopedia); Storozhenko 1986: 301, Figs. 140(5), 141(2); Ju 1993: 287 (Mt. Baekdusan); Kwon and Huh 1994: 52 (Korean check list); Huh and Kwon 1995: 13 (Is. Jejudo); Moon and Yoon 1996: 53 (KEI); Kwon et al. 1996: 105 (Korean species list); ***Chorthippus aethalinus***: Furukawa 1939: 21, 130; Ju 1969: 23 (North Korean check list); Yin et al. 1996: 156 (synonymic catalogue); ***Chorthippus aethalinus koreanus***: Tsyplenkov 1970: 214 (North Korea); ***Chorthippus* (*Megaulacobothrus*) *aethalinus***: Rentz and Miller 1971: 263 (Mt. Palgongsan).

Specimens examined. <RG> 6♂1♀, Hyesan cemetery, 8 x 1978, A. Vojnits and L. Zombori, No. 474 (Hungarian Natural History Museum, Budapest); **<GW>** 2♂, Mt. Kumgangsan path to Kuryong falls, 18 ix 1980, Gy. Tapal and L. Forro, No. 692 (Hungarian Natural History Museum, Budapest); 1♂1♀, Mt. Kumgangsan foot-path to Manmulsang Rocks, 19 ix 1980, Gy. Tapal and L. Forro, No. 710 (Hungarian Natural History Museum, Budapest); 1♂1♀, Gachilbong, 5 x 1992, Moon TY (KU); 3♂4♀, Gojindong Mt. Geonbongsan, 28 viii 1990, Kim JI et al. (SSU); 1♂, Sogeumgang Myeongju, 16 ix 1971, Kim CW (KU); 1♂1♀, Mt. Cheongoksan Hajang-myeon Samcheok, 30 vii 2006, Kim TW (SSU); 1♀, Baekdamsa Mt. Seoraksan, 30 viii 1984, Nam SH (KU); 1♀, Mt. Daeamsan Yanggu, 5 x 1992, Moon TY (KU); 2♂, Guryongryeong Seo-myeon Yangyang, 14 ix 2004, Jeong BH (SSU); 3♀, Changwon-3ri Ssangyong Yeongwol, 1-30 ix 1999, Kim MA (NIAST); 4♂, Mt. Odaesan, 27 vii 1958, Anonym (KU); 4♂, Guryongsa Mt. Chiaksan Wonseong, 29-30 vii 1975, Kim

JI (KU); 2♂, Jindong-1ri Bangdong-myeon Inje, 1 x 1995, Moon TY and Kim JK (KU); 5♂2♀, Deokgeo-ri Jangpyeong, 4 ix-10 x 1988, Jeon NY (SSU); 2♂3♀, Jeungsan Nam-myeon Jeongseon, 19 ix 2004, Kim TW (SSU); 4♀, Mt. Hambaeksan Manhangjae Jeongseon, 18 ix 2001, Kim MA (NIAST); 1♂3♀, Mt. Mindungsan Imgye Jeongseon, 18 ix 2004, Kim TW (SSU); 2♂1♀, Mt. Gariwangsan Jeongseon, 20 viii 2006, Kim AY (SSU); 1♀, Mt. Gwangdeoksan Cheolwon, 8 viii 1984, Nam SH (KU); 2♂, Chugokyaksu Chunseong, 16 viii 1981, Kim JI (SSU); 2♂1♀, Bongpyeong Pyeongchang, 16 viii 1997, Jang JY (SSU); 4♂1♀, Mt. Gyebangsan Nae-myeon Hongcheon, 21-22 vii 1981, Kim CW et al. (KU); 1♂1♀, Bongo-ri Sanseo Hwacheon, 20 viii 1990, Yang SY (SSU); 1♀, Haesanryeong Hwacheon, 13 ix 2000, Kim SS (SSU); **<GG>** 11♂7♀, Mt. Myeongjisan Gapyeong, 6 vii-6 viii 1991, Kim JI et al. (SSU); 2♀, Sindo Goyang, 25 viii 1984, Choi YS (SSU); 1♂, Gwangneung, 22 ix 1990, No SA (SSU); 1♂1♀, Mt. Mugapsan Gwangju, 5 viii 1991, Kim JI (SSU); 2♂, Mt. Munjusan Wolgot Gimpo, 1 vii 1987, Kim JI (SSU); 4♂, Paldang Namyangju, 3 x 1963, Kim IG et al. (KU); 1♂, Namhansanseong Seongnam, 3 x 1980, Park MK (KU); 1♀, Mt. Chukryeongsan Sudong, 6 viii 1980, Chang KS (SSU); 5♂, Songchu Yangju, 26-28 vii 1983, Jang YA and Kim MJ (SSU); 12♀, Mt. Yongmunsan Yangpyeong, 28 vii 2000, Kim TW (SSU); 4♂1♀, Mt. Cheondeoksan Sinseo-myeon Yeoncheon, 12 viii 1987, Kim JI and Yoo HJ (SSU); 1♀, Mt. Sohyeonsan Yongin, 16 ix 1991, Lee JR (SSU); 2♂, Mt. Suraksan Euijeongbu, 17 viii 1997, Nam SY (SSU); 3♂, Mt. Gamaksan Paju, 24 viii 1967, Kim JI and Oh JK (KU); 2♂, Bogwangsa Mt. Goryeongsan Gwangtan Paju, 18 vii 1998, Kim TW (SSU); 1♂1♀, Gangssibong Ildong Pocheon, 18 vii 1997, Kim JI and Kim SY (SSU); 1♀, Mt. Jugeumsan Pocheon, 14 viii 1999, Kim MA (NIAST); 2♂3♀, Mt. Cheonggyesan Gangnam-gu Seoul, 31 vii-6 ix 1986, Kim SM et al. (SSU); 1♂1♀, Mt. Gwanaksan Seoul, 20 viii 1993, Lee JS (SSU); 4♂, Mt. Bukhansan Dobong-gu Seoul, 8 viii 1987, Park HK (SSU); 1♂, Is. Deokjeokdo Ongjin Incheon, 27 vii 1955, Kim HK (EU); **<CB>** 1♂, Sinwon-ri Goesan, 25 vi 1986, Chang KS (SSU); 2♂, Mt. Songnisan Boeun, 7-8 viii 1990, Kim BJ and Lee OJ (SSU); 1♂, Sangchon Yeongdong, 6 vii 1982, Song YC (SSU); 1♂, Mt. Wolaksan Jecheon, 5 viii 1994, Moon TY (KU); 1♀, Mt. Gyemyeongsan Chungju, 24 viii 2000, Kim TW (SSU); 1♂, Mt. Namsan Chungju, 27 ix 2000, Kim AY (SSU); 5♂13♀, Mt. Cheongdeungsan Sancheok-myeon Chungju, 5-28 viii 2002, Kim TW (SSU); **<CN>** 3♂, Mt. Gyeryongsan Gongju, 3-4 viii 1973, Kim CW et al. (SSU); 1♂, Dohwadamri Boryeong, 22 vii 1989, Jang EJ (SSU); 3♂1♀, Onyang, 27 ix 1988, Jeon NY (SSU); **<GB>** 2♂, Mungeungsaejae, 10-11 vii 1977, Kim Y and Lee HK

(KU); 1♀, Daehyeon Seokpo Bonghwa, 24 vii 1986, Chang KS (SSU); 1♀, Mt. Cheongryangsan Bonghwa, 12 ix 1998, Kwon JH (SSU); 1♂, Sieo-dong Hoebuk Sangju, 9 viii 1990, Kim BJ (SSU); 3♂3♀, Mt. Sobaeksan, 13 viii 1992, Lee SM and Sohn HR (SSU); 1♂, Mt. Hakgasan Andong, 24 vii 1999, Kim SH (KU); 1♂, Galsan-ri Yeongpung, 18 viii 1986, Choi EY (SSU); 2♀, Sogwang-ri Uljin, 31 vii 1999, Kim TW (SSU); 1♂, Mt. Juwangsan Cheongsong, 7 viii 1975, Kim HK (EU); 1♂, Mt. Geumosan Chilgok, 29 viii 1979, Anonym (EU); 1♂, Mt. Taehaengsan, 27 vii 1984, Nam SH (KU); 1♂, Mt. Naeyeonsan Pohang, 1 viii 1983, Chang KS (SSU); **<GN>** 3♂2♀, Saeseoksanjang Mt. Jirisan Sicheon Sancheong, 12 x 2001, Jeon JB (SSU); 1♂, Mt. Gayasan Hapcheon, 1 viii 1989, Kim JK (SSU); **<JB>** 1♀, Deokdong-ri Sannae Namwon, 6 viii 1983, Jeong SS (SSU); 1♂1♀, Mt. Naejangsan, 17 ix 2000, Kim SS (SSU); 2♀, Anguksa Mt. Jeoksangsan Muju, 8 ix 1999, Park HC (NIAST); 1♂, Naebyeonsan-myeon Buan, 26 vi 1991, Ku HJ (SSU); 21♂7♀, Baemsagol Mt. Jirisan, 3 viii 1984, Chang KS (SSU); **<JN>** 5♂2♀, Saeseok Mt. Jirisan Gurye, 12 x 2001, Jeon JB (SSU); 1♂, Beolgyo Boseong, 4 viii 1970, Park KS (KU); 4♂, Piagol Mt. Jirisan, 1-3 viii 1984, Chang KS (SSU).

Description. <♂> Body coloration green, with more darkish black antennae and tegmina. Head subconical, with strongly inclined frons; antennae two times longer than head and pronotum combined length, its middle antennomeres four times longer than the width; interocular distance as wide as horizontal diameter of an eye; fastigium of vertex as long as basal width, with a longitudinal feeble carinular along with vertex; foveolae rectangular, four times longer than wide; scape wider than long; antennal socket as wide as frontal ridge; facial carina and frontal ridge reaching clypeal suture; vertical diameter of an eye a little longer than subocular groove. Pronotum as long as middle femur, its anterior margin truncated, posterior margin angularly projected; median longitudinal carina distinct, lateral carinae rather indistinct; principle transverse sulcus cut the longitudinal carina in mid, prozona as long as metazona; metazona rugously punctated; lateral carinae weakly incurved in prozona, abruptly diverged in metazona; lateral lobe of pronotum as deep as pronotal length. Tegmina blackish macropterous, surpassing hind knees, its apex widely rounded; subcosta strongly curved as S-shape; radial area wider, its width near the base of RS 1.25-1.75 times greater than subcostal area; subcostal area as wide as costal area. Hind wings darkish. Fore tibia with 5-6, middle tibia with 6-7 pairs of ventral spines. Hind femur and tibia yellowish, knees black; stridulatory pegs number less than 165. Prosternum smooth, mesosternal interspace 1.5 times wider than long. Abdominal tympanum

semicurcular, four times loner than wide, with a small covering lobe. **<♀>** Body coloration dark brown. Subocular groove a little longer than vertical diameter of an eye. Mesosternal interspace two times wider than long. Tegmina macropterous, just reaching hind knee. Hind wings less dark than ♂. Hind tibia reddish with subasal white annulation. Subgenital plate two times longer than wide, with a median triangular lobe and laterally a pair of small projections. Ovipositor with thick and short valves; basal plate 1.5 times longer than wide.

Distribution. Korea, Northeast China, East Russia.

123. *Megaulacobothrus jejuensis* sp. nov. 제주청날개애메뚜기 (신칭) (Figs. 360−364)

Specimens examined. <JJ> <Holotype> 1♂, Mt. Hallasan Yeongsil Namjeju, 27 ix 2000, Kim TW (SSU); **<Paratypes>** 7♂31♀, ibid. Kim TW et al. (SSU); 2♂5♀, ibid. 11 viii 2004, Seung JB and Jeong BH (SSU); 4♂3♀, Jejudo 1,100 m, 21 ix 1984, Kim YS (SSU); 6♂1♀, Donnaeko Seoguipo, 12 vii 1983, Kim GJ et al. (SSU); 1♂, Baeknokdam Jejudo, 28 vii 1978, Nam SH (KU); ; 3♂1♀, Mt. Hallasan Jejudo, 9 viii 1984, Lee SM; 1♂, Bijarim Bukjeju, 13 vii 1983, Jeong HJ (SSU); 2♂, Eorimok Jeju−si, 15 vii 1983, Kim JI and Chang KS (SSU); 2♂, ibid. 15 vii 1990, Park HC and Yoon TJ (KU); 1♂, ibid. 29 ix 2000, Kim TW (SSU); 3♂, Eoseungsaeng Jeju−si, 11 viii 1984, Lee SM; 9♂2♀, Seongpanak Jocheon Bukjeju, 12 vii 1983, Kim JI et al. (SSU).

Description. <♂> Body coloration dark green with black tegmina. Head subconical, frons distinctly inclined; antenna relatively shorter, less than two times of head and pronotum combined length; middle antennomeres 3.0−3.5 times longer than the width; scape as long as wide; lateral foveloae rectangular, four times longer than wide; vertical diameter of an eye as long as or slightly longer than subocular groove; frontal ridge as wide as scape between bases of antennae, diverged toward clypeal suture; facial carinae distinct. Pronotum with prozona as long as metazona, median longitudinal carina cut by principle transverse sulcus in mid; lateral carinae gently incurved in prozona, diverged in metazona; anterior margin of pronotum straight, posterior margin obtusely angulate, slightly granulose; lateral lobe of pronotum deeper than pronotal length. Mesosternal interspace 1.2 times wider than long. Ventral thorax with numerous white hairs. Tegmina macropterous, surpassing hind knee, not reaching mid of hind tibia; anterior margin with small precostal bulge, tegmina apex widely round; costa and subcosta sinuated as S−shape; costal area as wide as subcostal area, also radial area same width; medial area slightly wider than cubital area; bright stigma present on two thirds of joining veins composed of media and cubitus. Hind

wings smoky. Abdomen with narrower tympanal opening four times longer than the width. Hind genicular lobes and knees blackish, hind tibiae yellowish red. Abdominal sides with black patches. Fore femur as long as pronotum. Inner side of hind femur with stridulatory pegs number more than 185. Epiproct triangular, as long as basal width, its lateral margins moderatly sinuated, its apex sharply pointed. Cercus short and thick, 2.2 times longer than basal width, with bluntly pointed apex. Subgenital plate shortly conical. **<♀>** Body coloration dark brown, sometimes only vertex, occiput and pronotal disk green dorsally. Eye's vertical diameter slightly shorter than subocular groove. Antennae slightly longer than head and pronotum combined length, its middle antennomeres 2.5−3.0 times longer than wide. Tegmina shorter than abdominal apex, not reaching hind knee. Mesosternal interspace two times longer than wide.

Distribution. Korean endemic regarded from Is. Jejudo.

Remarks. This is closely related with inland *M. aethalinus*, but quickly distinguished by smaller body dimension at glimpse as well as large number of stridulatory pegs on hind femur of male and short tegmina of female, which deemed to diverge by Island's dwarfism.

Table 26. Measurements of *Megaulacobothrus* spp.

Species	BL	HTL	PL	TL	HFL
M. aethalinus	♂ 18.6−21.4	♂ 23.0−26.8	♂ 4.2−4.7	♂ 17.0−18.6	♂ 11.6−13.4
	♀ 23.5−27.3	♀ 24.4−31.0	♀ 4.6−5.7	♀ 17.6−22.4	♀ 13.1−17.3
M. jejuensis **sp. nov.**	♂ 17.8−20.3	♂ 18.6−21.7	♂ 3.4−3.9	♂ 13.6−15.4	♂ 10.0−11.5
	♀ 22.3−27.2		♀ 4.7−5.4	♀ 13.6−15.8	♀ 12.8−14.3

Genus *Glyptobothrus* Chopard 극동애메뚜기속

1951. Ortho. Faune de France, 56: 192 (pro subgenus *Chorthippus*). Type species: *Gryllus binotatus* Charpentier 1825.

Diagnosis. Lateral carinae of pronotum angularly incurved in the prozona and highly divergent in the metazona. 43 species are known in the world, the measurements of two Korean *Glyptobothrus* compared in Table 27.

124. *Glyptobothrus maritimus maritimus* (Mishchenko 1951) 극동애메뚜기 (Figs. 365−366)

Chorthippus biguttulus maritimus Mishchenko in Bey−Bienko and Mishchenko 1951. Locusts and Grasshoppers of the U.S.S.R. and Adjacent Countries, 2: 514, Fig. 1143. "Russia: Ussuri". Holotype ♂ in Zoological Institute of the Russian Academy of Sciences, St.

Petersburg.

Gryllus (*Locusta*) *biguttulus* nec Linnaeus 1758. Systema Naturae per Regna tria naturae (10th ed.), 1: 433, No. 56. "Europe". Lectotype ♂ in Linnean Society, London.

Gryllus brunneus nec Thunberg 1815. Mémoires de l'Académie Impériale des Sciences de St. Pétersbourg, 5: 249. "Sweden". Holotype ♀ in Zoological Institute, Uppsala University. = *Gryllus bicolor* Charpentier 1825. Horae entomologicae, adjectis tabulis novem coloratis: 161. "Europe, Africa, Asia". Syntype in ZMHB. [Johnston 1956]

Korean records. ***Stenobothrus bicolor***: Burr 1898: 29 ("Port Lazareff"); Ichikawa 1906: 183 ("Quelpart"); Okamoto 1924: 57 ("Quelpart"); ***Chorthippus bicolor***: Bey-Bienko 1931: 674; Cho 1959: 173, Fig. 54 (manual); Cho 1963: 162 (Is. Jejudo); Cho 1969: 730, pl. 78 (illustrated encyclopedia: 애메뚜기); ***Stauroderus bicolor***: Doi 1932: 35; Kamiya and Miyasaka 1938: 64; Mori and Cho 1940: 19 (Mt. Geumgangsan); Seok 1970: 176 (Is. Jejudo); ***Chorthippus biguttulus***: Wu 1935: 139 (Catalogus Insectorum Sinensium); Hua 2000: 43 (Chinese list); ***Chorthippus* (*Stauroderus*) *bicolor***: Mori and Cho 1939: 4 (Chailbong); ***Chorthippus brunneus***: Ju 1969: 23 (North Korean check list); Ju 1993: 287 (Mt. Baekdusan); Kwon and Huh 1994: 52 (Korean check list: 애메뚜기); Moon and Yoon 1996: 53 (KEI); Kwon et al. 1996: 105 (Korean species list); Yin et al. 1996: 159 (synonymic catalogue); Yoo et al. 1996: 82 (karyotype); Bae 1998: 192; ***Chorthippus biguttulus maritimus***: Bey-Bienko and Mishchenko 1951: 514 (Korea); Tsyplenkov 1970: 214 (North Korea); Storozhenko 1986: 301, Figs. 140(4), 143(2), 151(6); Tadauchi 1989: 54 (Japanese check list); Kwon and Huh 1994: 52 (Korean check list); Huh and Kwon 1995: 13 (Is. Jejudo); Kwon et al. 1996: 105 (Korean species list); ***Chorthippus* (*Glyptobothrus*) *biguttulus maritimus***: Rentz and Miller 1971: 263 (Mt. Palgongsan); ***Chorthippus biguttulus maritimas*** [!]: Ju 1993: 287 (Mt. Baekdusan); ***Glyptobothrus maritimus***: Storozhenko 2002: 7, Figs. 1, 5-8.

Specimens examined. **<RG>** 1♂, Chann-Pay plateau Samziyon 1600 m, 25 viii 1971, S. Horvatovich and J. Papp, No. 197 (Hungarian Natural History Museum, Budapest); **<PN>** 1♂, Pyongyang city park between river Te-dong and Pyongyan Hotel, 4 viii 1971, S. Horvatovich and J. Papp, No. 137 (Hungarian Natural History Museum, Budapest); **<GW>** 1♂, Mt. Kumgangsan path to Kuryong falls, 18 ix 1980, Gy. Tapal and L. Forro, No. 692 (Hungarian Natural History Museum, Budapest); 3♂1♀, Mt. Kumgangsan foot-path to Manmulsang Rocks, 19 ix 1980, Gy. Tapal and L. Forro, No. 710 (Hungarian Natural History Museum, Budapest); 1♂, Mt. Seokbyeongsan Sangye-ri Okgye-myeon Gangneung,

27–28 viii 2002, Kim TW (SSU); 1♂, Jinburyong Goseong, 12 vii 1983, Song JI (SSU); 1♂, "Kongosan" = Mt. Geumgangsan, 14 viii 1937, Mori and Cho (KU); 1♂1♀, Samhwasa Donghae, 25–26 viii 1997, Kim JI et al. (SSU); 1♀, Bogwang Poenix Park Myeonon-ri Bongpyeong, 5 viii 2003, Rhee HW (SSU); 1♂1♀, Mt. Cheongoksan Hajang-myeon Samcheok, 30 vii 2006, Kim TW and Rhee HW (SSU); 1♂1♀, Jangsudae to Daeseungpokpo Mt. Seoraksan, 23 ix 2000, Yeo JD (KU); 2♂3♀, Mt. Daeamsan Dong-myeon Yanggu, 7 vii–29 viii 2003, Kim JK and Kim TW (SSU); 1♂, Mt. Samyeongsan Chugok-ri Buksan-myeon Chuncheon, 25 vii 2003, Kim TW (SSU); 1♂, Donggang riverside Mitan Pyeongchang, 9 vii 1999, Kim TW (SSU); 2♂1♀, Mt. Odaesan Pyeongchang, 2 viii 1983, Lee SM; 1♂, Mt. Sogyebangsan Hongcheon, 22 vii 1981, Han HY (SSU); 1♂, Mt. Gwangdeoksan Gwangdeok-ri Naeseo-myeon Hwacheon, 4 vii 2000, Kim TW (SSU); 1♂5♀, Haesanryeong Hwacheon, 8 vii–3 x 2006, Kim TW (SSU); **<GG>** 1♀, Wongok-dong Ansan, 17 viii 1995, An JH (SSU); 1♀, Yangpyeong, 9 ix 1989, Moon HK (SSU); 1♂, Mt. Suraksan Nowon-gu Seoul, 24 ix 1995, Kwon HJ (SSU); 1♂1♀, Mt. Bukhansan Dobong-gu Seoul, 8 x 1987, Kim JE (SSU); 1♂1♀, Yeonhui-dong Seodaemun-gu Seoul, 7 ix 1992, Bae JH (SSU); 1♂, Seooneung Seoul, 19 vii 1971, Seo JW (KU); 1♂, Mt. Bukhansan Eunpyeong-gu Seoul, 30 vii 1998, Kim TW (SSU); **<CB>** 2♂1♀, Sinwon-ri Goesan, 25 vi 1986, Chang KS (SSU); 1♂, Mt. Hwangaksan Gungchon-ri Sachon-myeon Yeongdong, 4 viii 2001, Kim TW (SSU); 1♂, Jiktongma Sangchon Yeongdong, 25 vii 2001, Lee HA (NIAST); **<CN>** 1♂1♀, Mt. Gyeryongsan Gongju, 17 vi 1986, Chang KS (SSU); 2♂, Gongsanseong Okryongdong Gongju, 15 viii 1988, Moon K (SSU); **<GB>** 1♂, Jeodong Is. Ulleungdo, 23 vii 1976, Yoon SJ (EU); 2♂9♀, Mt. Juwangsan Cheongsong, 7 viii 1975, Kim HK (EU); 7♂11♀, ibid. 30 vii 1983, Chang KS and Park HK (SSU); 1♂2♀, Mt. Taehaengsan Cheongsong, 27 vii 1984, Nam SH and Kim KW (KU); 1♀, Bogyeongsa Pohang, 7 ix 2000, Kim TW (SSU); **<GN>** 1♂, Mt. Gajisan Ssalbawui Deokhyeon-ri Sangbuk-myeon Ulju Ulsan, 17–18 viii 2001, An TH (GSU); 1♂, Byeoksoryeong Samjeong Mt. Jirisan Hamyang, 30 vii 1984, Paik YH (GSU); **<JB>** 1♀, Deokdong-ri Sannae Namwon, 6 viii 1983, Jeong SS (SSU); 2♂, Mt. Jeoksangsan Muju, 8 ix 1999, Kim TW (SSU); 1♀, Mt. Daedunsan Wanju, 9 vii 2000, Park HC (NIAST); 1♂1♀, Mt. Naejangsan Jeongeup, 17 ix 2000, Kim SS (SSU); **<JN>** 1♀, Mt. Baekwunsan Gwangyang, 13 viii 1994, Choi HS (SSU); 6♂3♀, ibid. 24 viii 1999, Kim TW et al. (NIAST); 1♂1♀, Saeseok Mt. Jirisan Gurye, 12 x 2001, Jeon JB (SSU); 2♂1♀, Mt. Jirisan, 22 vii–19 viii 1982, Kim ML and Lee HJ (KU); 2♂4♀, Nogodan Mt. Jirisan

Gurye, 23 vii 1992, Lee SH (NIAST).

Description. **<♂>** Body coloration variable dark brown, with sometimes dark or bright patches, abdominal end and ventum of hind femora, hind tibiae reddish. Head subconical, frons moderately inclined; fastigium of vertex as long as basal wide; foveloae rectangular, four times longer than wide; interocular distance slightly narrower than horizontal diameter of an eye; scape as long as wide; antennae longer than head and pronotum combined length, surpassing a half of body length; middle antennomeres 3.0−4.0 times longer than wide; facial carinae distinct than frontal ridge near clypeal suture; vertical diameter of an eye a little longer than subocular groove. Pronotum as long as fore femur, its anterior margin truncated, posterior margin obtusely projected; median longitudinal carina distinct, subdivided in mid by principle transverse sulcus, prozona as long as metazona; lateral carinae rather indistinct, angularly incurved in prozona, distinctly diverged in metazona; lateral lobe of pronotum as deep as pronotal length. Tegmina macropterous, surpassing hind knee, its apex rounded; precostal bulge present; costal area widened, two times more wider than subcostal area; whitish stigma on dense veinlets present two thirds from base. Hind wings transparent. Prosternum smooth, mesosternal interspace 1.2 times wider than long. Fore tibia with 5−6, middle tibia with 6−7 pairs of ventral spines apically. Hind femur with a black longitudinal band on basal half of inner surface, hind knee weakly darkened. Hind tibia reddish, with 14−15 pairs of dorsal spines. Abdominal tympanum slit−shaped, three times longer than wide, with a small subtympanal lobe. Abdominal sides and dorsum with black patches basally, ventum yellowish, more reddish towards abdominal end. Epiproct triangular, as long as basal width, with a shallow median longitudinal furrow and transverse folding in mid. Cercus shortly conical, two times longer than basal width. Subgenital plate shortly conical, shorter than basal width. **<♀>** Larger than male. Antennae as long as head and pronotum combined length, middle antennomeres 1.5−2.5 times longer than wide. Interocular distance as wide as horizontal diameter of an eye in dorsal view, vertical diameter of an eye as long as subocular groove in lateral view. Mesosternal interspace 1.5 times wider than long. Tegmina macropterous, reaching hind knee; costal area narrower than male, as wide as medial area. Subgenital plate two times longer than middle width, its hind margin triangular. Paraprocts largely developed, mostly covering the base of ovipositor. Ovipositor hook−shaped, thick and short valves; dorsal valves short than epiproct; ventral valves as long as basivalvular sclerite.

Distribution. Korea, Japan, Northeast China, Russian Far East (ssp. *jacutus*: Yakutia; *insularis*:

Sakhalin; *huabeiensis*: Heilongjiang; *karakalensis*: ?; *saitirum*: Japan).

125. *Glyptobothrus tamna* sp. nov. 탐라애메뚜기 (신칭) (Figs. 367−371)

Specimens examined. <JJ> <Holotype> 1♂, Mt. Hallasan Yeongsil Seoguipo Is. Jejudo, 27 ix 2000, Kim TW (SSU); **<Paratypes>** 1♂6♀, ibid. Kim TW et al. (SSU); 2♂3♀, Eorimok Jeju−si, 15 vii 1983, Kim JI and Chang KS (SSU); 1♂1♀, Jejudo alt. 900 m, 22 ix 1984, Kim YS (SSU); 5♂3♀, Mt. Hallasan Jejudo, 6 viii 1984, Lee SM; 2♀, Yeongsil Jejudo, 17 vii 1990, Park HC and Yoon JG (KU); 3♂2♀, Cheonwangsa to Dokaebi road Jeju−si, 10 vii 2002, Kim TW (SSU).

Description. <♂> Body coloration brown or green combination, abdominal end, hind tibia, ventral aspect of hind femur bright red. Head subconical, frons strongly inclined; antennae short, as long as two times of head and pronotum combined length; middle antennomeres 1.7−2.2 times longer than wide; fastigium of vertex as long as basal width, lateral foveolae rectangular three times longer than middle width; scape as long as wide; frontal ridge as wide as a scape between antennae, diverged and diminished toward clypeal suture; facial carinae distinct; subocular groove shorter than vertical diameter of an eye. Pronotum slightly longer than head, anterior margin truncated, posterior margin obtusely angulate; prozona a little shorter than metazona, median carina cut by principle transverse sulcus just before the mid; lateral carinae angularly incurved in prozona, diverged in metazona; lateral lobe of pronotum deeper than pronotal length, weakly granulose in metazona. Vetral thorax with white numerous hairs; mesosternal interspace 1.5 times wider than long. Abdomen with very narrow tympanal opening, four time longer than wide, subtympanal lobe present. Tegmina macropterous, surpassing abdominal end, just reaching hind knee; precostal bulge very weakly protruding which rather similar with *Omocestus* at glimpse; subcostal area weakly widened, two time less than precostal area, costa weakly curved; medial area as wide as cubital area or radial area in each greatest width; bright stigma located 4−5 ㎜ from the tegminal apex. Hind wings transparent, weakly darkened posteriorly. Hind femur with stridulatory pegs number less than 135 on inner surface. Lateral sides of abdomen with black patches. Epiproct triangular, as long as basal width, its apex acutely pointed; median longtudinal groove present. Cercus short and bluntly conical, 1.5 times longer than basal width. Subgenital plate short and upraised conical. **<♀>** Slightly larger than ♂, less reddish in abdominal end and hind tibia. Antennae shorter than two times of head and pronotum combined length. Subocular groove as long as vertical diameter of an eye.

Mesosternal interspace two times wider than long. Tegmina macropterous, but not reaching hind knee, or barely reaching to that. Costa and subcosta nearly parallel. Ovipositor with short valves, slightly protruding from paraprocts.

Distribution. Korean endemic regarded from Is. Jejudo.

Remarks. This is closely related with inland *G. maritimus*, but much smaller as like to the case of above *Megaulacobothrus jejuensis* **sp. nov.** The name 'tamna' is the oldish name means Is. Jejudo.

Table 27. Measurements of *Glyptobothrus* spp.

Species	BL	HTL	PL	TL	HFL
G. maritimus	♂ 18.5−20.5	♂ 19.8−23.8	♂ 3.5−4.0	♂ 14.0−17.1	♂ 10.7−12.2
	♀ 23.3−28.4	♀ 25.3−29.2	♀ 4.0−4.7	♀ 17.7−20.9	♀ 13.0−15.5
G. tamna **sp. nov.**	♂ 15.0−17.4	♂ 16.4−18.4	♂ 3.0−3.4	♂ 10.8−12.7	♂ 9.6−10.0
	♀ 18.6−24.7	♀ 18.8−21.5	♀ 3.8−4.3	♀ 11.8−15.7	♀ 11.3−12.4

Genus *Euchorthippus* Tarbinsky 꼭지메뚜기속

1925. Revue Russe d' Entomologique, 19: 192. Type species: *Oedipoda pulvinata* Fischer von Waldheim 1846.

Diagnosis. Antennae in basal half compressed, but not widened, in upper half filiform. Head conical; fastigium of vertex widely angular, with obtuse lateral carinulae and slight median carinula; fastigial foveolae visible from above, shallow, with obtuse margins. Pronotum flat, with well developed carinae; lateral carinae slightly, irregularly incurved. Mosesternal interspace as long as its width or slightly longer. Tegminal membrane transparent, with comparatively sparse reticulation. Lobes of hind knee rounded. Claws not symmetrical, on front legs inner claw shorter than external, on middle and hind legs inner longer than external. Male epiproct elongate−angular. 30 species are known in the world.

126. *Euchorthippus unicolor* (Ikonnikov 1913) 꼭지메뚜기 (Figs. 354−355)

Chorthippus unicolor Ikonnikov 1913. Korea Acrid.: 15. "Korea: Malwi to Sambau". Lectotype ♂ in Zoological Museum, Moscow University.

Korean records. ***Euchorthippus unicolor***: Wu 1935: 156 (Catalogus Insectorum Sinensium); Furukawa 1939: 32 137; Bey−Bienko and Mishchenko 1951: 544; Tsyplenkov 1970: 214 (North Korea); Storozhenko 1986: 307, Fig. 139(13); Kwon and Huh 1994: 52 (Korean check list); Kwon et al. 1996: 105 (Korean species list); Yin et al. 1996: 272 (synonymic

catalogue); Hua 2000: 45 (Chinese list).

Specimens examined. **<HN>** 1♂1♀, Songhwa 50 m, 17 ix 1979, H. Steinmann and T. Vasarhelyi, No. 540 (Hungarian Natural History Museum, Budapest); **<RG>** 2♀, Hyesan cemetery, 8 x 1978, A. Vojnits and L. Zombori, No. 474 (Hungarian Natural History Museum, Budapest); **<PN>** 1♂, Pyongyang city Mt. Daesongsan, 20 ix 1979, H. Steinmann and T. Vasarhelyi, No. 551 (Hungarian Natural History Museum, Budapest); **<GW>** 1♂, Ssangyong Yeongwol, 30 ix 1999, Kim MA (NIAST); 1♂, Mt. Oeseoraksan, 18 ix 1981, Seo YM (KU); 1♂2♀, Jeungsan Nam-myeon Jeongseon, 19 ix 2004, Kim TW (SSU); 1♂, Bukpyeong Jeongseon, 17 viii 1989, Lee GJ (SSU); **<GG>** 1♂, Mt. Myeongjisan Gapyeong, 14 viii 1989, Cho SJ (SSU); 2♂, Mt. Yumyeongsan Gapyeong, 7 x 1983, No YM (SSU); 1♀, Hyeonri Gapyeong, 15 ix 1984, Chae MR (SSU); 2♂, Byeokje Goyang, 30 ix 1993, Lee HJ (SSU); 1♂, Mt. Cheonggyesan Gwacheon, 18 x 1983, Kim KJ (SSU); 1♂3♀, Gwangneungnae Pocheon, 21 x-6 xi 1983, Park KS and Hong HS (KU); 2♀, Eungogae Gwangju, 23 x 1982, Yoo MJ (SSU); 1♀, Mt. Surisan Gunpo, 9 x 1971, Lee GS (KU); 1♂, Jangneung Gimpo, 16 ix 1972, Yoo JS (EU); 1♀, Pyeongnae Namyangju, 25 ix 1987, Kim SJ (SSU); 1♀, Daeseong-ri, 22 ix 1984, An MK (SSU); 2♂1♀, Maseok Namyangju, 30 ix 1984, Lee KS and Lee MI (SSU); 2♂5♀, Mt. Soyosan Dongducheon, 21 x 1980, Kim OS et al. (KU); 5♂, Hwaseo Suwon, 13 viii 1985, Jeon MR (EU); 1♂1♀, Mt. Gamaksan Sinam-ri Nam-myeon Yangju, 10 ix 2006, Kim TW (SSU); 5♂1♀, Mt. Yongmunsan Yangpyeong, 27 ix 1986, Kim HJ et al. (SSU); 1♀, Giheung Yongin, 13 ix 1985, Han SO (SSU); 1♀, Bogwangsa Mt. Goryeongsan Gwangtan Paju, 3 x 1998, Kim TW (SSU); 1♀, Munsan Paju, 24 ix 1999, Park HC (SSU); 4♂5♀, Paldang, 4-5 x 1962, Park JS et al. (KU); 1♂1♀, Mt. Cheonmasan Pyeongnae, 1 x 1981, Chang KS (SSU); 1♂, Hwaseong, 12 ix 1992, Cho SH et al. (SSU); 2♂, Mt. Cheonggyesan Gangnam-gu Seoul, 14 viii-14 ix 1985, Han SO (SSU); 11♂6♀, Mt. Bulamsan Sanggyedong Seoul, 14 ix 2002, Rhee HW (SSU); 1♂1♀, Mt. Wumyeonsan Seocho-gu Seoul, 14-19 ix 1991, Lee JY and Im MJ (SSU); 3♂1♀, Mt. Achasan Seoul, 17 ix-2 x 1971, Won DY and Lee DH (EU); 4♂2♀, Mt. Yongmasan Seoul, 12-22 ix 1971, Won DY et al. (EU); **<CB>** 1♀, Dongi-myeon Okcheon, 28 ix 1993, Lee KA (SSU); **<CN>** 1♂, Onseok-dong Seosan, 12 ix 1997, Choi KJ (SSU); 1♀, Anseo-dong Cheonan, 22 ix 1982, Im CS (SSU); 1♂, Sindu-ri Taean, 1 ix 2001, Park HC (NIAST); **<GB>** 3♀, Sangju, 9 x 1999, Park JK (SSU); 1♂, Huibanggyegok Mt. Sobaeksan Punggi, 5 ix 2000, Kim MA (NIAST); 1♀, Daegu, 16 ix 1971, Lee EB (EU); **<GN>** 2♂, Yongseong-ri Samryangjin Milyang, 20 x

1994, Anonym (GSU); **<JJ>** 1♂, Mt. Sanbangsan Namjeju, 28 ix 2000, Kim TW (SSU).

Description. **<♂>** Body coloration yellowish brown. Head with weakly convex vertex and strongly inclined frons; interocular distance narrower than horizontal diameter of an eye; fastigium of vertex shorter than basal width; foveolae rectangular three times longer than wide; eyes large, vertical diameter of an eye longer than subocular groove; antennae longer, surpassing a half of body length, its middle antennomeres 2.5 times longer than wide; scape as wide as frontal ridge; frontal ridge and facial lateral carinae reaching clypeal suture. Pronotum as long as middle femur, its anterior margin truncated, posterior margin widely convex; median longitudinal carina distinct, subdivided behind the mid; prozona 1.2 times longer than metazona; lateral carinae nearly paralleled, weakly diverged in metazona; lateral lobe of pronotum as deep as pronotal length, lateral sides darkish near lateral carinae, sometimes forming dark longitudinal bands. Tegmina mesopterous, not reaching abdominal end (sometimes macropterous form present), its apex rather pointed; precostal bulge present; costal area widest. Hind wings transparent, as long as three quarters of tegmina. Prosternum weakly convex, mesosternal interspace as long as wide, ventral aspects of thorax with numerous white hairs. Fore tibia with five, middle tibia with 5−6 pairs of ventral spines apically. Hind knees darkened. Hind tibia with 10−12 pairs of dorsal spines. Abdominal tympanum largely oval, 1.5 times longer than wide, without basal covering lobe. Tarsal arolium large, as long as claws; claws asymmetrical, fore tibia with outer larger claw, middle and hind tibiae with inner larger claws. Hind tibia with large inner spurs, at least two times longer than outer ones. Epiproct triangular, as long as basal width, medially depressed. Cercus simly conical, 2.2 times longer than basal width. Subgenital plate elongated cone−shape. **<♀>** Larger than male. Antennae shorter, as long as a half of body length, its middle antennomeres two times longer than wide. Interocular distance wider than horizontal diameter of an eye. Vertical diameter of an eye as long as subocular groove. Tegmina mesopterous, surpassing a half of abdomen; costal area as wide as precostal, or medial area. Subgenital plate two times longer than wide. Ovipositor hook−shaped, ventral valves shorter than basivalvular sclerite. **<Measurements>** BL ♂ 15.5−16.8, ♀ 20.5−23.3; PL ♂ 2.7−3.0, ♀ 3.7−3.9; TL ♂ 8.8−9.9, ♀ 10.2−11.6; HFL ♂ 10.4−11.0, ♀ 12.6−14.0.

Distribution. Korea, North China, Russian Far East.

Genus *Schmidtiacris* Storozhenko 수염치레애메뚜기속

2002. Far Eastern Entomologist, 113: 13. Type species: *Stauroderus schmidti* Ikonnikov 1913.

Diagnosis. Head with foveolae well defined, rectangular, narrow, and visible from above. Pronotum with strong median carina cut by principle sulcus behind the middle of the disc. Tegmen long and narrower than *Chorthippis,* in male 4.75−5.2, in female 5.0−5.9 times longer than wide; male costal area wider than subcostal one; C and Sc stright. Male penis with ventral valvae widened near the apex. Only two species are known in the Manchurian Subregion.

127. *Schmidtiacris schmidti* (Ikonnikov 1913) 수염치레애메뚜기 (Figs. 333, 356−357)

Stauroderus schmidti Ikonnikov 1913. Korea Acrid.: 12. "Korea: Choanso". Lectotype ♂ in Zoological Museum, Moscow University.

= *Chorthippus nakazimai* Furukawa in Furukawa and Shiraki 1950. Iconographia Insectorum Japonicorum: 30, Fig. 70. "Japan". Type in ? [Ichikawa 2002]

Korean records. ***Stauroderus schmidt*** [!]: Doi 1933: 88; ***Chorthippus schmidti***: Bey−Bienko and Mishchenko 1951: 534; Mishchenko 1968: 492; Ju 1969: 23 (North Korean check list); Storozhenko 1986: 303, Figs. 133, 115(5), 153(4−10), 154(6); Ju 1993: 287 (Mt. Baekdusan); Kwon and Huh 1994: 52 (Korean check list: 발해애메뚜기); Otte 1995: 136 (Orthoptera species file); Kwon et al. 1996: 105 (Korean species list); Yin et al. 1996: 168 (synonymic catalogue); ***Chorthippus nakazimai***: Cho 1959: 172, Fig. 52 (manual); Cho 1969: 729, pl. 78 (illustrated encyclopedia: 수염치레애메뚜기); Ju 1969: 23 (North Korean check list); Kwon and Huh 1994: 52 (Korean check list); Moon and Yoon 1996: 53 (KEI); Kwon et al. 1996: 105 (Korean species list); ***Schmidtiacris schmidti***: Storozhenko 2002: 14, Figs. 18−20.

Specimens examined. <JG> 2♀, Mt. Myohyangsan river Chongchon−gang valley, 12 ix 1980, Gy. Tapal and L. Forro, No. 640 (Hungarian Natural History Museum, Budapest); **<PN>** 13 ♂7♀, Sagam 45 km N from Pyongyang, 12 viii 1971, S. Horvatovich and J. Papp, No. 163 (Hungarian Natural History Museum, Budapest); 1♀, Chang−lyong san 50 km N of Pyongyan and 15 km E from Sa−gam, 13 viii 1971, S. Horvatovich and J. Papp, No. 168 (Hungarian Natural History Museum, Budapest); **<GW>** 1♂1♀, Mt. Kumgangsan under Mumpil bong, 29 ix 1980, H. Steinmann and T. Vasarhelyi, No. 605 (Hungarian Natural History Museum, Budapest); 1♂, Yeongok Gangneung, 12 viii 1995, Seong KJ (SSU); 4♂5♀, Buyeongyegok Samsan−ri Yeongok Gangneung, 18−20 viii 2001, Kim JI (SSU); 1♂2♀, Gangchon, 14 viii 1997, Jeon HJ and Lee JH (SSU); 2♂7♀, Gojindong Mt. Geonbongsan,

28 viii 1990, Kim JI et al. (SSU); 1♂, Mureungje Donghae, 16 vii 1982, Park SH (SSU); 1♂, Samhwasa Bukpyeong, 26 vi 1984, Seo YM (SSU); 1♀, Daecheongbong Mt. Seoraksan Seo-myeon Yangyang, 27 viii 2002, Kim TW (SSU); 1♂1♀, Gwaneumsa Mt. Baekdeoksan Yeongwol, 26 viii 2001, Kim SY and Kim AY (SSU); 1♀, Mt. Chiaksan Wonju, 14 viii 1999, Ku DS (NIAST); 1♂1♀, Inje, 5 ix 1998, Kim TW (SSU); 1♂, Imgye Jeongseon, 6 viii 1991, Yoon SJ (SSU); 1♂1♀, Jinburyeong, 3 viii 1991, Cho HJ (SSU); 1♀, Goseokjeong Cheolwon, 4 ix 1988, Lee SE (SSU); 1♂, Sododong Taebaek, 22 vii 1986, Chang KS (SSU); 9♂7♀, Baegildong Daehwa Pyeongchang, 1 vii 1985, Kim JI et al. (SSU); 1♀, Hoeryeongbong Bongpyeong Pyeongchang, 20 vi 1998, Choi KJ et al. (SSU); 2♂2♀, Geomun-ri Jinbu Pyeongchang, 30 vi 1985, Kim JS (SSU); 5♂, Dongsan-ri Jinbu Pyeongchang, 2 vii 1985, Chang KS and Kim YS (SSU); 1♂, Mt. Baegamsan Gwangam-ri Naechon-myeon Hongcheon, 9 vi 2002, Kim TW (SSU); 1♀, Bongo-ri Sanseo Hwacheon, 20 viii 1990, Yang SY (SSU); **<GG>** 26♂34♀, Mt. Myeongjisan Gapyeong, 12 viii-23 ix 1989, Park JM et al. (SSU); 2♂, Gwangneung, 16 vii 1980, Kim SA (KU); 1♀, Mt. Paldalsan Suwon, 20 viii 1989, Choi YJ (EU); 1♂2♀, Choseong-ri Cheongsan Yeoncheon, 11 vii 1980, Park MK (KU); 2♂1♀, Seolma-ri Jeokseong Paju, 18 viii 1984, Kim SE and Lee MI (SSU); 1♂2♀, I-dong Pocheon, 21 viii 1994, Kwon YJ (SSU); 1♂1♀, Rodriguez shooting range Yeongpyeong Pocheon, 20 vii 1996, Kim JI et al. (SSU); 1♀, Segok-dong Gangnam-gu Seoul, 15 ix 1998, Yoo JS (SSU); 1♀, Mt. Gwanaksan Seoul, 8 viii 1993, Im JY (SSU); 1♀, Banghag-2dong Dobong-gu Seoul, 20 viii 1989, An EM (SSU); 1♂, Mt. Cheonggyesan Seocho-gu Seoul, 8 viii 1989, Lee HK (SSU); **<CB>** 1♀, Hwayang Cheongcheon Goesan, 18 viii 1985, Lee OK (SSU); 1♀, Osa-ri Danyang, 11 vii 1984, Kim MJ (SSU); 10♂20♀, Joryeng Mungyeong, 22 vi 1989, Kim JI et al. (SSU); 1♀, Mt. Songnisan Boeun, 8 viii 1990, Kim JI (SSU); 4♂6♀, Daemok-ri Mt. Songnisan, 9-10 viii 1990, Park HC and Lee OJ (SSU); 8♂9♀, Gosa-ri Yeonpung, 22 vi 1989, Yang JO et al. (SSU); 1♂, Mt. Janryongsan Geumsan Gunseo Okcheon, 26 vii 2002, Kim TW (SSU); 2♂2♀, Mt. Wolaksan Jecheon, 10 vii 1991, Park DK et al. (SSU); 1♂, Sujupalbong Jungwon-gun, 2 viii 1994, Min HJ (SSU); 27♂17♀, Songmyeon-ri Cheongcheon, 23 vi 1989, Park JM et al. (SSU); **<CN>** 1♀, Onyang, 27 ix 1988, Jeon NY (SSU); **<GB>** 10♂7♀, Daehyeon Seokpo Bonghwa, 24 vii 1986, Kim JI and Chang KS (SSU); 1♂, Sogwang-ri Seo-myeon Uljin, 1 viii 1999, Kim et al. (SSU); 1♂1♀, Mt. Juwangsan Cheongsong, 10 viii 1991, Kim NY and Im ET (SSU); **<GN>** 1♂1♀, Mt. Gayasan Jukjeon-ri Gaya-myeon Hapcheon, 10 vii 1999, An TH and Kang KH (GSU); **<JB>** 1♂1

♀, Deokdong-ri Namwon, 6 viii 1983, Jeon SS (SSU); 1♀, Mt. Deogyusan Muju, 10 viii 1984, Sohn JH (SSU); 1♀, Daea-ri Dongsan Wanju, 27 vii 2002, Kim TW (SSU); **<JN>** 1♀, Piagol Mt. Jirisan, 23 vi 1987, Lee SR (KU); **<JJ>** 1♂, Seongpanak, 12 vii 1983, Anonym (NIAST).

Description. **<♂>** Body coloration yellowish brown, laterally more bright. Head with flattened vertex, frons strongly inclined; antennae filiform, rather flattened basally, longer, as long as body length, its middle antennomeres four times longer than wide; fastigium of vertex as long as basal width; interocular distance as wide as horizontal diameter of an eye; foveolae rectangular, 3.5 times longer than wide; scape as long as wide; antennal socket wider than frontal ridge; frontal ridge and facial lateral carinae reaching clypeal suture; subocular groove shorter than vertical diameter of an eye. Pronotum as long as fore femur, its anterior margin truncated, posterior margin roundly convex; median longitudinal carina distinct, subdivided behind the mid by transverse posterior sulcus; prozona a little longer than metazona, principle sulcus rather upraised; lateral carinae incurved and interrupted in prozona, diverged in metazona; lateral lobe of pronotum as deep as pronotal length, upper half more brownish than lower half yellowish. Tegmina macropterous, surpassing hind knee, its apex rounded; veins brownish; precostal bulge present; costal area widest. Hind wings transparent. Prosternum weakly convex, mesosternal interspace 1.2 times wider than long. Fore tibia with four, middle tibia with 6-7 pairs of ventral spines apically. Hind femur yellowish, with a small dark area on inner basal surface; hind knees and base of tibia blackish; hind tibia with 11-13 pairs of dorsal spines. Abdominal tympanum semicircular, 2.5 times wider than long, without basal lobe. Abdominal sides with dark patches basally. Epiproct triangular, slightly longer than basal width, its apex sharply pointed, lateral margins weakly sinuated. Cercus simply conical, 2.5 times longer than basal width. Subgenital plate upraised cone-shape. **<♀>** Larger than male. Antennae shorter than male, just as long as a half of body length, its middle antennomeres 2.5 times longer than wide. Fastigium of vertex shorter than basal width. Epiproct and paraprocts largely developed, mostly covering the upper valves of ovipositor. Subgenital plate 1.7 times longer than wide, its hind margin triangular at apex. Ovipositor with short valves; ventral valves as long as basivalvular sclerite. **<Measurements>** BL ♂ 17.8-20.9, ♀ 23.4-25.6 (HTL ♂ 23.2-27.8, ♀ 27.0-29.2); PL ♂ 3.9-4.5, ♀ 4.3-4.7; TL ♂ 17.9-20.5, ♀ 19.3-21.8; HFL ♂ 11.5-13.5, ♀ 14.3-16.3.

Distribution. Korea, Japan (Nakabusa), Northeast China, Mongolia, Russian Far East.

Genus *Chorthippus* Fieber 애메뚜기속

1852. In Kelch. Grundlage zur Kenntnis der Orthopteren (Geradflugeler) Oberschlesiens, und Grundlage zur Kenntnis der Käfer Oberschlesiens, erster Nachtrag (Schulprogr). Ratibor, Bogner (publication series): 1. Type species: *Acridium albomarginatum* de Geer 1773.

Diagnosis. Representative genus of Gomphocerinae comprising about 1,066 species in the world (*sensu* Otte 1995). Filiform antennae, distinct foveolae, and stridulatory pegs on inner surface of hind femur. Lateral carinae of pronotum parallel or slightly curved inwards. More than 150 species are known in the world, the measurements of three Korean *Chorthippus* compared in Table 28.

128. *Chorthippus hammarstroemi hammarstroemi* (Miram 1906) 시베리아애메뚜기 (Figs. 331, 352-353)

Stenobothrus hammarstroemi Miram 1906. Helsingors Ofvers. F. Vet. Soc. 49(6): 5. "Russia: Osnatjennaja". Type in ?

Korean records. *Chorthippus hammarstroemi*: Won et al. 1990: 95 (Mt. Changbaishan); Ju 1993: 287 (Mt. Baekdusan).

Specimens examined. <GW> 1♀, Gachilbong, 23 vii 1981, Kim CW (KU); 1♂, Buyeongyegok Samsan-ri Yeongok Gangneung, 18-19 vi 2001, Kim AY (SSU); 2♂1♀, Bogwang Phoenix park Myeonon-ri Bongpyeong, 5 viii 2003, Rhee HW (SSU); 18♂10♀, Samhwasa Bukpyeong, 26-27 vi 1984, Kim JI et al. (SSU); 1♂, Baekdamsa Mt. Seoraksan, 30 viii 1984, Nam SH (KU); 2♂, Mt. Daeamsan Dong-myeon Yanggu, 7-8 vii 2003, Kim JK and Kim TW (SSU); 1♂1♀, Mt. Daewusan Dong-myeon Yanggu, 10 vii 2003, Kim TW (SSU); 8♂6♀, Changwon-3ri Ssanyong Yeongwol, 28 vi-24 vii 1999, Kim MA (NIAST); 1♀, Mt. Chiaksan Wonju, 27 vii 1974, Oh IT (KU); 2♂, Garibong Mt. Seoraksan Inje, 22 vii 2004, Kim TW (SSU); 1♀, Deokgeo-ri Jangpyeong, 16 ix 1988, Jeon NY (SSU); 1♀, Jeungsan Nam-myeon Jeongseon, 19 ix 2004, Kim TW (SSU); 1♀, Hoedong-ri Jeongseon, 16 vii 1999, Yeo JD (KU); 3♀, Mulgubi Jinburyeong, 12 viii 1980, Yoon SJ (EU); 1♂, Chugokyaksu Chunseong, 16 viii 1981, Kim JI (SSU); 1♂, Mt. Samyeongsan Chugok-ri Buksan-myeon Chuncheon, 25 vii 2003, Kim TW (SSU); 1♀, Mt. Hambaeksan Taebaek, 18 ix 2001, Kim MA (NIAST); 20♂4♀, Baegildong Daehwa Pyeongchang, 1-2 vii 1985, Chang KS et al. (SSU); 13♂6♀, Yongsan-ri Doam Pyeongchang, 29 vi 1985, Chang KS et al. (SSU); 3♂1♀, Geomun-ri Jinbu Pyeongchang, 30 vi 1985, Kim MA et al. (SSU); 13♂

2♀, Dongsan-ri Jinbu Pyeongchang, 2 vii 1985, Chang KS (SSU); 11♂4♀, Mapyeong-ri Jinbu Pyeongchang, 30 vi 1985, Chang KS et al. (SSU); 1♂, Woljeongsa Mt. Odaesan, 23 vi 1996, Kim HJ (SSU); 1♂, Daegwanryeong pasture Hoenggye, 28 vi 1984, Chang KS (SSU); **<GG>** 1♂, Mt. Pakyon 20 km NE from Kaesong both sides of and near to the road between Kaesong and Pakyon pokpo, 10 ix 1971, S. Horvatovich and J. Papp, No. 254 (Hungarian Natural History Museum, Budapest); 1♂, Jogaegol Mt. Yongmunsan Yangpyeong, 31 v 1986, Chang KS (SSU); 2♂, Mt. Cheondeoksan Yeoncheon, 26 vi 1987, Kim JI and Yoo HJ (SSU); 2♂, Mt. Cheonmasan Namyangju, 29 vi 1976, Choi HS and Jeong HS (KU); 1♂, Geogok-ri Jangdan-myeon Paju, 29 vi 1987, Yoo HJ (SSU); 6♂3♀, Jikdong-ri Soheul-eup Pocheon, 16 vi 2003, Rhee HW (SSU); **<CB>** 6♂1♀, Joryeong Mungyeong, 22 vi 1989, Ku HK and Kim SI (SSU); 1♂, Daemok-ri Mt. Songnisan, 8 viii 1990, Lee OJ (SSU); 11♂2♀, Gosa-ri Yeonpung, 22 vi 1989, Kim JI et al. (SSU); 1♀, Mt. Wolaksan Munsubong Dogi-ri Deoksan-myeon Jecheon, 14-15 ix 1996, Lee HS (SSU); 1♂1♀, Mt. Gyemyeongsan Jongmin-dong Chungju, 18 vi 2003, Kim JI (SSU); **<CN>** 1♂, Mt. Gwangdeoksan Cheonan, 16-18 vi 1994, Kim JI (SSU); **<GB>** 1♀, Daehyeon Seokpo Bonghwa, 24 vii 1986, Kim JI (SSU); 1♂, Mt. Cheongryangsan Bonghwa, 14 vi 1996, Kim DS (SSU); 1♂, Dalgipokpo Mt. Taehaengsan, 24 vi 1988, Kim HY (SSU).

Description. <♂> Body compressed, coloration yellowish, sometimes dorsally green. Head subconical, with inclined frons; interocular distance as wide as horizontal diameter of an eye; fastigium of vertex a little shorter than basal width; foveolae rectangular. 2.5 times longer than wide; antennae longer, as long as tegmina, its middle antennomeres 3.5-4.0 times longer than wide; scape as long as wide; antennal socket as wide as frontal ridge; lateral facial carinae distinct than frontal ridge near clypeal suture; vertical diameter of an eye longer than subocular groove. Pronotum as long as fore femur, its anterior margin truncated, posterior margin angularly projected; median longitudinal carina distinct, subdivided just behind the mid, prozona slightly longer than metazona; lateral carinae incurved, interrupted in prozona, diverged in metazona; lateral lobe of pronotum as deep as pronotal length. Tegmina macropterous, surpassing abdominal end, reaching hind knee, its apex widely rounded; precostal bulge present; radial area as wide as medial area; stigma on dense veinlets present four fifths from base. Hind wings transparent, surpassing stigma, not reaching tegminal end. Prosternum smooth, mesosternal interspace 1.2 times wider than long. Abdominal tympanum largely oval, 1.5 times longer than wide, without basal covering lobe. For tibia with 5-6, middle tibia with 6-7 pairs of ventral spines apically. Hind knees

darkened. Hind tibia with 12−13 pairs of dorsal spines. Epiproct roundly triangular with a pointed apex on hind margin. Cercus simply conical, 2.2 times longer than basal width. Subgenital plate shortly upraised cone−shape. **<♀>** Larger than male. Antennae shorter than male, its middle antennomeres 2.5−3.0 times longer than wide. Tegmina mesopterous, covering a thirds of abdomen. Subgenital two times longer than wide, with a small triangular lobe at apex. Ovipositor with short and thick valves; ventral valves a little longer than basivalvular sclerite.

Distribution. Korea, Northeast China, East Russia (ssp. *peipingensis*: Peiping = Beijing).

129. *Chorthippus fallax fallax* (Zubovsky 1900) 북방애메뚜기 (신칭) (Fig. 351)

Stenobothrus cognatus var. *fallax* Zubovsky. 1900. Trudy Russkago Entomologicheskago Obshchestva, 34: 7. "Russia: Lake Zaisan". Syntype in Zoological Institute of the Russian Academy of Sciences, St. Petersburg.

Specimens examined. <RG> 5♀, Samjiyon, 4 x 1978, A. Vojnits and L. Zombori, No. 451 (Hungarian Natural History Museum, Budapest).

Description. <♀> Body coloration dark brown; pronotum with wide posterior margin, the lateral carinae which strongly diverge in metazona; tegmina reaching the half of abdomen; mesosternal interspace two times wider than long.

Distribution. North Korea (new record), North China, North Mongolia, East Russia (ssp. *akaishicus*: Honshu; *kurilensis*: Is. Kuril; *saltator*: Is. Kuril; *strelkovi*: Sakhalin; *yamato*: Honshu; *yatsuanus*: Honshu).

130. *Chorthippus montanus montanus* (Charpentier 1825) 긴수염애메뚜기 (Fig. 350)

Gryllus montanus Charpentier 1825. Horae entomologicae, adjectis tabulis novem coloratis, 4: 173. "Poland, Czechoslovakia". Lectotype ♂ in Zoologiska Institution, Lunds Universitet, Lund.

Acrydium longicornis Latreille 1804. Hist. Nat. Crust. Ins. 12: 159. ? Type lost. Nom. dub. since Kevan (1960).

Korean records. ***Chorthippus longicornis***: Bey−Bienko 1931: 675 (Mt. Baekdusan); Cho 1959: 174 (manual); Cho 1969: 730 (illustrated encyclopedia: 긴수염애메뚜기); Kwon and Huh 1994: 52 (Korean check list); Moon and Yoon 1996: 53 (KEI); Kwon et al. 1996: 105 (Korean species list); ***Chorthippus montanus***: Ju 1993: 287 (Mt. Baekdusan: 산애기메뚜기); Hua 2000: 44 (Chinese list).

Specimens examined. <RG> 1♂2♀, Chann-Pay plateau Samziyon 1,500-1,600 m, 24-25 viii 1971, S. Horvatovich and J. Papp, No. 195, 197 (Hungarian Natural History Museum, Budapest); 1♂1♀, Mt. Baekdusan half-way between Samziyon and Mupo, 20 vii 1977, O. Gy. Dely and A. Dely-Draskovits, No. 381 (Hungarian Natural History Museum, Budapest); 6♂7♀, Samziyon, 4 x 1978, A. Vojnits and L. Zombori, No. 451 (Hungarian Natural History Museum, Budapest).

Description. <♂> Body coloration dark green; prozona as long as metazona; hind knee blackish; frontal ridge much protruding, frons slanted; tegmina macropterous, surpassing abdominal end; **<♀>** tegmina mesopterous, reaching two third of abdomen, its apex round; ovipositor with long valves.

Distribution. North Korea, North China, Mongolia, Russia, Europe (ssp. *tatrae*: Middle Europe): Transpalaearctic.

Table 28. Measurements of *Chorthippus* spp.

Species	BL	PL	TL	HFL
C. hammarstroemi	♂ 15.0-18.0 ♀ 17.0-19.8	♂ 3.0-3.4 ♀ 4.0-4.6	♂ 11.0-12.6 ♀ 8.3-9.0	♂ 10.4-11.0 ♀ 12.5-14.5
C. fallax	♀ 19.5-26.9	♀ 3.4-4.2	♀ 4.4-6.5	♀ 11.5-13.1
C. montanus	♂ 13.0-16.0 ♀ 17.0-25.0	♂ 2.6-3.4 ♀ 3.3-4.3	♂ 9.3-11.8 ♀ 8.7-12.2	♂ 8.7-11.0 ♀ 10.5-13.5

Subfamily Acridinae 메뚜기아과

Phytophilus grasshoppers, active herbivores and climbers. Head usually conical in profile, hind wings sometimes expanded cells to allow crepitation. Inner face of male hind femora without stridulatory pegs. Tegmina without raised intercalary vein. 470 species in the world distribution (Otte, 1995).

Key to Species of Acridinae

1. Antennae ensiform; vertex strongly projecting forwards, frons strongly sloping; tegminal apex sharply pointed 2

- Antennae filiform; vertex moderately projecting forwards, frons rather rounded; tegminal apex round 3

2. Hind femur with spine-like genicular lobes ····· ***Acrida cinerea*** (p. 313)

– Hind femur with round genicular lobes ····· ***Gonista bicolor*** (p. 316)

3. Antennae very long, middle antennomeres four times longer than wide; subgenital plate of male short and rounded with blunt apex; ovipositor with short wide valves, its dorsal valve 1.5 times as long as greatest height ····· ***Ceracris nigricornis laeta*** (p. 319)

– Antennae relatively short, middle antennomeres 2–3 times longer than wide; subgenital plate of male long and conical, sharply narrowed toward apex; ovipositor with long narrow valves, its dorsal valve three times more as long as greatest height ····· 4

4. Pronotum with longitudinal black bands on lateral sides (Fig. 322); tegmen with intercalary vein extending along median field ····· ***Mecostethus parapleurus*** (p. 320)

– Pronotum without black bands on lateral sides (Fig. 321); tegmem with intercalary vein connecting cross-veins bearing numerous small teeth ····· ***Stethophyma magister*** (p. 323)

Genus *Acrida* Linnaeus 방아깨비속

1758. Systema Naturae per Regna tria naturae (10th ed.), 1: 427. Type species: *Gryllus* (*Acrida*) *turritus* Linnaeus 1758.

Diagnosis. Head longer, its length longer than distinctly than that of pronotum. Eye situated the fore part of head, distance from hind margin of eye to anterior margin of pronotum 2–2.2 times of the length from anterior margin of eye to top of fastigium. 41 species are known in the Old World.

131. *Acrida cinerea cinerea* (Thunberg 1815) 방아깨비 (Fig. 318, 334)

Truxalis cinereus Thunberg 1815. Mémoires de l'Académie Impériale des Sciences de St. Pétersbourg, 5: 263. "China, Java, Japan". Holotype ♂ in Zoological Institute, Uppsala University.

= *Acrida lata* Motchulsky 1866. Bull. Sci. Nat. Mosc. 39(1): 181. "Japan". Type in ? [Dirsh and Uvarov 1953]

= *Acrida turrita koreana* Ikonnikov 1913. Korea Acrid.: 10, Figs. 1–2. "Korea". Type in ? [Dirsh and Uvarov 1953]

Gryllus (*Acrida*) *nasutus* nec Linnaeus 1758. Systema Naturae per Regna tria naturae (10th ed.), 1: 427, No. 11. "Algeria". Syntype in Linnean Society, London.

Gryllus (*Acrida*) *turritus* nec Linnaeus 1758. Systema Naturae per Regna tria naturae (10th ed.), 1: 427, No. 12. "Africa". Syntype in Linnean Society, London.

Korean records. ***Acrida nasuta***: Rehn 1902: 629 (Chemulpo); ***Acrida turrita***: Bey-Bienko 1929: 100; Wu 1935: 129 (Catalogus Insectorum Sinensium); Hua 2000: 47 (Chinese list); ***Acrida lata***: Doi 1932: 34; Kang and Son 1958: 18 (chromosomes); Cho 1959: 171, Fig. 49 (manual); Cho and Lee 1959; 5 (Gwangneung); Cho 1963: 162 (Is. Jejudo); Cho 1965: 9 ("Dagelet"); Cho 1969: 727, pl. 48 (illustrated encyclopedia); Ju 1969: 22 (North Korean check list); Kim et al. 1987: 216 (cytotaxonomy); Lee and Ko 1988: 204 (Is. Oeyondo); ***Acrida koreana***: Bey-Bienko and Mishchenko 1951: 400, Fig. 922; ***Acrida cinerea***: Dirsh 1954: 154, Fig. 19; Tsyplenkov 1970: 214 (North Korea); Rentz and Miller 1971: 262 (Mt. Palgongsan); Yu 1980: 14 (alimentary canal); Inoue 1985: 108, Figs. 1, 32, 63 (taxonomy with karyomorphology); Storozhenko 1986: 297; Tadauchi 1989: 54 (Japanese check list); Kwon and Huh 1994: 52 (Korean check list); Huh and Kwon 1995: 12 (Is. Jejudo); Moon and Yoon 1996: 52 (KEI); Kwon et al. 1996: 104 (Korean species list); Bae 1998: 173; Kim and Kim 2005: 34, Fig. 4 (taxonomy).

Specimens examined. **<HN>** 1♂, Songhwa 50 m, 17 ix 1979, S. Horvatovich and J. Papp, No. 540 (Hungarian Natural History Museum, Budapest); **<PN>** 1♀, Bongwa-ri on the riverside Te-dong about 45 km E from Pyongyang, 16 viii 1979, S. Horvatovich and J. Papp, No. 178 (Hungarian Natural History Museum, Budapest); **<HH>** 1♀, Sinpyong about halfway between Pyongyang and Wonsan, 30 ix 1979, S. Horvatovich and J. Papp, No. 610 (Hungarian Natural History Museum, Budapest); **<GW>** 1♀, Nagok-dong Gangneung, 1 x 1993, Jang MA (SSU); 1♀, Sacheon Gangneung, 19 viii 1997, Choi YJ (SSU); 1♀, Okgye Myeongju, 13 ix 1993, Jeong JR (SSU); 1♂, Samhwasa Bukpyeong, 27 vi 1984, Park SH (SSU); 1♀, Wonju, 29 vii 1987, Lee JH (SSU); 1♀, Gyeonggang Chunseong, 16 ix 1984, Chang KS (SSU); 1♀, Noil-ri Hongcheon, 19 ix 1993, Kim SJ (SSU); **<GG>** 2♂, Mt. Myeongjisan Gapyeong, 23 ix 1989, Lee HS and Choi YJ (SSU); 1♂, Mt. Daegeumsan Dumil-ri Ha-myeon Gapyeong, 2 ix 2006, Kim TW (SSU); 3♂, Is. Seokmodo Ganghwa, 27 ix 1992, Moon TY (KU); 1♀, Jeondeungsa Ganghwa, 18 viii 1990, Ju WA (SSU); 1♀, Mt. Chilbosan Suwon, 22 viii 1994, Choi HS (SSU); 1♀, Wonsi-dong Ansan, 30 viii 1994, Moon TY (KU); 1♂, Yongmunsa Yangpyeong, 22 vii 1989, Kim EK (SSU); 2♂, Sajanggol Dori Jeomdong-myeon Yeoju, 29 viii 2003, Yeo JD (KU); 1♂, Heoninneung Gangnam-gu Seoul, 3 ix 1988, Sim JH (SSU); **<CB>** 1♀, Hoeyang-ri Cheongcheon Goesan, 15 ix 1984, Kim YS (SSU); 1♂, Yongam-ri Hwanggan Yeongdong, 4-5 viii 2001, Kim AY (SSU); 1♂, Mt. Wolaksan Jecheon, 15 viii 1989, Kim SJ (SSU); 1♀, Euirimji Jecheon, 17 viii 1984, Park GJ (SSU); 1♂, Namil-myeon Cheongwon, 25 ix 1994, Park HJ (SSU); 1♀,

Mipyeong Cheongju, 18 x 1992, Park HH (SSU); 2♂, Mt. Cheongdeungsan Sancheok-myeon Chungju, 5 viii 2002, Kim TW (SSU); **<CN>** 1♀, Mt. Gyeryongsan Daejeon, 8 x 1994, Kim EJ (SSU); 1♀, Hoedeok-dong Daedeok-gu Daejeon, 26 viii 1997, Kim EY (SSU); 1♀, Gyeryong-myeon Gongju, 22 ix 1983, Lee JS (KU); 1♂, Wungcheon Boryeong, 15 viii 1989, Jang EJ (KU); 1♂, Hyeonbuk Buyeo, 16 viii 1985, Min KM (SSU); 1♀, Onseok-dong Seosan, 15 ix 1997, Choi KJ (SSU); **<GB>** 1♂, Wongu-dong Yeoengdeok, 3 viii 1983, Hong HS (SSU); 1♀, Taehwa Ulsan, 14 viii 1990, Choi SY (SSU); 1♂, Bogyeongsa Pohang, 31 vii 1983, Chang KS (SSU); 1♀, Hayang Gyeongsan, 24 vii 1992, Yoon HK (SSU); 1♂, Gyeongju, 15 viii 1989, An EM (SSU); 1♀, Ubo Gunwui, 11 viii 1994, Park YH (SSU); 1♂, Yongyu-ri Sangju, 2 viii 1992, Nam SR (SSU); 1♂, Waryong Andong, 22 ix 1991, An HJ (KU); 1♀, Yeongdeok, 10 viii 1996, Hong HJ (SSU); 1♂1♀, Is. Ulleungdo, 15 viii 1997, Lee HJ (SSU); **<GN>** 1♂, Namsang Geochang, 8 ix 1989, Jeong KD (SSU); 1♂, Hoehwa Gosoeng, 20 viii 1994, Kim YJ (SSU); 1♀, Jinyeong Gimhae, 26 ix 1996, An EK (SSU); 1♀, Yeonsan-dong Dongnae Busan, 21 viii 1985, Park MN (SSU); 2♂, Banrim-dong Changwon, 24-25 viii 1994, Kim AR (SSU); 1♂, Donam-dong Chungmu, 11 ix 1992, Shin MJ (SSU); 1♂, Samga-myeon Hapcheon, 13 ix 1992, Choi HJ (SSU); **<JB>** 1♂, Buan Gochang, 1 ix 1992, Choi HJ (SSU); 1♂, Seonwunsa Gochang, 29 vii 1984, Chang KS (SSU); 1♂, Naesosa Buan, 30 vii 1984, Chang KS (SSU); **<JN>** 1♂, Ganjeon-myeon Gurye, 10 viii 1989, Cho HS (SSU); 1♀, Toji-myeon Gurye, 27 ix 1996, Huh R (SSU); 1♀, Soho-dong Yeosu, 23 ix 1991, Sim SJ (SSU); 1♂, Is. Nakwoldo Yeonggwang, 15 viii 1989, Kim and Lee (SSU); 1♀, Is. Daesekmando Yeonggwang, 19 viii 1989, Lee OJ (SSU); 3♀, Is. Anmado Yeonggwang, 19-20 viii 1989, Kim JI and Lee OJ (SSU); 1♀, Is. Bogildo Wando, 23 viii 1982, Chang KS (SSU); 1♀, Is. Soando Wando, 22 viii 1982, Kim JI (SSU); 1♀, Is. Jagaedo Wando, 23 viii 1982, Kim JI (SSU); 2♀, Is. Cheongsando Wando, 20 viii 1982, Kim JI (SSU); 1♂, Is. Hoenggando Wando, 22 viii 1982, Kim JI (SSU); 1♂, Piagol Mt. Jirisan, 2 viii 1984, Chang KS (SSU); **<JJ>** 1♂, Ora-dong Jeju, 28 ix 1996, Jeong HJ (SSU).

Description. <♂> Body coloration green or brown, two contrastive types present, but variable intermediate forms, sometimes irregularly stripes marked forms also present. Head elongated, acutely conical; vertex upraised; fastigium of vertex a little shorter than vertical diameter of an eye, its apex roundly conical, with a weak median longitudinal carina to anterior margin of eyes; subocular groove two times longer than vertical diameter of an eye; median ocellus situated on between lower margin of eyes; interocular distance as wide

as horizontal diameter of an eye; frons weakly emarginated at lower margin of eyes. Antennae ensiform, as long as head and pronotum combined length, widened basally, triangular in cross section. Pronotum as long as fore femur, with distinct median and lateral carinae; anterior margin truncated, posterior margin triangularly pointed; principle transverse sulcus cut two thirds of lateral carinae; prozona 1.2 times longer than metazona; lateral lobe of pronotum a half shorter than pronotal length, with small longitudinal carinulae, its hind margin widely concave, the lateral angles acute. Prosternum smooth, mesosternal interspace two times longer than wide. Tegmina macropterous, surpassing hind knee, its apex sharply pointed. Hind wings weakly tinged with yellow, remigium with expanded large cells in apical half. Fore tibia with 8−9 pairs, middle tibia with 10−12 pairs of ventral spines apically. Hind femur with upper and lower lobes of knee each acutely pointed spiniform. Abdominal tympanum semicircular, 1.2 times longer than wide, subtympnal lobe present. Epiproct triangular, as long as basal width, ridge and groove of dorsal surface not discernable. Cercus finger−shaped, four times longer than basal width. Subgenital plate elongated, acutely conical, with a upper basal projection. **<♀>** Much larger than male. Subocular groove 3.5 times longer than vertical diameter of an eye. Mesosternal interspace 1.5 times longer than wide. Subgenital plate with two concavity on hind margin. Ovipositor with very short and thick valves; ventral valves without basal tooth; basal plate as long as wide. **<Measurements>** BL ♂ 40.0−45.3, ♀ 52.0−70.5 (HTL ♂ 42.3−54.6, ♀ 68.3−85.8); PL ♂ 6.4−7.8, ♀ 10.2−12.4; TL ♂ 32.0−39.0, ♀ 49.5−63.0; HFL ♂ 23.0−25.6, ♀ 34.1−44.6.

Distribution. Korea, Japan, China, Taiwan, Mongolia (ssp. *willemsei*: Malaysia).

Genus *Gonista* Bolívar 딱따기속

1898. Annali del Museo Civico di Storia Naturale 'Giacomo Doria', Genova, 39(19): 29. Type species: *Gonista antennata* Bolívar 1898.

Diagnosis. Fastigium of vertex rounded triangular, distinctly separated from the frontal ridge by a carina, forming with the frontal ridge a sharp angle. Crescents of hind knee rounded on inner and outer sides. 11 species are known in the Africa and Asia.

132. *Gonista bicolor* (de Haan 1842) 딱따기 (Figs. 319, 335)

Acridium (*Opsomala*) *bicolor* de Haan 1842. In Temminck. Verhandelingen over de natuurlijke geschiedenis der Nederlandsche overzeesche bezittingen, Zoologie: 148. "Java, Japan".

Holotype ♂ in Nationaal Natuurhistorische Museum, Leiden.

Gelastorhinus rotundatus nec Shiraki 1910. Acrididen Japans: 62, pl. 2, Fig. 6a–c. "Formosa = Taiwan". Type in ?

Korean records. ***Gelastorrhinus bicolor***: Ikonnikov 1913: 19; Cho 1959: 172, Fig. 51 (manual); Cho and Lee 1959; 11 (Gwangneung: 딱대기부치); Cho 1963: 162 (Is. Jejudo); Cho 1969: 728, pl. 48 (illustrated encyclopedia); Ju 1969: 24 (North Korean check list); ***Gelastorhinus rotundatus***: Okamoto 1924: 55 ("Quelpart"); Seok 1970: 176 (Is. Jejudo); ***Gelastorhinus*** [!] ***bicolor***: Doi 1932: 34; ***Gerastorhinus*** [!] ***bicolor***: Kang and Son 1958: 20 (chromosomes); ***Gonista bicolor***: Bey-Bienko and Mishchenko 1951: 406, Fig. 929; Tsyplenkov 1970: 214 (North Korea); Kwon and Huh 1994: 52 (Korean check list); Huh and Kwon 1995: 12 (Is. Jejudo); Moon and Yoon 1996: 52 (KEI); Kwon et al. 1996: 105 (Korean species list); Hua 2000: 47 (Chinese list); Kim and Kim 2005: 34, Fig. 5 (taxonomy).

Specimens examined. **<PN>** 1♂, Lake Taesong-ho South Pyongyang, 13 ix 1979, H. Steinmann and T. Vasarhelyi, No. 525 (Hungarian Natural History Museum, Budapest); **<HH>** 1♀, Songhwa South Hwanghae, 17 ix 1979, H. Steinmann and T. Vasarhelyi, No. 540 (Hungarian Natural History Museum, Budapest); **<GW>** 1♂, Chuncheon, 28 viii 1998, Park HC (NIAST); 1♂, Mt. Samaksan Chuncheon, 9 x 1971, Nam SS (KU); **<GG>** 1♂, Gwangneung, 7 ix 1985, Park MN (KU); 1♂, Eommi-ri Jungbu Gwangju, 15 ix 1984, Chang KS (SSU); 1♂, Namhansanseong, 19 ix 1981, Kim HM (SSU); 1♀, Wonsi-dong Ansan, 30 viii 1994, Moon TY (KU); 3♀, Yeoncheon, 7 ix 1997, Kim EN (SSU); 1♀, Jeongok, 22 viii 1984, Jang SH (SSU); 1♂, Eungogae, 15 ix 1984, An MG (SSU); 1♀, Ilyeong, 3 x 1984, Lee JG (SSU); 1♂1♀, Mt. Gamaksan Seolma-ri Jeokseong Paju, 8 ix 1984, Chang KS (SSU); 1♀, Mt. Jugeumsan Naechon Pocheon, 25 ix 2004, Kim TW (SSU); 1♂, Wonji-dong Gangnam Seoul, 18 ix 1985, Hwang MG (SSU); 1♂, Mt. Cheonggyesan Seoul, 13 viii 1987, Lee YM (SSU); 1♂, Mt. Gwanaksan Seoul, 3 x 1980, Lee HS (SSU); 1♀, Dogok-dong Seoul, 13 x 1979, Kim JI (KU); 1♂2♀, Ogeum-dong Seoul, 5 ix 1980, Lee SY (KU); 1♀, Mt. Yongmasan Seoul, 5 ix 1971, Kim SJ (EU); 1♀, Uidong Seoul, 13 ix 1981, Park OH (EU); 1♂1♀, Mt. Dobongsan Seoul, 19 x 1958, Lee BJ (NIAST); 1♂, Suwon, 1 ix 1959, Lee BJ (NIAST); **<CN>** 1♀, Onseok-dong Seosan, 12 ix 1997, Choi KJ (SSU); 1♂, Hyudae-ri Baebang Asan, 20 ix 1992, Kim HJ (SSU); **<GB>** 2♀, Daegu, 18 ix 1971, Lee EB (EU); 1♀, Guryongpo Pohang, 14 viii 1972, Park JH (EU); **<GN>** 1♀, Yeonsan-dong Dongnae Busan, 21 viii 1985, Park MN (SSU); 1♂, Is. Geojedo, 8 viii 1964, Bae JM (EU); 1♂, Mt. Gudeoksan Busan, 23 viii 1971, Kim SA

(EU); **<JJ>** 1♂1♀, Musucheon Aewol Bukjeju, 9 x 1999, Kim TW (SSU); 2♂, Gosan-ri Hangyeong Bukjeju, 26 ix 2000, An MG (NIAST); 5♂2♀, Mt. Sanbangsan Andeok Namjeju, 28 ix 2000, Kim TW (SSU).

Description. **<♂>** Body coloration pale green, longitudinal pink stripes present on each sides, sometimes entirely pink dorsally. Head conical, frons strongly inclined; interocular distance wider than horizontal diameter of an eye; fastigium of vertex anteriorly projected, depressed, as long as vertical diameter of an eye; antennae ensiform, triangular in cross section, longer than head and pronotum combined length; scape as long as wide; in front of eyes lateral carinular forming elongated triangle; antennal socket wider than frontal ridge; frontal ridge and facial carina reaching clypeal suture; vertical diameter of an eye slightly longer than subocular groove. Pronotum as long as head, with distinct median and lateral carinae which nearly paralleled; prozona two times longer than metazona; principle transverse sulcus cut lateral and median carinae, lateral carinae with two cut; lateral lobe of pronotum shorter than pronotal length with acute posterior angles, its hind margin roundly concave. Tegmina macopterous, reaching apex of hind tibiae, its apex pointed. Hind wings transparent, shorter than tegmina, its apex pointed. Prosternum with a small tubercle. Mesosternal interspace absent, lobes as long as wide. Fore tibia with 3-4 outer, 8-9 inner spines apically. Middle tibia with four outer, 9-11 inner spines. Hind femora shorter than abdominal end, lobes of knee smooth. Tarsal arolium large, as long as claws. Abdominal tympanum widely oval, 1.5 times longer than wide, without covering lobe. Epiproct elongated triangular, with longitudinal ridge, its apex pointed. Cercus compressed finger-shape, three times longer than middle width, its apex rounded. Subgenital plate elongated conical, more protruding than cerci. **<♀>** Larger and longer than male. Antennae as long as head and pronotum combined length. Interocular distance two times of horizontal diameter of an eye. Vertical diameter of an eye shorter than subocular groove. Pronotum longer than middle femur. Subgenital plate three times longer than middle width, its hind margin denticulated. Ovipositor hook-shaped, with basal plate three times longer than wide. **<Measurements>** BL ♂ 25.1-28.1, ♀ 37.0-44.5 (HTL ♂ 33.8-35.7, ♀ 48.0-56.4); PL ♂ 4.0-4.6, ♀ 6.3-7.8; TL ♂ 23.0-27.3, ♀ 37.0-43.0; HFL ♂ 11.1-13.0, ♀ 16.0-20.0.

Distribution. Korea, Japan, China, Taiwan, Vietnam, Thailand, Malaysia, Philippines, Indonesia.

Genus *Ceracris* Walker 검정수염메뚜기속

1870. Catalogue of the Specimens of Dermaptera Saltatoria in the Collection of the British Museum, 4: 790. Type species: *Ceracris nigricornis* Walker 1870.

Diagnosis. Head with short vertex, but antennae very long; middle antennomeres four times more than its greatest width. Fastigial foveolae indistinctly small, triangular. Pronotum with very weak lateral carinae; all three transverse sulci distinct; posterior margin projecting. Tarsus with a large arolium between claws, equal to claws or extending beyond their apices. Subgenital plate of male short, rounded, bluntly conical. 12 species are known in the Oriental Region.

133a. *Ceracris nigricornis nigricornis* Walker 1870

Ceracris nigricornis Walker 1870. Catalogue of the Specimens of Dermaptera Saltatoria in the Collection of the British Museum, 4: 791. "North Hindustan". Holotype ♀ in The Natural History Museum, London.

Korean records. *Ceracris nigricornis*: Doi 1932: 36 (Mt. Soyosan); Ju 1969: 23 (North Korean check list).

Distribution. Northeast India, Myanmar, South China.

133b. *Ceracris nigricornis laeta* (Bolívar 1914) 검정수염메뚜기 (Figs. 320, 336)

Kuthya laeta Bolívar 1914. Trabajos del Museo de Ciencias naturales, Madrid (Serie Zoologia), 20: 79. "Vietnam: Tan-Moi". Syntype in Instituto Espanol de Entomologia, Madrid.

Korean records. *Ceracris nigricornis laeta*: Cho 1959: 182, Fig. 68 (manual); Cho 1969: 738, pl. 79 (illustrated encyclopedia); Kim 1998: 397; Kim and Kim 2005: 35, Figs. 1, 2, 6 (taxonomy).

Specimens examined. **<GW>** 1♂, Haesanryeong Hwacheon, ? viii 2002, Paik YH (SSU); **<GG>** 3♀, Mt. Soyosan Dongducheon, 19-21 x 1980, Kim YH et al. (SSU); 1♂, Wangnim-ri Yeoncheon, 3 x 2000, Lee HS and Park SU (SNU); 1♀, Mt. Cheonmasan Namyangju, 12 x 1968, Kim GH (EU); 1♀, Ipseok Namyangju, 26 x 1968, Kim GH (EU); **<GN>** 1♀, Ssanggyesa Hadong, 11 viii 1959, Kim HG (EU).

Description. **<♂>** Body coloration deep green. Head with vertex moderately projecting forwards and frons slightly oblique; antennae dark black and very long, as long as body length, its middle antennomeres 4.5 times longer than wide; interocular distance narrower than horizontal diameter of an eye; foveolae absent; antennal socket wider than frontal ridge; vertical diameter of an eye longer than subocular distance. Pronotum longer than

head, as long as fore femur, coarsely punctured; lateral carinae nearly parallel on prozona, with blackish bands along them from behind eyes; median carina distinctly cut by principle transverse sulcus; prozona 1.2 times longer than metazona; anterior margin truncated, posterior margin obtusely angulated; lateral lobe of pronotum as long as pronotal length. Tegmina mcaropterous, surpassing hind knee, its apex rounded; vanal area green, remigium hyaline with reddish brown veins. Hind wings with dark veins. Prosternum smooth, mesosternal interspace 1.2 times wider than long. Legs yellowish brown; hind knee black, with a narrow pale pre-apical ring; hind tibia with black base and a pale post-basal ring. Fore tibia with six, middle tibiae 6-7 pairs of ventral spines apically. Abdominal tympanum semicircular, 1.5 times longer than wide, subtympanal lobe not discernable. Epiproct pentagonal, slightly longer than basal width. Cercus simply conical tapered with numerous granules, three times longer than basal width, its apex rounded. Subgenital plate short, with bluntly swollen apex. **<♀>** Larger than male. Antennae as long as a half of body length. Subgenital plate with hind margin undulate. Ovipositor with short wide valves, dorsal valve 1.5 times longer than greatest height. **<Measurements>** BL ♂ 20-24, ♀ 28-34; PL ♂ 4.0-5.5, ♀ 4.5-6.5; TL ♂ 17.1-19.0, ♀ 21.5-23.0; HFL ♂ 12.5-14.5, ♀ 16-18.

Distribution. Korea, South China, Taiwan, Vietnam, Northeast India.

Remarks. By the difference of body size, smaller southern *C. nigricornis* (♂ 18-20, ♀ 26-30), larger northern *C. laeta* (♂ 22-24, ♀ 34-37) the two subspecies are divided since Uvarov (1925).

Genus *Mecostethus* Fieber 벼메뚜기붙이속

1852. In Kelch. Grundlage zur Kenntnis der Orthopteren (Geradflugeler) Oberschlesiens, und Grundlage zur Kenntnis der Käfer Oberschlesiens, erster Nachtrag (Schulprogr). Ratibor, Bogner (publication series): 1. Type species: *Gryllus alliaceus* Germar 1825.

= *Parapleurus* Fischer 1853. Orthoptera Europaea: 297. Type species: *Gryllus alliaceus* Germar 1825. [Kirby 1910]

Diagnosis. Foveolae triangular, often indistinct. Pronotum not constricted in the middle. Intercalary vein in the medial area straight, prominent, and near the cubitus than the media. Subgenital plate conical in male. Valves of ovipositor long. Two species are known in the Palaearctic Region.

134. *Mecostethus parapleurus parapleurus* (Hagenbach 1822) 벼메뚜기붙이 (Figs. 322, 337)

Gryllus parapleurus Hagenbach 1822. Symb. faunae ins. Helvet.: 34, Fig. 21.

= *Gryllus alliaceus* Germar 1825. Faun. Ins. Eur. asc. 15 pl. 10: fasc. 11, tab. 19. "Dalmatia: Illyria". Type lost. [Coray and Lehmann 1998]

Korean records. ***Mecostethus alliaceus***: Ikonnikov 1913: 11 ("Dyruon to Chuchan"); Storozhenko 1986: 314; Kwon and Huh 1994: 52 (Korean check list); Huh and Kwon 1995: 15 (Is. Jejudo); Kwon et al. 1996: 105 (Korean species list); Kim and Kim 2005: 36, Fig. 7 (taxonomy); ***Parapleurus alliaceus***: Furukawa 1930: 100; Doi 1932: 35; Bey-Bienko and Mishchenko 1951: 462; Cho 1959: 183, Fig. 71 (manual); Cho and Lee 1959: 8 (Gwangneung); Cho 1969: 739, pl. 48 (illustrated encyclopedia); Ju 1969: 25 (North Korean check list); Harz 1975: 567, Figs. 1511, 1608, 1633, 2024-2033; Inoue 1985: 117, Figs. 10, 42, 73 (taxonomy with karyomorphology); Tadauchi 1989: 56 (Japanese check list); Zheng and Xia 1998: 83; Hua 2000: 42 (Chinese list).

Specimens examined. **<GW>** 1♂, Yongneup Mt. Daeamsan Yanggu, 7-8 vii 2003, Kim JK and Kim TW (SSU); 1♀, Mt. Samyeongsan Chugok-ri Buksan-myeon Chuncheon, 25 vii 2003, Kim TW (SSU); 1♂1♀, Mt. Soppulsan Duchon-myeon Hongcheon, 25 viii 2002, Kim TW (SSU); 2♂, Mt. Bangtaesan Inje, 15-19 viii 1995, Kim JI and Kim JK (SSU); 1♂, Chuncheon, 29 vi 1998, Park HC (SSU); 4♂, Garibong Mt. Seoraksan Inje, 24 vii 2004, Kim TW (SSU); 16♂7♀, Mulgubi Jinburyeong Goseong, 12 viii 1980, Yoon SJ et al. (EU); **<GG>** 1♂3♀, Mt. Myeongjisan Gapyeong, 18 vii 1991, Kim JI and Lee OJ (SSU); 1♀, Mt. Chukryeongsan Sudong, 6 ix 1980, Kim JI (SSU); 1♂1♀, Yongsan-ri Baekhak-myeon Yeoncheon, 29 vi 1987, Kim JI and Yu HJ (SSU); 5♂, Mt. Godaesan Sinseo-myeon Yeoncheon, 12 viii 1987, Kim JI and Yu HJ (SSU); 1♂1♀, Mt. Cheondeoksan Sinseo-myeon Yeoncheon, 12 viii 1987, Kim JI (SSU); 2♂, Gunnam Yeoncheon, 1 viii 1994, Yang MJ (SSU); 1♂1♀, Yeongpyeong-ri Yeongjung-myeon Pocheon, 18 viii 1996, Kim JK (SSU); 1♂, Mt. Baekunsan Hwacheon, 15 viii 1996, Yu JE (SSU); 1♂1♀, Mt. Bukhansan Seoul, 14 viii 2001, Lee HS (SSU); 1♂, ibid. 28 vi 1998, Kim TW (SSU); 1♂, Beopwon Paju, 5 vii 1998, Kim TW (SSU); 1♀, Mt. Gwangdeoksan, 8 viii 1984, Nam SH (KU); **<GB>** 1♂, Birosa Mt. Sobaeksan, 4 viii 1994, Moon TY (KU); **<JB>** 17♂7♀, Mt. Naejangsan, 3 viii 1974, Kim CW et al. (KU); 2♂3♀, Baemsagol Mt. Jirisan Namwon, 3 viii 1984, Chang KS (SSU); 2♂2♀, Gucheondong Seolcheon-myeon Muju, 22 viii 1977, Kim CW and Nam SH (KU); **<JN>** 5♂1♀, Is. Geomundo Yeocheon, 13 vii 1984, Kim JI and Chang KS (SSU); 2♂1♀, from Songgwangsa to Seonamsa, 8 viii 1976, Kim CW and Nam SH (KU); **<JJ>** 1♂, Is. Jejudo, 2 viii 1959, Cho PS (KU); 1♂, ibid. 18 vii 1966, Oh

JG (KU); 1♀, Gwaneumsa, 2 viii 1955, Cho PS (KU); 1♂, Sancheondan, 3 viii 1972, Kim JI (KU).

Description. **<♂>** Body coloration bright greenish yellow, or brownish yellow. Black longitudinal stripes presented from behind eyes along with lateral carinae of pronotum. Head subconical, antennae longer, surpassing the half of body length; middle antennomeres 4−4.5 times longer than wide; foveolae indistinct, punctated; frontal ridge as wide as antennal socket; facial carina meet with clypeal suture; subocular groove shorter than vertical diameter of an eye. Pronotum as long as middle femur, with truncated anterior margin and obtusely convex posterior margin; lateral carinae absent; median carina cut by principle transverse sulcus in mid, prozona as long as metazona; lateral lobe of pronotum as long as pronotal length; Tegmina macropterous, surpassing hind knee, its apex rounded; base of radial, subcostal, medial and cubital veins rather blackish; costal area bright yellow. Hind wings transparent. Prosternum smooth, mesosternal interspace two times longer than wide. Fore tibia with 6−7, middle tibiae with 7−8 pairs of ventral spines apically. Hind tibia with 11 outer, 10 inner dorsal spines. Abdominal tympanum largely oval, 1.2 times longer than wide, subtympanal lobe not discernable. Epiproct pentagonal, longer than basal width, laterally with projections; median longitudinal furrow and middle folding present. Cercus simply conical, apically tapered, three times longer than basal width. Subgenital plate elongated coincal upraised. **<♀>** Larger than male. Antennae shorter, slightly longer than the combined length of head and pronotum. Mesosternal interspace 1.5 times longer than wide. Subgenital plate with tree triangular lobes, median one large. Ovipositor with long and slender dorsal valves, which longer than epiproct, its base not thickened with parallel dorsal and ventral margins; ventral valves with basal tooth on outer ventral base; basal plate four times longer than wide. **<Measurements>** BL ♂ 21.0−27.0, ♀ 30.0−36.8 (HTL ♂ 23.5−28.1); PL ♂ 4.2−5.2, ♀ 5.6−7.2; TL ♂ 16.7−22.5, ♀ 21.2−27.4; HFL ♂ 12.5−16.2, ♀ 16.2−22.0.

Distribution. Korea, Japan, China, Russia, Europe (ssp. *nigricans*: France; *turanicus*: Caucasus): Transpalaearctic.

Genus *Stethophyma* Fischer von Waldheim 끝검은메뚜기속

1853. Orthoptera Europaea: 297. Type species: *Gryllus* (*Locusta*) *grossus* Linnaeus 1758.

Diagnosis. Male possess a raised intercalary vein between the M and Cu veins on tegmina. Female with long ovipositor valves. Antennae filiform. Lateral foveloae are small and

triangular. Hind knees black. Five species are known in Holarctic distribution.

135. *Stethophyma magister magister* (Rehn 1902) 끝검은메뚜기 (Figs. 321, 338)

Mecostethus magister Rehn 1902. Proceedings of the Academy of Natural Sciences, Philadelphia, 54: 631. "Japan". Holotype ♂ in Academy of Natural Sciences, Philadelphia.

= *Stethophyma tscherskii* Ikonnikov 1911. Annuaire du Musée Zoologique de l'Académie Impériale des Sciences de St. Pétersbourg, 16: 249. "Russia: Kamen-Rybolov". Lectotype ♀ in Zoological Museum, Moscow University. [Storozhenko and Otte 1994]

= *Mecostethus angustatus* Zhang 1984. Entomotaxonomia, 6(1): 32, Figs. 5-7. "China: Mt. Changbaishan". Holotype ♂ in NE Normal Univ. [Storozhenko and Otte 1994]

Korean records. ***Stethophyma tscherskii***: Ikonnikov 1913: 12; ***Mecostethus magister***: Cho 1959: 184, Fig. 72 (manual); Cho 1963: 162 (Is. Jejudo); Cho 1969: 740, pl. 48 (illustrated encyclopedia); Inoue 1985: 115, Figs. 7, 39, 70 (taxonomy with karyomorphology); Tadauchi 1989: 55 (Japanese check list); Hua 2000: 42 (Chinese list); ***Mecostethus angustatus***: Won et al. 1990: 96 (Mt. Changbaishan); ***Stethophyma magister***: Storozhenko and Otte 1994: 63, Figs. 11-12; Kwon and Huh 1994: 53 (Korean check list); Huh and Kwon 1995: 15 (Is. Jejudo); Moon and Yoon 1996: 53 (KEI); Kwon et al. 1996: 105 (Korean species list); Bae 1998: 197; Kim and Kim 2005: 36, Fig. 8 (taxonomy).

Specimens examined. <GW> 1♀, Chuncheon, 21 vii 1996, Kim JH (SSU); 1♀, Myeonon-ri Bongpyeong, 5 viii 2003, Rhee HW (SSU); **<GG>** 1♀, Mt. Pakyon 20 ㎞ NE from Kaeseong, 10 ix 1971, S. Horvatovich and J. Papp, No. 254 (Hungarian Natural History Museum, Budapest); 1♂, Namhansanseong, 13 viii 1996, Kim JH (SSU); 1♂, Munsan Paju, 24 vi 1972, Yeo OJ (KU); 1♂, Bogwangsa, 17 vi 1978, Jang BY (KU); 1♂, ibid. 18 vii 1998, Kim TW (SSU); 1♀, Yongsan-ri Baekhak-myeon Yeoncheon, 29 vi 1987, Yu HJ (SSU); 2♀, Gwangneung Pocheon, 25 vii 1981, Kim Y and Jeon MS (SSU); 1♂, Eumhyeon-ri Nachon Pocheon, 26 vi 1991, Lee JH (SSU); **<CB>** 1♂, Wonpung-ri Yeonpung Goesan, 25 vi 1986, Park KA (SSU); 12♂4♀, Mt. Songnisan Boeun, 7-10 viii 1990, Kim BJ and Lee OJ (SSU); 1♂, Guksabong Cheongwon, 23 vii 1997, Kim JI (SSU); **<GB>** 1♂, Daehyeon Bonghwa, 25 vii 1986, Kim JI (SSU); 1♂, Bulyeonggyegok Uljin, 26 vi 1990, Kim IJ (SSU); **<JN>** 3♂, Is. Geomundo Yecheon, 13 vii 1984, Chang KS (SSU); 1♂, ibid. 31 vii 2004, Yoo IS (SSU); **<JJ>** 1♂, Sangumburi Jochen Bukjeju, 9 vii 2002, Kim TW (SSU); 1♂2♀, Hamdeok-ri Jocheon Bukjeju, 8 vii 2002, Kim TW (SSU); 1♂, Jeongbangpokpo Seoguipo, 9 vii 2002, Kim TW (SSU); 1♀, Ilchulbong Seongsan, 24 viii

1996, Kim SY (SSU); 1♂, Jeju Univ. Campus, 8 vii 1995, Song SJ (SSU).

Description. **<♂>** Body coloration yellowish brown. Head with round vertex and moderately inclined frons; antennae longer than head and pronotum combined length; middle antennomeres 3.5−4.0 times longer than middle width; interocular distance as wide as horizontal diameter of an eye; foveolae indistinctly triangular, punctated; vertex with a weak median longitudinal carine anteriorly; scape as long as wide; antennal socket slightly narrower than frontal ridge; vertical diameter of an eye longer than subocular groove. Pronotum as long as middle femur, with a distinct median carina, but the lateral carinae not distinct; anterior margin truncated, posterior margin moderately protruding; principle transverse sulcus cut median carina just behind the mid, prozona a little longer than metazona; integument coarsely punctated; lateral lobe of pronotum as deep as pronotal length. Tegmina macropterous, surpassing hind knee, its apex rounded and blackish; basal a thirds of radial vein blackish, basal half of costal area bright yellow; intercalary vein serrulated in medial area and connecting cross−veins bearing numerous small teeth. Hind wing transparent, its apex more dark. Prosternum with weakly projected tubercle, mesosternal interspace 1.5 times longer than wide. Fore tibia with 5−7, middle tibia with 7−8 pairs of ventral spines apically. Hind knee with smooth lower lobe and black crescent, base of hind tibia also black. Hind tibia with 11−12 pairs of dorsal spines. Abdominal tympanum widely oval, 1.2 times longer than wide, without covering lobe. Epiproct triangular, longer than basal width, with a weak transverse median folding. Cercus elongate, four times longer than basal width, tapered apically. Subgenital plate elongated conical, as long as epiproct. **<♀>** Larger than male, sometimes dorsum of pronotum or hind femora reddish. Subocular groove as long as vertical diameter of an eye. Tegmina just reaching abdominal end, its apex indistinctly black than male. Subgenital plate triangularly undulated. Ovipositor longer hook−shaped; dorsal valves as long as epiproct; ventral valves with basal teeth on outer margin; basal plate four times longer than middle width. **<Measurements>** BL ♂ 26.8−36.5, ♀ 38.8−47.8 (HTL ♂ 31.0−40.0, ♀ 40.5−50.0); PL ♂ 5.3−7.0, ♀ 6.9−8.7; TL ♂ 22.5−30.8, ♀ 28.0−34.2; HFL ♂ 16.7−22.7, ♀ 22.6−26.7.

Distribution. Korea, Japan, Northeast China, Mongolia, East Russia (ssp. *kevani*: Kyushu).

Subfamily Oedipodinae 풀무치아과

Ground dwellers prefer to barren and arid habitats with sparse vegetations. Remarkable

large size, round head, filiform antennae, round tegminal apex, and usually banded or with vivid colored hind wings. Sound-producing mechanisms represented by hind femora against tegmina with serrated intercalary veins (Bey-Bienko and Mishchenko 1951).

Key to Species of Oedipodinae

1. Median carina of pronotum entire or intersected by only one transverse groove ····· 2
- Median carina of pronotum intersected by 2-3 transverse grooves ····· 8
2. Median carina of pronotum very distinctly intersected by transverse groove; lateral carinae of pronotum distinct only in metazona ····· ***Celes skalozubovi akitanus*** (p. 332)
- Median carina of pronotum entire or only slightly intersected by transverse groove; lateral carinae of pronotum indistinct ····· 3
3. Pronotum dorsally flat, with slightly convex median carina upwardly ····· 4
- Pronotum sharply roof-shaped, with strongly raised median carina upwardly ····· 6
4. Frons strongly sloping, foveolae trapezoidal (Fig. 339); mesosternal interspace wider than long; ♂ subgenital plate cone-shaped ····· ***Aiolopus thalassinus tamulus*** (p. 326)
- Frons rather rounded, foveolae triangular (Fig. 340); mesosternal interspace as wide as long; ♂ subgenital plate tongue-shaped ····· 5
5. Hind wings pale blue; tarsal arolium very small and narrower, not reaching half the length of claws ····· ***Epacromius japonicus*** (p. 328)
- Hind wings hyaline; tarsal arolium broad and thicker, reaching half the length of claws ····· ***Epacromius pulverulentus*** (p. 329)
6. Mandibles bluish; ventral thorax with dense hairs; hind wings without dark band; tympanal lobe largely developed, covering half of tympanum ····· ***Locusta migratoria*** (p. 333)
- Mandibles dark brown; ventral thorax bare or with sparse hairs; hind wings with remarkable transverse band; tympanal lobe undeveloped ····· 7
7. Pronotum with long median carina, the anterior and posterior margins acute angle ····· ***Gastrimargus marmoratus*** (p. 337)
- Pronotum with short median carina, the anterior margin nearly straight, posterior margin obtuse angle ····· ***Oedaleus infernalis*** (p. 340)
8. Median carina of pronotum bidentate in prozona by two transverse grooves; occiput with a pair of tubercles between the eyes ····· ***Trilophidia annulata*** (p. 342)
- Median carina of pronotum not bidentate in prozona; occiput smooth, without tubercles

between the eyes ····· 9

9. Ocular distance wider than the diameter of an eye; pronotum with median carina intersected by two transverse grooves; tympanal lobe less developed ····· ····· ***Bryodemella tuberculata diluta*** (p. 346)

– Ocular distance as long as the diameter of an eye; pronotum with median carina intersected by three transverse grooves; tympanal lobe largely developed, covering a thirds of the tympanum ····· ***Sphingonotus mongolicus*** (p. 348)

Genus *Aiolopus* Fieber 청분홍메뚜기속

1853. Lotos, 3: 100. Type species: *Gryllus thalassinus* Fabricius 1781.

Diagnosis. Fastigium of vertex pentagonal, slightly longer than wide, moderately concave with well defined margins, forward angle acute or broadly rounded; fastigial foveolae trapezoidal or rectangular. Pronotum tectiform to saddle–shaped; median carina linear, crossed only by posterior sulcus; metazona longer than prozona. Medial area of tegmen with a well developed intercalary vein. Male epiproct triangularly rounded, subgenital plate short, subconical, with rounded apex. 12 species are known in the Old World.

136. *Aiolopus thalassinus tamulus* (Fabricius 1798) 청분홍메뚜기 (Figs. 339, 372)

Gryllus tamulus Fabricius 1798. Supplementum Entomologiae Systematicae. Suppl: 195. "India, China". Lectotype ♂ in Zoological Museum, University of Copenhagen.

Korean records. ***Aiolopusta*** [!] ***tamulis*** [!]: Doi 1936: 106; ***Aiolopus tamulus***: Cho 1959: 179, Fig. 62 (manual); Cho 1969: 734, pl. 48 (illustrated encyclopedia); Tsyplenkov 1970: 214 (North Korea); ***Aiolopus tamulumus*** [!]: Ju 1969: 22 (North Korean check list); ***Aiolopus thalassinus tamulus***: Storozhenko 1986: 315, Fig. 159(14); Kwon and Huh 1994: 52 (Korean check list); Huh and Kwon 1995: 14 (Is. Jejudo); Moon and Yoon 1996: 53 (KEI); Kwon et al. 1996: 105 (Korean species list); Kim and Kim 2005: 86 (taxonomy).

Specimens examined. **<PN>** 2♀, Sagam 45 ㎞ N from Pyongyang, 12 viii 1971, S. Horvatovich and J. Papp, No. 163 (Hungarian Natural History Museum, Budapest); **<GW>** 1♂7♀, Madal–ri Hyeonnae–myeon Goseong, 25 ix 1978, Lee SS (KU); **<GG>** 1♀, Daeseong–ri Oeseo–myeon Gapyeong, 4 ix 1982, Eom GS (SSU); 14♂10♀, Yeocha–ri Ganghwa, 7 viii–9 x 1996, Han SM (KU); 1♂2♀, Is. Baeknyeongdo, 25 vii 1987, Kim JI and Yoo HJ (SSU); 1♀, Mt. Seongjusan Bucheon, 15 ix 1991, Yoon SJ (SSU); 5♂4♀, Eco–garden Seodun–dong Suwon, 13 viii–11 ix 1998, Dept. Bio. (NIAST); 4♂1♀, ibid. 6

vii−27 ix 1999, Kim TW and Jang SS (NIAST); 1♂, the riverside of Namhangang Yeoju, 23 x 2004, Kim TW (SSU); 1♂, Songchu Uijeongbu, 25 ix 1994, Yang MJ (SSU); 1♀, Is. Yeongheungdo Ongjin Incheon, 15 vii 1999, Kim MA (NIAST); 2♂, Yongmi−ri Gwangtan Paju, 29 ix 2004, Kim TW (SSU); 3♂1♀, Misari Hanam, 14 vii 1991, Cho HJ (SSU); 1♂, Banpo−dong Seoul, 6 x 1999, Paik GJ (SSU); 2♀, Ilwon−dong Seoul, 20 ix−2 x 1994, Han YH (SSU); **<GB>** 1♀, Gyeongju, 15 viii 1989, An EM (SSU); **<GN>** 1♂, Namhae, 26 vii 1983, Kim SH (SSU); **<JN>** 1♂, Is. Sangbaekdo Samsan−myeon Yeosu, 13 x 2001, Kim AY (SSU); **<JJ>** 1♂, Gwaneumsa, 14 vi 1990 Yoon TJ (KU); 1♂1♀, ibid. 18 vii 2001, Lee HS (NIAST); 2♂, Mt. Sanbangsan Andeok Namjeju, 28 ix 2000, Kim TW (SSU); 1♂2♀, Andeokgyegok Namjeju, 11 x 1999, Kim TW (SSU); 1♂2♀, Hagui−2ri Aewol Bukjeju, 9 viii 2001, Park HC (NIAST); 3♀, Is. Udo Bukjeju, 10 x 1999, Kim TW (SSU); 1♂3♀, Hamdeok−ri Jocheon Bukjeju, 8 vii 2002, Kim TW (SSU); 5♀, Seonheul−ri Jocheon Bukjeju, 28 ix 2000, Kim MA (NIAST); 2♀, Jeongbangpokpo Dongheundong Seoguipo, 9 vii 2002, Kim TW (SSU).

Description. <♂> Body coloration variable greenish or brownish, its combination. Head rather conical, interocular distance narrower than horizontal diameter of an eye; foveolae distinct, four times longer than wide; scape as long as wide; frontal ridge wider than antennal socket; eye larger, its vertical diameter longer than subocular groove. Pronotum as long as fore femur, with distinct median carina cut by principle transverse sulcus; metazona 1.5 times longer than prozona; lateral carinae weakly incurved, cut by first transverse sulcus on prozona, strongly diverged on metazona, but rather diminished; lateral lobe of pronotum a little deeper than pronotal length, punctated on metazona. Tegmina macropterous, longer than hind knee, reaching a half of hind tibiae, its apex weakly truncated dorsally; intercalary vein serrulated on medial area; costal area with bright green coloration basally. Hind wing pale yellowish, its outer margin more darker. Prosternum smooth, mesosternal interspace 1.2 times wider than long. Fore tibia with 5−6 pairs of ventral spines apically, middle tibia with 6−7 pairs of ventral spines apically. Hind femur with black inner surface in basal half, ventrally reddish; apical half banded with black and white, knee black. Hind tibia with 9−10 pairs of dorsal spines, banded with white, blue and red from the base. Tympanal opening widely oval, 1.2 times longer than wide, with small covering lobe. Epiproct shield−shaped, 1.5 times longer than wide, its apex acute; lateral sides with sinus; dorsal surface with basal carinular. Cercus weakly tapered conical, three times longer than basal width. Subgenital plate shortly conical, upraised. **<♀>** Larger than male. Subgenital

plate with rather pointed hind margin. Ovipositor hook-shaped, its ventral valve without basal tooth. **<Measurements>** BL ♂ 19.0-23.7, ♀ 25.0-32.0 (HTL ♂ 26.0-30.2, ♀ 30.7-38.1); PL ♂ 3.6-4.8, ♀ 4.2-5.6; TL ♂ 20.7-24.4, ♀ 25.3-28.4; HFL ♂ 11.7-13.5, ♀ 14.4-17.2.

Distribution. Korea, Japan, China, Taiwan, India, Myanmar, Thailand, Malaysia, Philippines, Indonesia, Australia (ssp. *thalassinus*: Africa, Europe, Russia; *dubius*: New Caledonia; *rodericensis*; Madagascar).

Genus *Epacromius* Uvarov 발톱메뚜기속

1942. Transactions of the American Entomological Society, 67: 338. Type species: *Oedipoda pulverulentus* Fischer von Waldheim 1846.

Diagnosis. Head with foveolae elongate triangular; angle of the fastigium rounded; frontal ridge at least in the male, with a weak groove. Mesosternal interspace slightly elongated. Tegmina with intercalary vein often irregular, extending along the middle of median area. Subgenital plate of male dorso-ventrally flattened, rather wide, short tongue-shaped. Only three species are known in the Palaearctic Region, the measurements of two Korean *Epacromius* compared in Table 29.

137. *Epacromius japonicus* (Shiraki 1910) 해변메뚜기 (Fig. 341-343, 373)

Oedipoda japonica Shiraki 1910. Acrididen Japans: 39, pl. 1, Fig. 10a-c. "Japan: Takasago". Syntype in Taiwan University, Taipei.

Korean records. ***Aiolopus japonicus***: Kim 1998: 389; ***Epacromius japonicus***: Kim and Kim 2005: 87, Figs. 1-5 (taxonomy).

Specimens examined. <GG> 1♀, Ganseok-ri Bukdong Daebudo Ansan, 3 vii 2001, An MG (NIAST); 7♂3♀, Is. Guleopdo Ongjin Incheon, 5 viii 1982, Kim JI and Chang KS (SSU); 3 ♀, the Batjireum beach Is. Deokjeokdo Ongjin Incheon, 14 ix 2001, Rhee HW (SSU); 2♂, Is. Deokjeokdo Ongjin Incheon, 23-25 vii 1955, Kim HG (EU); **<CN>** 1♂, the Daecheon beach Sinheuk-dong Boryeong, 10 viii 1956, Ahn KH (KU); 1♂, the Biin beach Seocheon, 23 vii 1971, Park JH (EU); 2♂, Sindu-ri Wonbuk Taean, 18 vii 2002, Kim TW (SSU); 2 ♀, the Daeseong salt field Igok-ri Wonbuk Taean, 5 vii 2000, Park HC (NIAST); **<JN>** 3 ♂2♀, the Myeongsasimri and Wonpyeong beach Is. Bigeumdo Sinan, 22 ix 2001, Park HC (NIAST); 1♀, Is. Uido Heuksan-myeon Sinan, 21 vii 1979, Kim JI (KU); 1♀, Wando-eup Wando, 6 vii 1982, Dept. Bio. (SSU); 2♂, the Myeongsasimri beach Sin-ri Is. Sinjido

Wando, 16 vii 2003, Kim TW (SSU).

Description. **<♂>** Body coloration bright sandy, sometimes with green patch. Head subconical or rather rounded; vertex with indistinct foveolae, lateral carinular merging with frontal ridge; scape as long as wide; antennal socket as wide as frontal ridge; vertical diameter of an eye longer than subocular groove; palpi whitish; median antennomeres four times longer than wide. Pronotum with a distinct median carina only on metazona, without lateral carinae; prozona shorter than metazona, hind margin of pronotum obtusely projected; lateral lobe of pronotum slightly deeper than pronotal length, its lower and hind margins rectangular. Tegmina macropterous, reaching a half of hind tibia, its apex weakly truncated dorsally; intercalary vein serrulated on medial area. Hind wings tinged with pale blue in base. Prosternum smooth, mesosternal interspace as long as wide. Fore tibia with five, middle tibia with six pairs of ventral spines apically. Hind femur with bright inner base, two banded, lower lobe of knee blackish. Hind tibia with nine outer, then inner dorsal spines. Tarsal arolia very small and narrower, not reaching half the length of claws. Abdominal tympanum semicurcular, two times longer than wide, with small covering lobe. Abdominal end with a lot of whitish hairs. Epiproct triangular, as long as basal width, with a weak transverse ridge and median concavity. Cercus finger-shaped, four times longer than basal width. Subgenital plate tongue-shaped, rather depressed, its apex obtusely truncated. **<♀>** Larger than male. Subocular groove as long as vertical diameter of an eye. Mesosternal interspace 1.5 times wider than long. Subgenital plate two time longer than wide, its hind margin with a triangular median lobe. Ovipositor hook-shaped, its dorsal valves upper-basally with small rows of teeth, its ventral valves outer-basally with blunt projection.

Distribution. Korea, Japan.

138. *Epacromius pulverulentus* (Fischer von Waldheim 1846) 발톱메뚜기 (Figs. 340, 374)

Oedipoda pulverulenta Fischer von Waldheim 1846. Nouv. Mém. Soc. Imp. Natur. Moscou: 299, 396, tab. 32, Fig. 2. "Russia". Syntype in Zoological Institute of the Russian Academy of Sciences, St. Petersburg.

= *Epacromia coerulipes* Ivanov 1887. Trudy Obshchestva ispytatelei prirody pri Imperatorskom Khar'kovskom universitetie, 21: 303, 348. "Ukraine". Syntype in Zoological Institute of the Russian Academy of Sciences, St. Petersburg. [Mishchenko 1968]

Korean records. ***Aiolopus coerulipes***: Furukawa 1939: 39, 139; Cho and Lee 1959; 13

(Gwangneung); ***Epacromius coerulipes***: Bey-Bienko and Mishchenko 1951: 565, Fig. 1256; Zheng and Xia 1998: 85, Fig. 41; ***Epacromius pulverulentus***: Mishchenko 1968: 494; Storozhenko 1986: 314, Figs. 143(8), 144(1-2), 159(19); Kwon and Huh 1994: 52 (Korean check list); Kwon et al. 1996: 105 (Korean species list); Yin et al. 1996: 259 (synonymic catalogue); Kim and Kim 2005: 88 (taxonomy).

Specimens examined. **<GW>** 1♀, Jukheon-dong Gangneung, 29 vii 1997, Kim HJ (SSU); **<GG>** 1♀, Mt. Myeongjisan Gapyeong, 23 ix 1989, Choi MY (SSU); 17♂12♀, Yeocha-ri Ganghwa, 15 viii-30 x 1996, Han SM (KU); 1♂4♀, light trap, Jeondeungsa Ganghwa, 10 viii 1991, Kim JI and Park HC (SSU); 1♀, Mt. Bukhansan Goyang, 19 viii 1991, Yoon SJ (SSU); 1♀, Mt. Cheonggyesan Gwacheon, 14 viii 1983, Kim GJ (SSU); 1♀, Cheonjinam Gwangju, 5 viii 1998, Oh SY (SSU); 1♂, light trap, Mt. Gwanggyosan Suwon, 21 vii 2000, Jang SJ (NIAST); 1♂1♀, Ganseokri Bukdong Is. Daedudo Ansan, 3 vii 2001, An MG (NIAST); 4♂, Sihwaho Ansan, 3 vii 2001, Park HC (NIAST); 6♂8♀, light trap, Is. Yeongheungdo Ongjin Incheon, 15 vii 1999, Kim TW et al. (SSU); 1♀, Mt. Cheolmasan Seogu Incheon, 10 ix 1995, Lee EJ (SSU); 3♂3♀, Wolchon-ri Is. Yeongjongdo Incheon, 29 x 2000, Jang YJ (SSU); 11♀, near Incheon Air-port Is. Yeongjongdo Incheon, 5 x 2003, Kim TW (SSU); 1♀, Yeonpung-ri Paju, 2 viii 1986, Park SM (SSU); 1♂, Hyangnam-myeon Hwaseong, 25 ix 1988, Lee MO (SSU); 1♂1♀, Gangseo Eco-park Banghwa-dong Seoul, 24 vii-24 viii 2004, Kim TW (SSU); 1♂, Mt. Suraksan Seoul, 5 x 1995, Lee JS (SSU); 4♂3♀, Mt. Cheonggyesan Seoul, 19 viii 1989, Lee JW (SSU); 1♂1♀, the riverside of Hangang Yongsan Seoul, 24 viii 1997, Lee HJ and Jeong DW (SSU); 1♂, Seodaemun Seoul, 11 viii 1981, Yoon SJ (EU); **<CN>** 3♂, Muryangsa Mt. Mansusan Oesan Buyeo, 19 vii 1999, Kim TW (SSU); 2♀, Is. Anmyeondo Taean, 27 vii 1994, Kim RR (SSU); 1♂, Sindu-ri Wonbuk Taean, 1 ix 2001, Park HC (NIAST); 5♂1♀, the Daeseong salt field Igok-ri Wonbuk Taean, 5 vii 2000, Park HC (NIAST); **<JB>** 1♂, Taein Jeongeup, 12 viii 1995, Kim MS (SSU); **<JN>** 1♀, Wando-eup Wando, 7 vii 1982, Dept. Bio. (SSU).

Description. **<♂>** Body coloration very variable, basically brown, sometimes bright longitudinal stripe present from vertex to pronotal disk or just reddish. Head with lateral foveolae that triangular two times longer than wide; scape as wide as frontal ridge; vertex with carinular merging with frontal ridge; antennal socket slightly narrower than frontal ridge; middle antennomeres 3.5 times longer than wide; vertical diameter of an eye longer than subocular groove. Pronotum as long as fore femur, with truncated anterior margin and

obtusely angular posterior margin; lateral carinae absent, median carina distinct only on metazona; metazona 1.2 times longer than prozona; lateral lobe of pronotum slightly deeper than pronotal length. Tegmina macropterous, reaching a half of hind tibia, its apex rather truncated dorsally; intercalary vein serrulated on medial area; costal area sometimes greenish. Hind wings nearly transparent. Prosternum weakly convex, mesosternal interspace 1.2 times longer than wide. Abdominal tympanum widely oval, 12 times longer than wide, covering lobe not discernable. Fore and middle tibiae each with 6−7 pairs of ventral spines apically. Hind femur reddish in ventral base, with two black strips on inner side. Hind tibia with 9 outer, 10 inner dorsal spines, ventrally three black banded. Epiproct triangular, with median transverse folding, apical half with median longitudinal groove. Cercus rod−shaped, protruding than epiproct, 3.5 times longer than basal width. Subgenital plate depressed, tongue−shaped, its hind margin gently convex. **<♀>** Larger than male. Mesosternal interspace as long as wide. Subgenital plate longer than wide, with median triangular projection on hind margin. Ovipositor hook−shaped; upper valves with basal denticulated ridges on dorsum; lower valves with basal outer tooth ventrally; basal plate longer than wide.

Distribution. Korea, East China, Mongolia, North India, East Russia.

Table 29. Measurements of *Epacromius* spp.

Species	BL	HTL	PL	TL	HFL
E. japonicus	♂ 21.5−26.5	♂ 26.6−28.8	♂ 4.0−5.0	♂ 18.5−25.5	♂ 11.0−14.5
	♀ 28.0−33.0	♀ 36.2−38.7	♀ 5.3−6.5	♀ 26.5−32.0	♀ 16.0−18.0
E. pulverulentus	♂ 18.8−21.2	♂ 21.2−26.0	♂ 3.0−4.3	♂ 16.0−20.6	♂ 10.5−12.0
	♀ 22.7−29.0	♀ 26.7−34.7	♀ 4.3−5.6	♀ 21.2−27.6	♀ 13.0−16.3

Genus *Celes* Saussure 홍날개메뚜기속

1884. Mémoires de la Société de Physique et d'Histoire Naturelle de Genève, 28(9): 131. Type species: *Gryllus variabilis* Pallas 1771.

Diagnosis. Body thickset. Head with distinct foveolae, elongate triangular. Pronotum roof−shaped; median carina distinct, sharp, slightly raised; anterior margin straight, posterior margin obtusely angled; metazona with lateral carinae. Tegmina reaching hind knee; intercalary vein closer to M than to CuA. Wing without a dark band. Subgenital plate of male short, bluntly conical. Only two species are known in the Palaearctic Region.

139. *Celes skalozubovi akitanus* (Shiraki 1910) 홍날개메뚜기 (Fig. 377)

Oedipoda akitana Shiraki 1910. Acrididen Japans: 40, tab. 2, Fig. 13. "Japan: Akita". Syntype in Hokkaido University, Sapporo.

= *Celes scalozubovi orientalis* Ikonnikov 1913. Korea Acrid.: 15. "Korea". Syntype in Zoological Institute of the Russian Academy of Sciences, St. Petersburg. [Tarbinsky 1932]

Korean records. ***Celes akitana***: Doi 1933: 88; Furukawa and Shiraki 1950: 28, Fig. 63; Cho 1959: 182, Fig. 67 (manual); Cho 1969: 737, pl. 79 (illustrated encyclopedia); Ju 1969: 23 (North Korean check list); ***Celes skalozubovi akitanus***: Furukawa 1939: 57, 147; Bey-Bienko and Mishchenko 1951: 587; Cho and Lee 1959; 14 (Gwangneung: 청다리메뚜기); Tsyplenkov 1970: 214 (North Korea); Inoue 1985: 114, Figs. 5, 38, 69 (taxonomy with karyomorphology); Storozhenko 1986: 316, Fig. 143(11); Tadauchi 1989: 54 (Japanese check list); Kwon and Huh 1994: 53 (Korean check list); Moon and Yoon 1996: 53 (KEI); Kwon et al. 1996: 105 (Korean species list); Kim and Kim 2005: 86 (taxonomy); ***Celes akitanus***: Zheng and Xia 1998: 143; Hua 2000: 41 (Chinese list).

Specimens examined. <RG> 2♀, Hyesan cemetery, 8 x 1978, A. Vojnits and L. Zombori, No. 474 (Hungarian Natural History Museum, Budapest); **<HN>** 1♀, Bukcheong, 29 x 1929, Nakayama (NIAST); **<GW>** 1♀, Dutayeon Bangsan-myeon Yanggu, 6 x 1972, Kim JI (KU); 3♂2♀, Changwon-3ri Ssangyong Yeongwol, 28 vi-24 vii 1999, Kim MA (NIAST); 1♂, ibid. 9 vii 2000, Kim MA (NIAST); 1♀, Mt. Odaesan, 27 vii 1958, Anonym (KU); 1♂1♀, ibid. 25 vi 1994, Lee SG and Min JH (KU); 1♀, Pyeongchon Seohwa Inje, 30 viii 2004, Rhee HW (SSU); 1♀, Jeungsan Nam-myeon Jeongseon, 19 ix 2004, Kim TW (SSU); **<GG>** 1♂, Mt. Pakyon 20 ㎞ NE from Kaesong, 10 ix 1971, S. Horvatovich and J. Papp, No. 254 (Hungarian Natural History Museum, Budapest); 1♀, Eommi-ri Gwangju, 15 ix 1984, Chang KS (SSU); 1♀, Mt. Godaesan Sinseo-myeon Yeoncheon, 31 viii 1967, Kim JI (KU); 1♀, Mt. Dobongsan Seoul, 10 ix 1972, Lee NS (KU); **<JN>** 1♀, Mt. Daedunsan Haenam, 15 viii 1972, Kim JI (KU).

Description. <♂> Body coloration brown, sometimes partly greenish on pronotum and dorsum of hind femora. Head with round vertex, frons slightly inclined; interocular distance as wide as the horizontal diameter of an eye; foveolae coarsely punctated; scape as long as wide; frontal ridge as wide as antennal socket; vertical diameter of an eye longer than subocular groove. Pronotum with distinct median carina, intersected by principle transverse sulcus; prozona as long as metazona; lateral carinae of pronotum only present on metazona; lateral lobe of pronotum slightly longer than pronotal length. Tegmina macropterous, reaching hind

knee, with numerous black spots; intercalary vein of medial area serrulated. Hind wings with bright red color on basal anal area, remaining out margin darkish black. Prosternum smooth, mesosternal interspace as long as wide. Fore tibia with seven pairs of ventral spines, middle tibia with eight pairs of ventral spines. Hind femur with bright inner base, dorsally three banded, inner side of hind knee black. Hind tibia black banded, with 11 pairs of dorsal spines. Tympanum oval, 1.5 times longer than width, widely open without covering lobes. Epiproct triangular, its apex pointed; dorsal surface with weakly developed a pair of longitudinal carinae and a transverse carina; lateral margin slightly curved in mid. Cercus conical, 3.5 times longer than basal width, protruding than epiproct. Subgenital plate short conical, upraised. **<♀>** Larger than male. Mesosternal interspace 1.5 times wider than long. Ovipositor hook-shaped, its apex pointed, with strongly developed basal tooth on outer margin of ventral valves; upper valves denticulated basally. **<Measurements>** BL ♂ 24.0-26.0, ♀ 32.0-43.3 (HTL ♂ 26.4-30.5); PL ♂ 5.4-6.2, ♀ 8.2-9.3; TL ♂ 19.0-23.2, ♀ 26.8-32.5; HFL ♂ 15.0-17.0, ♀ 20.0-24.2.

Distribution. Korea, Japan, Russian Far East (ssp. *skalozubovi*: East Russia, Mongolia, North East China).

Remarks. By the difference of body size, smaller western *C. skalozubovi* (♂ 19-22, ♀ 28-34) and larger Eastern *C. akitanus* (♂ 22-25, ♀ 34-44) the two subspecies are divided (Bey-Bienko and Mishchenko 1951; Storozhenko 1986).

Genus *Locusta* Linnaeus 풀무치속

1758. Systema Naturae per Regna tria naturae (10th ed.), 1: 431. Type species: *Gryllus* (*Locusta*) *migratorius* Linnaeus 1758 by monotypy.

= *Pachytylus* Fieber 1852. In Kelch. Grundlage zur Kenntnis der Orthopteren (Geradflugeler) Oberschlesiens, und Grundlage zur Kenntnis der Käfer Oberschlesiens, erster Nachtrag (Schulprogr). Ratibor, Bogner (publication series). 5. [Kirby 1910]

Diagnosis. Foveolae triangular, flat, rather inconspicuous. Median carina of pronotum more or less projecting and intersected by a transverse sulcus. Wings well developed, extending beyond the hind femora. Hind wings transparent, slightly yellowish in color and without prominent dark banding. Dorsal carina of hind femur straight and slightly denticulate.

140. *Locusta migratoria* (Linnaeus 1758) 풀무치 (Fig. 381)

Gryllus (*Locusta*) *migratorius* Linnaeus 1758. Systema Naturae per Regna tria naturae (10th

ed.), 1: 432, No. 45. "Russia". Syntype in Linnean Society, London.

= *Gryllus* (*Locusta*) *danicus* Linnaeus 1767. Systema Naturae per Regna tria naturae (12th ed.), 1(2): 702, No. 57. "Europe". Type lost [Uvarov 1951]

= *Gryllus* (*Locusta*) *cinerascens* Fabricius 1781. Species Insectorum, 1: 369. "Italy". Neotype ♂ in Museum d'Histoire Naturelle, Geneva. [Johnston 1956]

Korean records. ***Pachytylus cinerascens***: Walker 1870: 723 (Corea); Rehn 1902: 634 (Chemulpo); ***Pachytylus migratorius***: Rehn 1902: 634 (Chemulpo); ***Locusta danica***: Ikonnikov 1913: 17; Mori and Cho 1940: 19 (Mt. Geumgangsan); Cho 1959: 188, Fig. 80 (manual); Kang and Son 1959: 18 (chromosome); Cho 1963: 162 (Is. Jejudo); Cho 1965: 10 ("Dagelet"); Seok 1970: 176 (Is. Jejudo); ***Locusta migratoria***: Ikonnikov 1913: 17; Furukawa 1939: 45, 142; Bey-Bienko and Mishchenko 1951: 576, Figs. 7, 16-20, 25, 32-34, 1215; Cho and Lee 1959: 6 (Gwangneung); Mishchenko 1968: 495; Ju 1969: 24 (North Korean check list); Storozhenko 1986: 315, Fig. 156(3); Kwon and Huh 1994: 53 (Korean check list); Huh and Kwon 1995: 16 (Is. Jejudo); Moon and Yoon 1996: 53 (KEI); Kwon et al. 1996: 105 (Korean species list); Yoo et al. 1996: 82 (karyotype); Bae 1998: 202; Hua 2000: 42 (Chinese list); Kim and Kim 2005: 88 (taxonomy); ***Pachytylus danicus***: Okamoto 1924: 55 ("Quelpart"); Ju 1969: 25 (North Korean check list); ***Pachytilus*** [!] ***danicus***: Doi 1932: 36; ***Locusta migratoria danica***: Cho 1969: 744, pl. 49 (illustrated encyclopedia); Ju 1969: 24 (North Korean check list).

Specimens examined. **<HN>** 1♂, Haeju Mt. Suyongsan, 31 vii 1982, L. Forro and L. Ronkay, No. 893 (Hungarian Natural History Museum, Budapest); **<GW>** 1♂, Gangchon, 17 ix 1972, Park JH (EU); 2♂, Gojindong Mt. Geonbongsan Goseong, 28 viii 1990, Park HC (KU); 1♂, "Kongosan" = Mt. Geumgangsan, 23 viii 1937, Mori and Cho (KU); 1♀, Dogye Samcheok, 20 viii 1967, Kang BH (EU); 1♂, Mt. Seoraksan, 10 x 1970, Kim MH (EU); 1♀, Dutayeon Bangsan-myeon Yanggu, 6 x 1972, Kim JI (KU); 2♂1♀, Ssangyong-ri Seo-myeon Yeongwol, 21 viii 2003, Rhee HW (SSU); 1♀, Mt. Taehwasan Yeongwol, 28 viii 2001, Kim SY and Kim AY (SSU); 2♂, Jeongseon, 2 viii 1996, Byeon HS (KU); 1♂, Goseokjeong Cheolwon, 4 ix 1988, Lee SE (KU); 1♀, Mt. Myeongseongsan Cheolwon, 19 ix 1971, Kim CS (KU); 2♂, Chugokyaksu Chunseong, 16 viii 1981, Kim JI (SSU); 1♀, Sinnam Chuncheon, 23 vii 1971, Seo JW (KU); 2♂, Donggang riverside Mitan Pyeongchang, 9 vii 1999, Kim TW (SSU); **<GG>** 1♂4♀, Mt. Myeongjisan Gapyeong, 23 ix 1989, Lee OJ et al. (SSU); 2♂, Mt. Unaksan Gapyeong, 18 viii 1987, Lee SR (SSU); 1♂, Hyeonri Gapyeong, 15 ix 1984, Kang MJ (SSU); 1♂1♀, Mt. Cheonggyesan Gwacheon, 21 viii 1997,

Kim SY (SSU); 1♀, Gwangneung, 5 x 1968, Cho HJ (EU); 4♂2♀, Hanggang riverbed Yongsan-gu Seoul, 11 vi-14 x 2001, Kim TW and Rhee HW (SSU); 2♂1♀, Is. Guleopdo Ongjin Incheon, 5 viii 1982, Kim JI and Chang KS (SSU); 69♂17♀, Is. Deokjeokdo Ongjin Incheon, 25 vii 1955, Kim HK (EU); 2♂1♀, Is. Mungapdo Ongjin Incheon, 28 vii 1972, Lee AS (EU); 29♂, Is. Baegado Ongjin Incheon, 27-29 vii 1956, Kim HK and Lo TY (EU); 2♂, Is. Seongapdo Ongjin Incheon, 4 viii 1982, Kim JI (SSU); 3♀, Is. Yongyudo Incheon, 14 x 2006, Kim TW (SSU); 6♂1♀, Is. Uldo Ongjin Incheon, 3 viii 1982, Kim JI and Chang KS (SSU); **<CB>** 1♀, Goesan, 10 ix 1973, Yoo BY (EU); 1♀, Osa-ri Yeongchun Danyang, 11 vii 1984, Kim MJ (KU); 1♀, Eumseong, 20 x 1995, Lee YH (SSU); 1♂, Sinrim Jecheon, 11 vii 1988, Yoon SJ (EU); 1♀, Bugang Cheongwon, 27 vi 1967, Choi YH (EU); **<CN>** 1♀, Gongju, 12 viii 1967, Lee JR (KU); 1♂, Seonghwan Cheonan, 25 viii 1973, Shin MH (EU); 1♂, Baekripo beach Taean, 26 viii 2006, Kim TW (SSU); 1♂1♀, Is. Hwachangdo Anheung Taean, 1 x 2005, Kang TH (SSU); **<GB>** 1♂, Mt. Hamwolsan Ulsan, 8 vii 1996, Hong SM (KU); 1♀, Jikjisa Gimcheon, 22 x 1972, Han AH (EU); 1♂, Mungyeongsaejae, 14 ix 1980, Kim JS (KU); 6♂1♀, Nari-dong Is. Ulleungdo, 28 vii 1976, Shin S and Song JI (EU); 3♂, Seonginbong Is. Ulleungdo, 28 vii 1976, Yoon SJ (EU); 2♂, Jeodong Is. Ulleungdo, 9 vii 1978, Lee JW (KU); **<GN>** 1♂, Mt. Gudeoksan Busan, 29 vii 1973, Park DO (EU); 1♀, Busan Univ. Campus, 18 viii 1972, Lee NS (EU); 1♀, Bujeon-dong Busan, 19 viii 1987, Anonym (KU); 1♀, Naewonsa Yangsan, 15 viii 1971, Park YJ (EU); **<JB>** 1♀, Naebyeonsan, 11 viii 1973, Shin TH (KU); 1♂4♀, Bongeun-ri Buan, 10 x 1981, Kim JI and Chang KS (SSU); **<JN>** 2♀, Cheoneunsa Gurye, 8 viii 1959, Kim HK (EU); 1♀, Hwaeomsa Gurye, 4 viii 1959, Kim HK (EU); 1♂1♀, Is. Janggundo Yeosu, 9 viii 1967, Lee SJ (EU); 3♀, Yeocheon, 24 vii 1972, Park JH (EU); 1♂2♀, Is. Daeseokmando Yeonggwang, 19 viii 1989, Kim JI and Lee OJ (SSU); 2♂1♀, Is. Anmado Yeonggwang, 18-20 viii 1989, Kim JI and Lee OJ (SSU); 1♂, Mangchuk Wando, 6 vii 1982, Choi SH (SSU); 1♀, Sukseungbong Wando, 22 vii 1960, Seo YS (EU); **<JJ>** 2♀, Gwaneumsa, 9 vii 1965, Im YJ and Lee HS (EU); 1♂, Seogeumryeong Gujoa Bukjeju, 13 vii 1983, Kim JI (SSU); 1♀, Hagui-1ri Aewol-eup Bukjeju, 9 viii 2001, Kim MA (NIAST); 1♀, Sangumburi Gyorae-ri Jocheon Bukjeju, 9 vii 2002, Kim TW (SSU); 1♂1♀, Hamdeok-ri Jocheon Bukjeju, 8 vii 2002, Kim TW (SSU); 1♂, Cheonwangsa to Dokkabi road Bukjeju, 10 vii 2002, Kim TW (SSU); 1♂, Gosan-ri Hangyeong Bukjeju, 26 ix 2000, Kim MA (NIAST); 1♂, Is. Sangchujado, 15 vii 1985, Nam SH (KU); 1♂, Seoguipo, 16 viii 1973, Huh BH (EU); 1♂1♀, Jungmun, 11 x 1999, Kim

TW (SSU); 1♂, Hado Is. Chujagundo, 10 viii 1969, No YT (KU); 1♂1♀, Pyoseon, 10 vii 1985, Cho YB (EU); 1♂, Is. Hachujado, 17 vii 1985, Yoon IB (KU); 1♂, Baeknokdam Mt. Hallasan, 11 vii 1979, Kim HJ (KU); 3♀, Hallim, 8 vii 1965, Choi SJ et al. (EU); 1♂2♀, Hyeopje beach, 26 ix 2000, Kim MA (NIAST).

Description. **<♂>** Body coloration green or brown, two contrastive types present. Head with vertex roundly connected with frontal ridge; foveolae absent; antennal socket narrower than frontal ridge; vertical diameter of an eye as long as subocular groove; mandibular bluish; palpi whitish. Pronotum with distinct median carina, weakly intersected by principle transverse sulcus; prozona as long as metazona; anterior and posterior margins rather angulated; lateral lobe of pronotum deeper than pronotal length. Tegmina speckled, macropterous, reaching a half of hind tibia, its apex weakly truncated dorsally; intercalary vein on medial area serrulated. Hind wings yellowish without banding pattern, its apex with more darker cells. Prosternum smooth, meso- and metasternum with numerous white hairs; mesosternal interspace as wide as long. Fore and middle femora much thickened than female. Hind femur with small denticles on dorsal carina; inner surface nearl black in basal half, apical half bright and its median balck banded. Fore and middle tibiae with 7-8 pairs of ventral spines apically. Hind tibia reddish with 11-13 pairs of dorsal spines. Abdominal tympanum large oval, 1.2 time longer than wide, the covering lobe largely covered entrance two thirds of tympanum. Epiproct triangular, as long as basal width, lateral carina present along with basal half of lateral margins. Cercus simply conical, three times longer than basal width. Subgenital plate upraised cone-shaped, two times longer than basal width. **<♀>** Much larger than male. Vertical diameter of an eye shorter than subocular groove. Subgenital plate 2.5 time longer than basal width, with truncated hind margin. Ovipositor hook-shaped, ventral valve without basal tooth; basal plate longer than wide. **<Measurements>** BL ♂ 35.0-58.0, ♀ 46.0-65.0 (HTL ♂ 43.0-70.0, ♀ 57.5-84.3); PL ♂ 6.4-13.5, ♀ 9.7-14.8; TL ♂ 33.6-55.8, ♀ 46.0-66.8; HFL ♂ 20.2-32.5, ♀ 23.3-38.0.

Distribution. Korea, Japan, China, Russia, Europe, Africa, New Zealand (ssp. *burmana*: Myanmar; *capito*: Madagascar; *cinerascens*: Southeastern Europe; *manilensis*: Southeastern Asia; *migratorioides*: Ethiopia; *tibetensis*: Tibet): the Old World.

Remarks. This locust ranges all over the Old World, ie. Palaearctic, Ethiopian, Oriental and including Australian Regions. Associated with wide distribution of this more than seven subspecific status have been assigned like above mostly based on their location and

variability of the generation. Around the Korean peninsula, two subspecific forms are considered by the difference of body size, ie. northern larger *L. migratoria* (♂ > 40, ♀ > 50) and southern smaller *L. manilensis* (♂ < 35, ♀ < 45). But the subspecific consideration is not so preferred in this polytypic locust, both might be on the geological extension of wide transition zone from China (see Liu et al. 1999).

Genus *Gastrimargus* Saussure 콩중이속

1884. Mémoires de la Société de Physique et d'Histoire Naturelle de Genève, 28(9): 110 (pro subgenus *Oedaleus*). Type species: *Oedaleus* (*Gastrimargus*) *virescens* Saussure 1884.

Diagnosis. Body large, green or yellowish brown. Anterior and posterior margins of pronotum angularly projected. Median carina of pronotum faintly crossed by posterior transverse sulcus without a distinct cut. Basal half of tegmen with sparse, transverse veinlets; anterior part of intercalary vein in medial area with many parallel, transverse veinlets. 23 species are known in the Africa, Asia and Australia.

141. *Gastrimargus marmoratus* (Thunberg 1815) 콩중이 (Fig. 380)

Gryllus marmoratus Thunberg 1815. Mémoires de l'Académie Impériale des Sciences de St. Pétersbourg, 5: 232. "Cap: incorrectly labelled". Lectotype ♀ in Zoological Institute, Uppsala University.

= *Gryllus transversus* Thunberg 1815. Mémoires de l'Académie Impériale des Sciences de St. Pétersbourg, 5: 233. "China". Lectotype ♀ in Zoological Institute, Uppsala University. [Stål 1873]

Korean records. ***Oedaleus marmoratus***: Ichikawa 1906: 183 ("Quelpart"); Okamoto 1924: 56 ("Quelpart"); ***Gastrimargus transversus***: Doi 1932: 36; Cho 1959: 187, Fig. 79 (manual); Cho and Lee 1959; 7 (Gwangneung); Kang and Son 1959: 18 (chromosome); Cho 1963: 162 (Is. Jejudo); Cho 1965: 10 ("Dagelet"); Cho 1969: 744, pl. 49 (illustrated encyclopedia); Ju 1969: 24 (North Korean check list); Seok 1970: 175 (Is. Jejudo); ***Gastrimargus marmoratus***: Bey-Bienko and Mishchenko 1951: 580, Figs. 1213, 1220, 1221; Tsyplenkov 1970: 214 (North Korea); Ritchie 1982: 262, Figs. 26-32, 119, 127; Inoue 1985: 112, Figs. 9, 36, 67 (taxonomy with karyomorphology); Tadauchi 1989: 55 (Japanese check list); Kwon and Huh 1994: 53 (Korean check list); Huh and Kwon 1995: 15 (Is. Jejudo); Moon and Yoon 1996: 53 (KEI); Kwon et al. 1996: 105 (Korean species list); Yoo et al. 1996: 82 (karyotype); Bae 1998: 203; Zheng and Xia 1998: 15, Fig. 10;

Hua 2000: 41 (Chinese list); Kim and Kim 2005: 89 (taxonomy).

Specimens examined. **<RG>** 1♀, Mt. Pektusan wooden environs of the Sam-zi-yan Hotel, 19 vii 1977, O.Gy. Dely and A. Dely-Draskovits, No. 378 (Hungarian Natural History Museum, Budapest); **<PN>** 1♂, De-sang san 12 km NE from Pyongyan, 7 viii 1971, S. Horvatovich and J. Papp, No. 146 (Hungarian Natural History Museum, Budapest); 2♂, Bongwa-ri on the riverside Te-dong about 45 km E from Pyongyan, 16 viii 1971, S. Horvatovich and J. Papp, No. 178 (Hungarian Natural History Museum, Budapest); 2♂, Lyong-ak san 25 km W from Pyongyan, 31 viii 1971, S. Horvatovich and J. Papp, No. 223 (Hungarian Natural History Museum, Budapest); 1♂3♀, Pyongyang city: Mt. Daesong-san 10 km NE of Pyongyang, 23 ix 1978, A. Vojnits and L. Zombori, No. 389 (Hungarian Natural History Museum, Budapest); 2♂, Pyongyang city Mt. Daesongsan 10 km NE of Pyongyang, 11 ix 1979, H. Steinmann and T. Vasarhelyi, No. 522 (Hungarian Natural History Museum, Budapest); 2♂5♀, Lake Taesongho, 13 ix 1979, H. Steinmann and T. Vasarhelyi, No. 525, 528 (Hungarian Natural History Museum, Budapest); **<GW>** 1♂, Gangchon, 10 ix 1972, Lee CD (KU); 1♀, Sogeumgang, 25 viii 1968, Lee JG (KU); 1♂, Ssangyong Yeongwol, 30 ix 1999, Kim MA (NIAST); **<GG>** 1♀, Mt. Pakyon 20-21 km NE from Kaesong both sides of and near to the road between Kaesong and Pakyon pokpo, 11 ix 1971, S. Horvatovich and J. Papp, No. 260 (Hungarian Natural History Museum, Budapest); 1♂, Mt. Myeongjisan Gapyeong, 23 ix 1989, Yoon SH (SSU); 1♂, Is. Boleumdo Ganghwa, 18 viii 1987, Kim JI (SSU); 1♀, Gwangneung, 10 viii 1968, Lee HS (EU); 2♀, Palya-ri Namyangju, 20 ix 1968, Park KS (EU); 1♀, Is. Mueuido Incheon, 4 x 2006, Kim TW (SSU); 1♂, Batjireum beach Is. Deokjeokdo Ongjin Incheon, 14 ix 2001, Rhee HW (SSU); 1♀, Mt. Gyeyangsan Incheon, 26 viii 2001, Kim TW (NIAST); 2♂3♀, Mt. Cheonggyesan Seoul, 9-16 ix 1973, Cho CH et al. (EU); 2♀, Mt. Dobongsan Seoul, 25 ix-9 x 1971, Han SB and Won DY (KU); 7♂, Joam Hwaseong, 11-12 viii 1972, Park IS et al. (EU); 3♂, Maseok Namyangju, 9 ix-1 x 1972, Lee MH et al. (KU); 2♂, Seosamneung, 11 ix 1971, Park JH and Jeong EJ (EU); 1♀, Jeongneung Seoul, 2 viii 1971, Kang YS (EU); **<CB>** 1♀, Yongam-ri Hwanggan-myeon Yeongdong, 4-5 viii 2001, Kim AY (SSU); 2♂, Mt. Jangryongsan Geumsan-ri Gunseo-myeon Okcheon, 26 vii 2002, Kim TW (SSU); 2♂, Mt. Namsan Chungju, 24 viii-27 ix 2000, Kim SY and Kim AY (SSU); 2♀, Mt. Cheondeungsan Sancheok-myeon Chungju, 5-28 viii 2002, Kim TW (SSU); **<CN>** 1♀, Donghaksa Gongju, 17 viii 1972, Cho AH (KU); 1♂, Mt. Mansusan Boryeong, 20 vii 1999, Ku DS (NIAST); **<GB>** 1♀, Daegu Palgongsan, 8 x 1991, L. Zombori (Hungarian Natural

History Museum, Budapest); 1♀, Daegu, 10 ix 1971, Lee EB (EU); **<GN>** 1♂1♀, Is. Geojedo, 10 viii 1971, Kim HK (EU); **<JB>** 1♂, Jogyeongdan Jeonju, 3 viii 1960, Kim HK (EU); **<JN>** 1♂1♀, Wonpyeongsanji Is. Bigeumdo Sinan-gun, 22 ix 2001, Park HC (NIAST); 1♀, Is. Heuksando Sinan-gun, 2 viii 2003, Kwon Y (SSU); 1♂, Is. Gogeumdo Wando, 26 vii 2000, Lee YB (NIAST); 2♂1♀, Baekyangsa Mt. Naejangsan Bukha-myeon Jangseong, 11-12 ix 2004, Kim TW (SSU); **<JJ>** 2♀, Mt. Hallasan Northern slope, 4 viii 1955, Cho PS and Lee BJ (KU).

Description. **<♂>** Body coloration green or brown combination, two contrastive types present. Head rounded, vertex and frontal ridge smoothly connected; antennal socket narrower than frontal ridge; inner lower areas of eyes more darkish. Pronotum with distinctly raised median carina, crest-shaped, black longitudinal markings distinct laterally; anterior and posterior margin acutely pointed; prozona as long as metazona; lateral lobe of pronotum deeper than pronotal length, lower hind area punctated and wrinkled. Tegmina macropterous, surpassing hind knee, its apex rounded; remigium with two white bands; intercalary vein on medial area serrulated. Hind wings bright yellow in basal half, with outer black band in median, its apex slightly darker; longitudinal vannal veins serrulated ventrally. Prosternum smooth, mesosternal interspace as long as wide. Fore and middle tibiae each with 7-8 pairs of ventral spines apically. Hind femur with small denticles on dorsal carina. Hind tibia reddish, subasally white annulated, with 13 pairs of dorsal spines. Abdominal tympanum widely opened circle-shape, as long as wide, with small basal covering lobe. Epiproct triangular, as long as basal width, dorsal surface nearly flattened, undiscernable carinae present. Cercus elongated conical, three times longer than basal width. Subgenital plate triangularly conical, as long as basal width. **<♀>** Much larger than male. Mesosternal interspace 1.5 times wider than long. Subgenital plate longer than wide. Ovipositor hook-shaped; upper valves with dorso-basal denticulations; ventral valve without ventro-basal tooth; basal plate longer than wide. **<Measurements>** BL ♂ 28.0-32.3, ♀ 45.8-49.2 (HTL ♂ 36.8-42.4, ♀ 52.7-58.3); PL ♂ 7.8-9.2, ♀ 10.5-12.3; TL ♂ 28.5-31.6, ♀ 41.5-45.2; HFL ♂ 18.4-21.7, ♀ 27.5-29.0

Distribution. Korea, Japan, China, Taiwan, Thailand, Malaysia, Philippines, Indonesia, New Guinea.

Genus *Oedaleus* Fieber 팥중이속

1853. Lotos, 3: 126 (pro subgenus *Oedipoda*). Type species: *Acrydium nigrofasciatum* de Geer

1773.

= *Microgastrimargus* Lee and Park 1992. J. Basic Sci. Res. Inst. Hyosung Women's Univ. 6: 61. Type species: *Microgastrimargus taeguensis* Lee and Park 1992. [Kim and Kim 2005]

Diagnosis. Pronotal X-marking present, always with anterior and posterior arms separate; posterior arms straight, not converging. Hind margin of pronotum rounded to rectangular, never acutangular. Hind wings black banded. 27 species are known in the Old World tropics and subtropics.

142. *Oedaleus infernalis* Saussure 1884 팥중이 (Fig. 379)

Oedaleus (*Oedaleus*) *infernalis* Saussure 1884. Mémoires de la Société de Physique et d'Histoire Naturelle de Genève, 28(9): 116. "Japan". Lectotype ♂ in Naturhistorisches Museum Wien.

= *Oedaleus infernalis* var. *amurensis* Ikonnikov 1911. Annuaire du Musée Zoologique de l'Académie Impériale des Sciences de St. Pétersbourg, 16: 255. "Russia: Amur". Lectotype ♂ in Naturhistorisches Museum Wien. [Ritchie 1981]

= *Microgastrimargus taeguensis* Lee and Park 1992. (애콩중이) J. Basic Sci. Res. Inst. Hyosung Women's Univ. 6: 62, Figs. 1-2. "Korea: Daegu". Holotype ♂ in ?DCU. [Kim and Kim 2005]

Acrydium nigrofasciatum nec Geer 1773. Mémoires pour servir à l' histoire des insectes, 3: 493. "South Africa". Holotype ♀ in Naturhistoriska Riksmuseet, Stockholm.

Korean records. ***Oedaleus nigrofasciatus***: Rehn 1902: 632 ("Chemulpo"); ***Oedaleus infernalis***: Burr 1898: 29 ("Port Lazareff"); Ikonnikov 1913: 17; Doi 1932: 36; Kamiya and Miyasaka 1938: 64; Furukawa 1939: 51 144; Furukawa and Shiraki 1950: 27, Fig. 62; Bey-Bienko and Mishchenko 1951: 577; Cho 1959: 186, Fig. 78 (manual: 팟중이); Cho and Lee 1959; 6 (Gwangneung); Cho 1965: 10 ("Dagelet"); Cho 1969: 743, pl. 49 (illustrated encyclopedia); Ju 1969: 25 (North Korean check list); Tsyplenkov 1970: 214 (North Korea); Rentz and Miller 1971: 265 (Mt. Palgongsan); Ritchie 1981: 128, Figs. 5, 36, 52, 107-110, 163; Inoue 1985: 111, Figs. 3, 34, 65 (taxonomy with karyomorphology); Storozhenko 1986: 315, Fig. 159(16); Tadauchi 1989: 56 (Japanese check list); Kwon and Huh 1994: 53 (Korean check list); Huh and Kwon 1995: 16 (Is. Jejudo); Moon and Yoon 1996: 53 (KEI); Kwon et al. 1996: 105 (Korean species list); Yoo et al. 1996: 82 (karyotype); Bae 1998: 204; Zheng and Xia 1998: 123, Figs. 60, 61, 65, 66, 68; Hua 2000: 42 (Chinese list); Kim and Kim 2005: 89 (taxonomy); ***Oedeleus*** [!] ***infernalis***: Kang

and Son 1958: 20 (chromosomes); ***Oedaleus infernalis amurensis***: Bey-Bienko and Mishchenko 1951: 577 (North Korea); Won et al. 1990: 96 (Mt. Changbaishan).

Specimens examined. **<HN>** 1♀, Mt. Suyongsan, 27 ix 1978, A. Vojnits and L. Zombori, No. 413 (Hungarian Natural History Museum, Budapest); 2♂, Haeju Mt. Suyongsan, 31 vii 1982, L. Forro and L. Ronkay, No. 893 (Hungarian Natural History Museum, Budapest); **<RG>** 4♂7♀, Hyesan cemetery, 8 x 1978, A. Vojnits and L. Zombori, No. 474 (Hungarian Natural History Museum, Budapest); **<JG>** 1♂1♀, Mt. Myohyangsan, 15 ix 1980, L. Forro and GY. Topal, No. 680 (Hungarian Natural History Museum, Budapest); **<PN>** 1♀, Bongwa-ri on the riverside Te-dong about 45 km E from Pyongyang, 16 viii 1971, S. Horvatovich and J. Papp, No. 178 (Hungarian Natural History Museum, Budapest); 2♂5♀, Pyongyang city Mt. Daesongsan, 20 ix 1979, H. Steinmann and T. Vasarhelyi, No. 551, 553 (Hungarian Natural History Museum, Budapest); **<GW>** 1♂, Malaise trap, District On-dzong Kumgangsan near Hotel Gosong, 6-8 viii 1975, J. Papp and A. Vojnits, No. 326 (Hungarian Natural History Museum, Budapest); 1♂, Inje, 5 ix 1998, Kim TW (SSU); 1♀, Buyeongyegok Gangneung, 20 viii 2001, Kim SY (SSU); 1♀, Haesanryeong Hwacheon, 3 x 2006, Kim TW (SSU); 2♂, Gangchon, 26 viii 1989, Kim MJ (SSU); **<GG>** 12♂1♀, Mt. Myeongjisan Gapyeong, 23 ix 1989, Lee OJ et al. (SSU); 1♂, Mt. Daegeumsan Dumil-ri Ha-myeon Gapyeong, 2 ix 2006, Kim TW (SSU); 2♂, Wondang Goyang, 10 viii 1988, Paik HS (SSU); 1♂, Daehwa-dong Ilsan Goyang, 4 viii 1998, Kim TW (SSU); 2♂, Sajanggol Dori Jeomdong-myeon Yeoju, 29 viii 2003, Yeo JD (KU); 1♀, Myeongji Univ. Campus Yongin, 24 vii 1994, Jeong HJ (SSU); 1♀, Pocheon, 20 vii 1989, Lee SH (SSU); 2♂, Mt. Gaehwasan Banghwa-dong Gangseo-gu Seoul, 6 viii 1998, Kim TW (SSU); 2♀, Is. Yeongjongdo Hang-dong Jung-gu Incheon, 5 x 2003, Kim TW (SSU); **<CB>** 1♂, Yongam-ri Hwanggan-myeon Yeongdong, 4-5 viii 2001, Kim AY (SSU); 2♂, Mt. Jangryongsan Geumsan-ri Gunseo-myeon Okcheon, 26 vii 2002, Kim TW (SSU); 22♂12♀, Mt. Cheondeungsan Sancheok-myeon Chungju, 5-28 viii 2002, Kim TW (SSU); **<CN>** 1♀, Wungcheon Boryeong, 15 viii 1989, Jang EJ (SSU); 1♂, Sindu-ri Wonbuk-myeon Taean, 18 vii 2002, Kim TW (SSU); **<GB>** 2♂1♀, Is. Ulleungdo 15 viii 1997, Lee HJ (SSU); 1♂, Dodong Is. Ulleungdo, 10 vii 1978, Nam SH (KU); 2♀, Taeha Is. Ulleungdo, 3 viii 1983, Kim MR (KU); 1♀, Sogwang-ri Seo-myeon Uljin, 1 viii 1999, Kim et al. (SSU); **<GN>** 1♂, Naewonsa Naepo-ri Samjang-myeon Sancheong, 1-2 x 1994, Shin JG (SSU); **<JB>** 1♀, Mt. Naejangsan, 18 x 1980, Oh MY (SSU); **<JN>** 1♀, Is. Geomundo Yeocheon, 12 vii 1984, Chang KS (SSU); 1♀, Is. Anmado Yeonggwang, 20 viii 1989, Kim

JI (SSU); **<JJ>** 2♀, Mt. Hallasan Northern slope, 4 viii 1955, Cho PS and Park SU (KU).

Description. **<♂>** Body coloration variable brown, or sometimes greenish mottled. Head with round vertex, foveloae indistinct; vertex anteriorly depressed, lateral carinae connected with frontal ridge; scape as long as wide; antennal socket narrower than frontal ridge. Pronotum with bright X-marking, sometimes vague; median longitudinal carina distinct, anterior marin weakly convex, posterior margin obtusely triangle; prozona as long as metazoan; lateral lobe of pronotum deeper than pronotal length, punctated on metazona. Tegmina macropterous, reaching a half of hind tibia, its apex obliquely truncated; intercalary vein on medial area serrulated. Hind wings basally pale yellow with outer dark band, its apex darkish. Fore and middle tibiae each with seven pairs of spines apically. Hind femur with three black bands on inner surface, reddish ventrally. Hind tibia reddish, subasally bright, with 11 outer, 12 inner dorsal spines. Prosternum smooth, mesosternal interspace 1.5 times wider than long. Abdominal tympanum two time longer than wide, with upper ridge on entrance and basal covering lobe. Epiproct triangular, as long as wide, with a pair of lateral small tubercles in mid; median longitudinal furrow present apically. Cercus finger-shaped, three times longer than basal width, protruding than epiproct. Subgenital plate upraised short, conical. **<♀>** Larger and robuster than male. Subgenital plate two times longer than wide, its hind margin pointed at apex. Ovipositor hook-shaped; upper valves thick, shorter than epiproct; ventral valves with a ventral outer tooth; basal plate longer than wide. **<Measurements>** BL ♂ 21.4-27.0, ♀ 32.2-38.8 (HTL ♂ 28.0-33.0, ♀ 39.0-45.5); PL ♂ 5.4-6.2, ♀ 7.4-8.0; TL ♂ 21.3-25.1, ♀ 30.5-35.8; HFL ♂ 14.2-16.4, ♀ 20.1-23.6.

Distribution. Korea, Japan, Northeast China, Mongolia, Russian Far East.

Genus *Trilophidia* Stål 두꺼비메뚜기속

1873. Recencio Orthopterorum, 1: 117, 131. Type species: *Oedipoda cristella* Stål 1860.

Diagnosis. Integument strongly rugose, tuberculate and hairy. Pronotum tectiform, somewhat constricted in prozona, strongly tuberculate; median carina cut by two transverse sulci; metazona longer than prozona. Mesosternal interspace wider than long. Tegmina and wings fully developed, intercalary vein of median area of tegmen strong, slightly sinus finely serrated. Male epiproct rounded triangular. Cecus narrow conical. Ten species are known in the Ethiopian and Oriental Regions.

143. *Trilophidia annulata* (Thunberg 1815) 두꺼비메뚜기 (Fig. 378)

Gryllus annulatus Thunberg 1815. Mémoires de l'Académie Impériale des Sciences de St. Pétersbourg, 5: 234. "China, Japan, Java". Lectotype in Zoological Institute, Uppsala University.

= *Acridium* (*Oedipoda*) *velneratum* de Haan 1842. In Temminck. Verhandelingen over de natuurlijke geschiedenis der Nederlandsche overzeesche bezittingen, Zoologie: 161. "Japan, Padang". Lectotype in Nationaal Natuurhistorische Museum, Leiden. [Willemse 1930]

?= *Trilophidia annulata* var. *japonica* Saussure 1888. Mémoires de la Société de Physique et d'Histoire Naturelle de Genève, 28(9): 54. "Japan". Type in ? [Hollis 1965]

Korean records. ***Trilophidia annulata japonica***: Ikonnikov 1913: 17; Inoue 1985: 113, Figs. 8, 37, 68 (taxonomy with karyomorphology); Tadauchi 1989: 57 (Japanese check list); ***Trilophida*** [!] ***annulata***: Doi 1932: 36; ***Trilophida*** [!] ***velnerata***: Doi 1933: 88; ***Trilophidia velnerata***: Haku 1937: 73 (Daegu); Cho 1959: 186, Fig. 77 (manual); Cho 1969: 743, pl. 49 (illustrated encyclopedia); Ju 1969: 26 (North Korean check list: 사마귀메뚜기); ***Trilophidia annulata***: Cho and Lee 1959; 9 (Gwangneung); Kang and Son 1959: 20 (chromosome); Hollis 1965: 251, Figs. 2–4, 8, 12, 17–19, 26; Bhowmik 1986: 78, Fig. 86, pl. 6, Fig. 244; Storozhenko 1986: 316, Figs. 139(3), 143(12); Kwon and Huh 1994: 53 (Korean check list); Huh and Kwon 1995: 16 (Is. Jejudo); Moon and Yoon 1996: 54 (KEI); Kwon et al. 1996: 105 (Korean species list); Yoo et al. 1996: 82 (karyotype); Bae 1998: 206; Zheng and Xia 1998: 156, Fig. 85; Hua 2000: 43 (Chinese list); Kim and Kim 2005: 90 (taxonomy); ***Trilophidia japonica***: Tsyplenkov 1970: 214 (North Korea); Rentz and Miller 1971: 265 (Mt. Palgongsan).

Specimens examined. **<PN>** 3♀, Desangsan 12 km NE from Pyongyang, 7 viii 1971, S. Horvatovich and J. Papp, No. 146 (Hungarian Natural History Museum, Budapest); 2♂2♀, Sagam 45 km N from Pyongyang, 12 viii 1971, S. Horvatovich and J. Papp, No. 163 (Hungarian Natural History Museum, Budapest); 1♂, Pyongyang Nungrado Island in the river Tedong, 14 viii 1971, S. Horvatovich and J. Papp, No. 174 (Hungarian Natural History Museum, Budapest); **<GW>** 1♂, Mt. Kumgangsan path to Kuryong falls, 18 ix 1980, L. Forro and GY. Topal, No. 692 (Hungarian Natural History Museum, Budapest); 1♂, Mt. Geonbongsan Goseong, 10 ix 1967, Kim CW (KU); 1♂, Myeongpa-ri Goseong, 28 ix 1972, Kim JI (KU); 1♀, Sinpyeong-ri Goseong, 26 viii 1998, Nam MA (SSU); 1♂, Seongsan Myeongju, 13 viii 1989, Im DK (SSU); 1♂, Sogeumgang, 17 ix 1971, Kim CW (KU); 1♂, Nakcheon-ri Imgye Jeongseon, 5 viii 1977, Kim CW (KU); **<GG>** 2♀, Mt. Myeongjisan Gapyeong, 23 ix 1989, Lee OJ and Im DK (SSU); 1♂, Mt. Chukryeongsan Naebang-myeon

Gapyeong, 10 viii 1999, Kim TW (SSU); 2♀, Wondang Goyang, 10 viii 1988, Paik HS (SSU); 6♂3♀, Maseok Namyangju, 17 viii–17 ix 1988, Kim MY and Byeon JE (SSU); 1♂, Is. Baekryeongdo, 25 vii 1987, Kim JI (SSU); 1♀, Dangjingyo Hyeonsu-ri Jeomdong-myeon Yeoju, 29 viii 2003, Yeo JD (KU); 2♂, Is. Deokjeokdo Ongjin, 6 viii 1982, Kim JI and Chang KS (SSU); 1♂, Is. Mungapdo Ongjin, 4 viii 1982, Kim JI (SSU); 1♂1♀, Namhansanseong Hanam, 24 viii 1994, Yang MJ (SSU); 2♀, Mt. Chilbosan Hwaseong, 15 viii 1989, Yoon SH (SSU); 2♂, Mt. Gwanaksan Seoul, 14 viii 1994, Sohn IP (SSU); 1♀, Mt. Dobongsan Seoul, 27 ix 1992, Oh HK (SSU); **<CB>** 1♂, Hwajangam Mt. Taehwasan Osa-ri Yeongchun Danyang, 27 viii 2001, Kim SY and Kim AY (SSU); 1♂, Yongam-ri Hwanggan Yeongdong, 4–5 viii 2001, Kim AY (SSU); 1♂, Mt. Cheongdeungsan Sancheok-myeon Chungju, 28 viii 2002, Kim TW (SSU); **<CN>** 1♂, Mt. Gyeryongsan Gongju, 6 viii 1973, Kim JI (KU); 1♂, Daecheon Boryeong, 15 viii 1997, So JK (SSU); 1♀, Muryangsa Mt. Mansusan Oesan-myeon Buyeo, 19 vii 1999, Kim TW (SSU); 1♂, Mt. Gwangdeksan Cheonan, 22–23 vii 1994, Park JM (SSU); **<GB>** 1♂, Duseo Ulju, 12 ix 1992, Choi HJ (SSU); 1♂, Yeongnam Univ. Campus Gyeongsan, 19 viii 1992, Yoon HK (SSU); 1♀, Hyoseong Women's Univ. Campus, 7 vii 1992, Yoon HK (SSU); 1♀, Is. Ulleungdo, 12 ix 1971, Kim JI (KU); **<GN>** 1♂1♀, Is. Geojedo, 11–18 viii 1961, Anonym (KU); 1♂, Naeseo Masan, 15 viii 1994, Cho SJ (SSU); 1♂, Burim Euiryeong, 2 x 1982, Im CS (SSU); 1♂, Chilgoksa Galcheon-ri Geumsan-myeon Jinyang, 24 ix 1994, Kim KH (KU); 1♂, Gukdo Tongyeong, 21 vii 1978, Yoon IB (KU); **<JB>** 1♂, Bongeun-ri Buan, 10 x 1981, Chang KS (SSU); 1♀, Iri, 22 ix 1991, Oh JS (SSU); **<JN>** 1♂, Mt. Baekyangsan, 5 viii 1974, Kim CW (KU); 1♂, Mt. Mudeungsan Gwangju, 5 viii 1996, Choi JH (SSU); 1♂, Is. Songido Yeonggwang, 17 viii 1989, Kim JI (SSU); 1♂, Is. Bogildo Wando, 22 viii 1982, Chang KS (SSU); 1♂1♀, Is. Cheongsando Wando, 20 viii 1982, Chang KS (SSU); 1♂, Is. Gageodo Heuksan-myeon Sinan-gun, 17 xii 2006, Kang EY (SSU); **<JJ>** 1♂, Seongpanak, 12 vii 1983, Anonym (SSU).

Description. <♂> Body coloration variable dull brown or grayish, sometimes pronotum and hind femora with different dark coloration. Head with tuberculated vertex, with a pair of small tubercles between eyes; interocular distance narrower than horizontal diameter of an eye; foveolar indistinct, lateral carinae connected with frontal ridge; frontal ridge and facial carinae distinct, meet with clypeal suture. Palpi bright white. Pronotum with two dentations in lateral view of prozona along with median carina (a total of six knots present on head and pronotum); anterior margin weakly convex, posterior margin widely triangular, undulate;

metazona longer than prozona; lateral lobe of pronotum as deep as pronotal length. Tegmina macropterous, surpassing a half of hind tibiae; intercalary vein of medial area serrulated. Hind wings basally weakly yellowish, outer margin more dark. Appendages such as antennae and legs annulated. Prosternum smooth, mesosternal interspace two times wider than long. Fore and middle tibiae each with four pairs of ventral spines apically. Hind femur nearly black inner surface an white band near knee. Hind tibia with eight pairs of dorsal spines. black and white patterns. Arolium between claws small, less than a half of claw. Abdominal tympanum oval, 1.2 times longer than wide, without covering lobe. Epiproct triangular with median longitudinal furrow. Cercus conical, 2.5 times longer than basal width. Subgenital plate upraised short, conical. **<♀>** Larger and stouter than male. Interocular distance as wide as horizontal diameter of an eye. Subgenital plate two times longer than wide, its hind margin rather pointed at apex. Ovipositor hook-shaped; upper valves with dorso-basal denticulation; ventral valves without ventro-basal tooth, basal plate longer than wide. **<Measurements>** BL ♂ 16.8-19.6, ♀ 22.0-25.7 (HTL ♂ 23.2-26.0, ♀ 29.5-33.2); PL ♂ 3.7-4.6, ♀ 4.4-5.7; TL ♂ 18.5-21.2, ♀ 23.8-25.7; HFL ♂ 10.0-11.6, ♀ 11.7-14.0.

Distribution. Korea, Japan, Northeast China.

Remarks. The larger *T. japonica* was subspecifically considered from smaller *T. annulata* (Furukawa 1938), or independently regarded (Bey-Bienko and Mishchenko 1951), but is synonymous by Hollis (1965). Both are beings differ in life cycle and allopatric distribution (OSJ 2006), but morphological difference is not so clearly presented until now.

Genus *Bryodemella* Yin 참홍날개메뚜기속

1982. Acta Biologica Plateau Sinica, 1(1): 86. Type species: *Bryodemella holdereri* Krauss 1901.

Diagnosis. Tegmina and hind wings in both sexes extending beyond end of abdomen at least. Main longitudinal veins of hind wing distinctly thickened, finely serrated ventrally. Dorso-external carinula of hind femur finely serrated in apical half, stridulating with thickened longitudinal veins of hind wing. 11 species are known in the Palaearctic Region.

144a. *Bryodemella tuberculata tuberculata* (Fabricius 1775)

Gryllus tuberculatus Fabricius 1775. Systema entomologiae: 290. "Germany: Bremen". Neotype ♂ in Museum d'Histoire Naturelle, Geneva.

Korean records. ***Bryodema tuberculatum***: Doi 1932: 36; Cho and Lee 1959; 12 (Gwangneung: 홍날개메뚜기).

Distribution. Europe, West Russia (ssp. *bavaricum*: Germany): Transpalaearctic.

144b. ***Bryodemella tuberculata diluta*** **(Stroll 1813)** 참홍날개메뚜기 (Fig. 376)

Gryllus (*Locusta*) *dilutus* Stroll 1813. Représentation exactement colorée d'après nature des spectres: 21, pl. 9b, Fig. 31. "Russia: Siberia". Type in ?

= *Bryodema tuberculatum sibirica* Ikonnikov 1913. Korea Acrid.: 17. "Korea". Type in ? [Bey-Bienko 1930]

Korean records. ***Bryodema tuberculatum dilutum***: Bey-Bienko 1930: 91, pl. 18, Fig. 2, pl. 20, Fig. 6; Bey-Bienko 1931: 675; Wu 1935: 175 (Catalogus Insectorum Sinensium); Furukawa 1939: 61 150; Cho 1959: 181, Fig. 66 (manual); Cho 1969: 737, pl. 79 (illustrated encyclopedia); Tsyplenkov 1970: 214 (North Korea); Rentz and Miller 1971: 264 (Mt. Palgongsan); Kwon and Huh 1994: 53 (Korean check list); Moon and Yoon 1996: 54 (KEI); Kwon et al. 1996: 105 (Korean species list); ***Bryodema tuberculata sibirica***: Haku 1937: 73 (Daegu); ***Briodema*** [!] ***tuberculatum dilatum*** [!]: Kang and Son 1959: 21 (chromosome); ***Bryodema tuberculata sibinca*** [!]: Ju 1969: 22 (North Korean check list); ***Bryodema tuberculatum sibirica***: Ju 1993: 287 (Mt. Baekdusan); ***Bryodemella tuberculatum dilutum*** [!]: Kim and Kim 2005: 90 (taxonomy).

Specimens examined. **<RG>** 1♂2♀, the river Karim 10 ㎞ NEE from Bochonbo 1100 m, 27 vii 1975, J. Papp and A. Vojnits, No. 295, 297 (Hungarian Natural History Museum, Budapest); **<HN>** 1♀, Bukcheong, 29 x 1929, Nakayama (NIAST); **<PN>** 1♀, Unsan about 65 ㎞ NE from Pyongyang along the river Tedong, 12 vi 1970, E. Antal, No. 132 (Hungarian Natural History Museum, Budapest); 1♂, Mt. Daesongsan 10 ㎞ NE of Pyongyang, 11 ix 1979, H. Steinmann and T. Vasarhelyi, No. 521 (Hungarian Natural History Museum, Budapest); **<GW>** 2♂, Yanggu, 4 vi 1967, Kim JI and Oh JG (KU); 2♀, Woljeongsa (= Gesseiji) Mt. Odaesan Jinbu Pyeongchang, 13 vii 1923, Kurisue T and Maruta S (NIAST); 1♀, Mt. Odaesan, 27 vii 1958, Anonym (EU); 1♂, Mt. Chiaksan Wonseong, 30 vii 1975, Kim JI (KU); 1♂, Yuchon Doam Pyeongchang, 2 vii 1985, Cho HY (SSU); 1♀, Ganpyeong-ri Jinbu Pyeongchang, 29 vi 1985, Chang KS (SSU); 2♂, Dongsan-ri Jinbu Pyeongchang, 2 vii 1985, Kim YS (SSU); 1♀, Gangchon Chuncheon, 23 vi 1973, Oh HA (KU); **<GG>** 2♂, Mt. Bagyonsan near Sanchonri in the San river valley about 22 ㎞ from Kaesong, 7 vi 1970, S. Mahunka and H. Steinmann, No. 107 (Hungarian

Natural History Museum, Budapest); 1♂, Mt. Godongsan Gapyeong, 23 viii 1977, Yoon OH (KU); 1♂, Gwangneung, 7 vi 1968, Lee JG (KU); 1♀, ibid. 19 vi 1969, Wu SW (KU); 1♂, ibid. 11 vi 1977, Kim SK (KU); 1♀, Gwangju, 17 vii 1972, Lee OJ (EU); 1♂, Maseok Namyangju, 11 vi 1966, Yoon TH (EU); 1♂2♀, Paldang Namyangju, 3 x 1963, Lee JS et al. (KU); 2♂, Mt. Cheonmasan, 23–25 vii 1961, Anonym (EU); 1♂, ibid. 11 vi 1966, Kim YS (EU); 1♂, Sangsangok-dong Hanam, 10 vi 1977, Kim NS (EU); 1♂, Gupabal Seoul, 11 vi 1961, Kim MM (EU); 1♂, Jeongneung Seoul, 5 vi 1959, Yoo JA (EU); **<CB>** 1♀, Silim Jecheon, 11 vii 1988, Yoon SJ (SSU); 1♂, Songmyeon-ri Cheongcheon-myeon Goesan, 23 vi 1989, Yang JO (SSU); 1♂, Mt. Songnisan, 6 vi 1970, Choi SN (KU); 5♂1♀, ibid. 21 vi 1989, Kim NR et al. (SSU); 1♀, ibid. 7 viii 1990, Kim BJ (SSU); **<GB>** 1♂, Mungyeongsaejae, 11 vii 1977, Lee HG (KU); 1♀, Mt. Bohyeonsan Yeongcheon, 19 vii 1968, Lee HY (EU); 1♂2♀, Uljin, 27–30 vi 1972, Han IW (KU); 1♂, Unmunsa Mt. Unmunsan Sinwon-ri Unmun-myeon Cheongdo, 18 vi 2001, Park HC (NIAST); **<GN>** 1♂, Masanpo, 26 viii 1959, Lee BJ (NIAST); **<JB>** 2♂1♀, Jeonju, 12 vi 1983, Yeo SH (KU); 1♀, Mt. Moaksan Jeonju, 30 vii 1984, Jeong WS (SSU).

Description. <♂> Body coloration grayish brown. Head with round vertex, frons vertical; foveolae regular triangle-shaped; interocular distance 1.5 times wider than the horizontal diameter of an eye; scape slightly shorter than wide; frontal ridge slightly wider than the diameter of an antennal socket; vertical diameter of an eye longer than subocular groove. Pronotum rugose and punctuate; anterior margin weakly convex, posterior margin angularly projected; median longitudinal carina distinct, intersected by two transverse sulci; metazona two times longer than prozona; lateral lobe of pronotum as long as pronotal length. Tegmina macropterous, reaching a half of hind tibia, its apex obliquely truncated; intercalary vein of medial area not serrated. Hind wings with bright red color on basal area and dark border on outwardly; longitudinal veins thickened, ventrally serrulated. All femur without spinules, fore and middle tibiae each with six pairs of ventral spines. Hind femur with smooth dorsal and ventral carinae; basal half of inner side black, apical half bright with a black band, and inner knee black; dorsal apex of hind knee with longitudinal ridges; dorsal outer carinula serrulated apically. Hind tibiae yellowish, with 11–12 pairs of dorsal spines. Prosterum smooth, mesosternal interspace two times wider than long. Tympanum ovoidal, two times longer than wide, tympanal lobe weakly developed. Epiproct triangular, wider than long, with a pair of curved basal carinae. Cercus finger-shaped, four times longer than basal width. Subgenital plate short, conical. **<♀>** Slightly larger than male. Interocular distance two

times wider than the horizontal diameter of an eye. Metazona 1.5 times longer than prozona. Tegmina as long as abdominal end. Epiproct triangular, as long as basal width. Ovipositor with upper valves as long as epiproct. Subgenital plate longer than wide, its hind margin weakly convex. **<Measurements>** BL ♂ 27.4−33.8, ♀ 33.0−44.8 (HTL ♂ 33.6−42.0); PL ♂ 7.6−9.6, ♀ 8.3−10.0; TL ♂ 26.6−33.8, ♀ 26.8−29.8; HFL ♂ 14.5−18.0, ♀ 18.0−20.1.

Distribution. Korea, Northeast China, Mongolia, East Russia.

Remarks. By the difference of body size, smaller western *B. tuberculata* (♂ 25−29, ♀ 25−30) and larger eastern *B. diluta* (♂ 29−39, ♀ 34−48) the two subspecies are divided (Bey−Bienko 1930; Storozhenko 1986).

Genus *Sphingonotus* Fieber 강변메뚜기속

1853. Lotos, 3: 124. Type species: *Gryllus* (*Locusta*) *caerulans* Linnaeus 1767.

Diagnosis. Foveolae triangular and elongate. Basal area of hind wings blue, with or without an outer dark band. Tegmina with at least two strong cross bands. Median pronotal carina very low, not much more than a raised line, and cut by two or three transverse grooves. Hind tibiae yellow−green to blue. 116 species are recorded in the world.

145. *Sphingonotus mongolicus* Saussure 1888 강변메뚜기 (Fig. 375)

Sphingonotus mongolicus Saussure 1888. Mémoires de la Société de Physique et d'Histoire Naturelle de Genève, 30(1): 82, No. 13. "Mongolia". Syntype in Museum d'Histoire Naturelle, Geneva.

Sphingonotus japonicus nec Saussure 1888. Mémoires de la Société de Physique et d'Histoire Naturelle de Genève, 30(1): 84. "Japan". Syntype in Museum d'Histoire Naturelle, Geneva.

Korean records. ***Sphingonotus mongolicus***: Ikonnikov 1913: 19 ("Chiri to Bugu"); Doi 1933: 88; Wu 1935: 178 (Catalogus Insectorum Sinensium); Furukawa 1939: 71, 155; Bey−Bienko 1950: 200; Bey−Bienko and Mishchenko 1951: 629, Fig. 1308; Cho 1959: 186, Fig. 76 (manual); Cho and Lee 1959; 12 (Gwangneung); Mishchenko 1968: 496; Cho 1969: 742, pl. 79 (illustrated encyclopedia); Ju 1969: 26 (North Korean check list); Storozhenko 1986: 316, Figs. 143(13), 144(7); Kwon and Huh 1994: 53 (Korean check list); Moon and Yoon 1996: 54 (KEI); Kwon et al. 1996: 105 (Korean species list); Zheng and Xia 1998: 197; Hua 2000: 42 (Chinese list); Kim and Kim 2005: 90 (taxonomy); ***Sphingonotus japonicus***: Doi 1932: 36; Kamiya and Miyasaka 1938: 65; Ju 1969: 26 (North

Korean check list).

Specimens examined. **<PN>** 3♀, Sagam 45 ㎞ N from Pyongyang, 12 viii 1971, S. Horvatovich and J. Papp, No. 163 (Hungarian Natural History Museum, Budapest); **<GW>** 2♀, Bukpyeong Jeongseon, 17 viii 1989, Lee GJ (SSU); 3♂, Donggang riverbed Mitan Pyeongchang, 9 vii 1989, Kim TW (SSU); 1♀, Noil-ri Hongcheon, 18 ix 1993, Kim SJ (SSU); **<GG>** 1♀, the riverside of Hantangang Yangju, 22 vii 1984, Yoo HJ (SSU); 1♂, Cheongpyeong, 7 ix 1960, Jang GR (EU); 1♂, Ui-dong Seoul, 1 ix 1960, Jang GR (KU); **<GB>** 1♀, Angang-eup Wolseong, 18 viii 1972, Park JH (KU); 1♀, Mt. Deungunsan Danchon Uiseong, 24 vi 1991, Kim HJ (ADU); 1♂, Andong Univ. Campus Andong, 22 vi 1991, Kim HJ (ADU); 1♂, Songcheon-dong Andong, 29 vi 1991, Paik JW (ADU); 1♂, Magae-1ri Gwangheungsa Andong, 18 vi 2002, An MG (NIAST).

Description. **<♂>** Body coloration variable bluish gray to whitish gray. Head with round vertex, interocular distance as wide as the vertical diameter of an eye; a pair of dorsal carinae between eyes connected with frontal ridge, foveolae absent; scape as long as wide; antennal socket as wide as frontal ridge; vertical diameter of eye as long as subocular groove. Middle antennomeres four times longer than middle width. Pronotum with weakly protruding narrow anterior margin and angularly projected wide posterior margin; prozona constricted, median carina of pronotum intersected by three transverse grooves; prozona shorter than metazona; lateral lobe of pronotum as deep as the length of pronotal disk. Tegmina macropterous, reaching apex of hind tibia, with two banded stripes; intercalary vein of medial area serrulated. Hind wings bluish in basal half, black banded on outer margin. Prosterum smooth, mesosternal interspace 1.5 times wider than long. All femora without spines. Fore and middle tibiae each with four pairs of ventral spines. Hind femora with nearly black inner surface, subapically white banded, knee black. Hind tibia with eight outer, 10 inner dorsal spines, nearly whitish, subasally blue banded. Arolium between claws very small, not reaching a half of claws. Abdominal tympana widely oval, 1.5 times longer than wide, the base with a small covering lobe. Epiproct triangular, as long as wide, with a pairs of latero-basal projections and basal folding, median longitudinal furrow present. Cercus finger-shaped, four times longer than basal width. Subgenital plate shortly conical, its apex blunted. **<♀>** Larger and longer than male. Mesosternal interspace two times wider than long. Ovipositor hook-shaped, its apex pointed; upper valves denticulated basally; outer margin of ventral valves with basal tooth. Subgenital plate two times longer than wide, with nearly transverse hind margin. **<Measurements>** BL ♂ 18.8-23.5, ♀

27.3–30.0 (HTL ♂ 27.0–33.0, ♀ 34.5–38.0); PL ♂ 4.0–4.8, ♀ 5.6–6.6; TL ♂ 21.3–28.2, ♀ 28.4–31.6; HFL ♂ 11.4–12.7, ♀ 12.7–14.4.

Distribution. Korea, Northeast China, Mongolia, Russian Far East.

4. Conclusion and perspectives

4-1. Taxonomic accomplishments

Since Walker (1869), ca. 293 nominal species or subspecies of Orthoptera had been referred in Korea. But in there junior synonyms, misidentified names, and errors by previous workers were included, therefore some confusions inevitable in state of absent comprehensive study for them. Consequently this taxonomic study is conducted for the first time in the level of order. Throughout historical review and pursued morphological comparative study based on the Korean specimens, a total of 145 species including two subspecies belonging to 102 genera under 12 families have been recognized within two distinct suborders, Ensifera and Caelifera. Three of which are newly described, ten species and genera are newly recognized in Korea, additionally four names are newly synonymized.

There are, however, still unavailable specimens with only early records, among which includes mislabelled or erroneous species are reviewed (Appendix 1). Besides, due to the limit of the local faunistic study, taxonomically unclear species are still remained in such as the genera *Euconocephalus, Ruspolia* and *Hexacentrus* for which only temporary and conventional names are adopted. To clarify that world revisionary works needed to elucidate nomenclatural problems through the type designation and redescription in modern view. Likewise, this study was only focused on the external morphology based on the Korean specimens, the subspecies or allopatric species in more large scale, the sibling species with behavioral difference, and the species complex groups are not fully compared. It will be wait for later further study using another methods.

The species diversity, abundance of Korean Orthoptera is expected up to over 150 numbers, that could be more increase when does if the field research exerted on the areas less explored such as southwestern islands and mountainous high lands including North Korean boundary. Among them a few endemics found that reveal the Korean peninsula is important place for the Orthoptera evolution.

4-2. Geographical distribution

Based on the indications of labelled data in Korea and the species ranges of those distributions on earth, following biogeographical considerations are suggested around the Korean peninsula. The six according to the geographical scales except for the cosmopolitan two species: *Diestrammena asynamora* and *Gryllodes supplicans*.

1) Widely distributed transpalaearctic species of which five are arrested around Farthest Northern area of the peninsula for the dispersal limit, they do not occupy main ground of the peninsula: *Bicolorana bicolor*, *Metrioptera brachyptera*, *Chorthippus montanus*, *Chrysochraon dispar major* and *Omocestus viridulus*. Where is the contact zone with the Eurosiberian Continent, in continuous large-scaled their distribution the Korean peninsula is positioned to marginal boundary. Function of the zone is seemed to as like as a bottle-neck, the limitation rather corresponded with the line of the average temperature 2-4 ℃ of the year, see Korean vegetation map (Kim 1976).

2) Eastpalaearctic species penetrates main body of the Korean peninsula in a little down-scaled distribution. Those are alternated with closely related Westpalaearctic species as the pairing partners, eg. *Tetrix japonica* and *T. tenuicornis* both are meeting in Mongolia of Middle Asia which regarded as the vicariant sister species (per. com. with Dr. Lehman). The relationship is also confusedly substituted with Manchurian endemic species. According to Sergeev (1992), the Daurian Subprovince of Scythian Subregion is colonized by Manchurian Orthoptera where is possibly suspected that to the subdividing turning point including near Altai-Sayan subprovince. Where are contact zone comprised of Russia, Mongolia and China bordered on. About 74 percent of Korean Orthoptera represents for Manchurian endemic, it is resonable that many endemic genera and species are exist in Manchurian Subregion (Sergeev 1992, 1993).

3) Amurian endemics and the main body of the Korean peninsula throughout from north to south nemoral area where extending along with 'Baekdudaegan (白頭大簡)' so called. The Amurian Province is a part of Manchurian Subregion together with the Sakhalin-Hokkaido, North Chinese and Japanese Provinces (Sergeev 1992). From the Amur of Far Eastern Russia, northern mountainous range of Korea reaches into the southern part, in where the ranges of each species to southward differs by cases or partly scattered in south provinces. Besides,

some ones are extending the range across the seas to the southern Is. Tsushima or towards Northeast Hokkaido and Sakhalin where are directly neighboring areas with Amurian Province. Amurian endemism is possibly originated from the transformation by the marginal effect of enormous Eurosiberian Continent, so then the Korean peninsula could be contribute to that because of geographically situated on the core in the relationship with Far Eastern Continent and Japanese Archipelago.

4) Detected nine species are regarded with Korean endemics which are also belonging to the Amurian endemics: *Anapodisma beybienkoi, Anatlanticus koreanus, Anoplophilus coreanus* **sp. nov.** *Glyptobothrus tamna* **sp. nov.** *Megaulacobothrus jejuensis* **sp. nov.** *Prumna halrasana, Sphagniana monticola, Xizicus coreanus, Zubovskya koreana.* Those are considered with nemoral species evolved throughout natural history of the Korean peninsula.

5) Oriental species and the southwestern lowland area including numerous attached islands in the Yellow and South Seas. The main body of Korean peninsula is belonging to the part of extending East Asia continent, however, in where some ones are found that distantly distributed across the sea barrier between Oriental and Palaearctic Regions (cf. the joining area is interpreted as Orthrian Subregion since Emelijanov (1974)). In this boundary, Southeast Asian 22 common species are included there. To those the Korean peninsula is the northern limit for their ranges, southwestern lowland parts of the peninsula could be interpreted as belonged to the Orthrian Subregion. Based on the fact, the southern land connections with China and Japan must be important dispersal routes in the early history.

6) Is. Jejudo where is the largest Korean Island located in the South Sea, as well as to be regarded with most interesting and peculiar place for the biogeographical investigation. Because of altogether present of Orthopteran species such as northern and southern derivations, transpalaearctic, glacial relict (*Omocestus haemorrhoidalis*) and endemics (*Megaulacobothrus jejuensis* **sp. nov.** and *Glyptobothrus tamna* **sp. nov.**), but also island giantism (*Tettigonia* sp.) or dwarfism could be observed frequently by cases. Since the island is formed by volcanic activity before one or two million years ago between Tertiary and Quaternary in Cenozoic era (Park and Paik 1995), many members of Orthoptera in Is. Jejudo look to be different from true inland species although by empirical intuition. Where the evolutionary property is considered with neoendemism, ie. young time scale and the complex of closely related endemics are presented in limited range undergoing same history. Possibly they are rapidly differentiated from closely related inland species.

4-3. Geographical subspecies vs. species

Among the Korean check-list, a total of 28 species are designated to subspecific rank and closely allied with another geographical subspecies. Subspecies is defined to 'an aggregation of local populations of a species inhabiting a geographic subdivision of the range of the species and differing taxonomically from other populations of the species (Mayr and Ashlock 1991); a variant population of an evolutionary species (Wiley 1981)' in the infraspecific categories. However, the being is really arguable among the systematists (Wheeler and Meier 2000).

In the circumstance of absent consensus opinion for the concepts about subspecies even for the species, it could be difficult to say what is that by short human words. Species and subspecies are embodiments of the life, the life is also not easily defined until now. We can only understand that by the special common properties of the life which are eventually recognized by the special units to see the nature in variability. Here I just followed previous opinions that valid subspecific nomenclature accepted in ICZN rather than insist on either biased views between the lumper and splitter.

Besides, Winston (1999) presented a few reasons that why are subspecies important that finally the naming attracts attention to a taxon in evolutionary history; Ross (1974) pointed out that if named the subspecies, they give us notice of incipient species that might be important in our phylogenetic thinking, but would be missed by the phylogenist if not given a name.

Around the Korean peninsula, especially size transition of Orthoptera is remarkable in many members, Choo and Choi (1983) firstly noted that in *Teleogryllus emma,* ie. Northern smaller, Southern larger ones. Actually many species exhibit the tendency is perceived empirically. To noticeable thing is that widely distributed Palaearctic or East Asian Continental species to be diverged towards end of the Korean peninsula in longitudinal axis, that is in the tendency to more robuster and larger away from the Continent. Probably which resulting the subspecific consideration as shown in the Table 30. Already described subspecies are generally in the scope of this.

Regarding with that, I think that interesting arguments for the below three synonymy are also to be corresponded to this tendency. This controversy must be revaluated by additional evidences from the observation of unnoticed characters or use the other molecular and acoustic behavioral methods. Those problems will be clues of searching the evolutionary

history happened around this area, consequently, the Korea peninsula is assumed that biologically more important place where the evolutionary events occur in today.

Table 30. Geographically correlated subspecies and arguable species around the Korean peninsula.

Continental ssp.	Korean peninsula ssp.
Bryodemella tuberculata tuberculata	*Bryodemella tuberculata diluta*
Celes skalozubovi skalozubovi	*Celes skalozubovi akitanus*
Ceracris nigricornis nigricornis	*Ceracris nigricornis laeta*
Chrysochraon dispar dispar	*Chrysochraon dispar major*
Gampsocleis sedakovii sedakovii	*Gampsocleis sedakovii obscura*
Mongolottetix japonicus vittatus	*Mongolottetix japonicus japonicus*
Oxya chinensis chinensis	*Oxya chinensis sinuosa*
Tettigonia dolichoptera maritima	*Tettigonia dolichoptera dolichoptera*
Zubovskya koeppeni koeppeni	*Zubovskya koeppeni parvula*

Arguable species	
Anapodisma miramae	?= *Anapodisma beybienkoi*
Paratlanticus ussuriensis	?= *Paratlanticus palgongensis*
Paratachycines boldyrevi	?= *Paratachycines uenoi*

Appendix 1. Specimens unconfirmed

There were previously referred records, but unavailable species are as follows in this study. Most of those are considered to rather restrict within North Korean territory, I could not check them among the North Korean specimens deposited in Hungarian Museum. That is indirectly proving that Orthoptera diversity of North Korea is unexpectedly high, to understand all properties of Korean fauna further detailed investigations are requested throughout whole area.

On the other sides, misidentifications, mislabellings, mistaken synonymies, citing error, editing and typing errors were the various reasons for the incorrect referring of the species, among which there are unbelievable records without any bases at all.

About mislabellings, the specimens collected by early European expeditions are fundamental sources, but the locality data are sometimes not so believable which has been questioned by previous workers (Karny 1937; Willemse 1968; Lee 1995; Kim and Kim 2001; Kim and Kim 2005). Once it could be happened at that time perhaps due to the carelessness of the handling during long-term navigation or misunderstanding the geographical boundaries. Yet it is even occurring at present days unless careful dealings.

1. *Arcyptera albogeniculata* Ikonnikov 1911 어리삽사리

Arcyptera fusca var. *albogeniculata* Ikonnikov 1911. Annuaire du Musée Zoologique de l'Académie Impériale des Sciences de St. Pétersbourg, 16: 250. "Russia: Irkutsk". Lectotype ♂ in Zoological Museum, Moscow University.

Korean records. ***Arcyptera fusca albogeniculata***: Ikonnikov 1913: 12; Bey-Bienko 1931: 675; Bey-Bienko and Mishchenko 1951: 430; Cho 1959: 180 (manual); Mishchenko 1968: 490; Cho 1969: 736 (illustrated encyclopedia); Storozhenko 1986: 297, Figs. 139(4), 140(2), 149(3) 150(7); Storozhenko 1988: 51, Figs. 8-11; Kwon and Huh 1994: 52 (Korean check list); Moon and Yoon 1996: 53 (KEI); Kwon et al. 1996: 105 (Korean species list); Bae 1998: 191.

Distribution. ?Korea, China, Mongolia, East Russia.

Remarks. Korean distribution has been already questioned (Furukawa 1940; Bey-Bienko and Mishchenko 1951). This is raised to distinct East Siberian species from the subspecies of European *A. fusca* since Bukhvalova (1993, 1997).

2. *Bryodema gebleri gebleri* (Fischer von Waldheim 1836) 빨간종아리메뚜기

Oedipoda gebleri Fischer von Waldheim 1836. Bulletin de la Société Imperial des Naturalistes de Moscou, 9: 346, pl. 4, Fig. 1. "Russia: Mt. Altai". Type lost.

Korean records. ***Bryodema gebleri***: Ju 1993: 287 (Mt. Baekdusan); Kim and Kim 2005: 90 (taxonomy).

Distribution. North Korea, North China, Mongolia, East Russia (ssp. *mongolicum*: Mongolia).

3. *Celes variabilis variabilis* (Pallas 1774)

Gryllus variabilis Pallas 1774. Reise Russ. Reich. 1: 467. No. 52. "Russia". Type lost.

= *Acrydium affine* Fischer von Waldheim 1820. Entom. Russ. 1: 41, No. 4, pl. 1, Fig. 4. ? Type in ? [Kirby 1910]

Korean records. ***Celes affinis***: Yin et al. 1996: 142 (Korea); ***Celes variabilis***: Kim and Kim 2005: 91 (editing error).

Distribution. Europe, West Russia (ssp. *carbonaria*: Caucasus; *curtipennis*: Turkey).

4. *Chondracris rosea* (de Geer 1773) 꽃메뚜기

Acridium roseum de Geer 1773. Mémoires pour servir à l' histoire des insectes, 3: 488, No. 3, pl. 41, Fig. 1. "China". Holotype ♀ in Naturhistoriska Riksmuseet, Stockholm.

Korean records. ***Chondracris rosea***: Bey-Bienko and Mishchenko 1951: 248; Mishchenko 1952: 499, Fig. 148; Lee and Lee 1983: 5 (taxonomy); Kwon and Huh 1994: 51 (Korean check list); Kwon et al. 1996: 105 (Korean species list); Hua 2000: 36 (Chinese list).

Distribution. ?Korea, China, Taiwan, Vietnam, India, Indonesia, Philippines.

5. *Chorthippus intermedius* (Bey-Bienko 1926) 동방애메뚜기

Stauroderus intermedius Bey-Bienko 1926. Trans. Siberian Acad. Agriculture and Forest, Omsk, 5: 47. "Mongolia: Mt. Altai". Syntype in Omsk.

Korean records. ***Chorthippus intermedius***: Won et al. 1990: 95 (Mt. Changbaishan); Ju 1993: 287 (Mt. Baekdusan).

Distribution. North Korea, Japan (Hokkaido), Northeast China, Mongolia, Russian Far East.

6. *Conocephalus* (*Anisoptera*) *melaenus* (de Haan 1842) 애기가는여치

Locusta (*Xiphidium*) *melaena* de Haan 1842. In Temminck. Verhandelingen over de natuurlijke

geschiedenis der Nederlandsche overzeesche bezittingen, Zoologie: 188. "Java". Syntype in Nationaal Natuurhistorische Museum, Leiden.

Korean records. ***Conocephalus melanum***: Ju 1969: 17 (North Korean check list).

Distribution. ?Korea, Japan, China, Taiwan, Malaysia, Indonesia.

Remarks. Korean record has been questioned (Kim and Kim 2002).

7. *Decma* (*Idiodecma*) *improvisum* Gorochov and Kostia 1993 우리어리쌕쌔기

Decma (*Idiodecma*) *improvisum* Gorochov and Kostia in Gorochov et al. 1993. Zoosystematica Rossica, 2(2): 291, Figs. 37–41. "North Korea: Mt. Geumgangsan". Holotype ♀ in Hungarian Natural History Museum, Budapest.

Korean records. ***Decma improvisum***: Kwon et al. 1996: 103 (Korean species list); ***Decma* (*Idiodecma*) *improvisum***: Otte 1997: 89 (Orthoptera species file); Kim and Kim 2001: 160 (taxonomy).

Remarks. Only the female holotype specimen is known in North Korea.

8. *Deracantha transversa* Uvarov 1930 민충이

Deracantha transversa Uvarov 1930. Annals and Magazine of Natural History, London, 10(5): 255. "China: Peking = Beijing". Syntype in Staatliches Museum für Tierkunde, Dresden.

Gryllus onos nec Pallas 1772. Spicil. zool. 9: 17, pl. 2, Fig. 1. "Russia: Siberia". Type lost.

Korean records. ***Callimenus onos***: Mori 1929: 40 (NE Korea); Doi 1932: 37; Kamiya and Miyasaka 1938: 63; ***Deracantha onos***: Mori 1933: 55 (Korean Tettigoniidae); Čejchan 1967; 612, Figs. 5, 8, 9, 13, 23, 26, 27; Mishchenko 1968: 485; Moon and Yoon 1993: 56 (KEI); Kwon and Huh 1994: 48 (Korean check list); Kwon et al. 1996: 103 (Korean species list); ***Deracantha transversa***: Kishida 1934: 187; Mori 1935: 7, 16, pl. 3, Figs. 3–4, text–Fig. 6; Cho 1958: 32 (sexual dimorphism); Cho 1959: 158, Fig. 25A–B (manual); Čejchan 1967; 615, Figs. 7, 24; Cho 1969: 753, pl. 50, text–Fig. 6 (illustrated encyclopedia); Ju 1969: 17 (North Korean check list); Lee 1990: 109 (systematic notes); Kim and Kim 2001: 158; Storozhenko 2004: 172, Figs. 436, 437.

Distribution. North Korea, Northeast China, Mongolia.

Remarks. Based on the historical accounts and previous descriptions, Korean *Deracantha* is considered with *transversa* (Kim and Kim 2001), but owing to the specimen was not available so far impossible to know what is true that confusedly referred either *D. transversa* or *D. onos*.

9. ***Diabolocatantops innotabilis*** **(Walker 1870)**

Acridium innotabile Walker 1870. Catalogue of the Specimens of Dermaptera Saltatoria in the Collection of the British Museum, 4: 629. "Ceylon = Sri Lanka". Holotype ♀ in The Natural History Museum, London.

Korean records. ***Catantops innotabilis***: Wu 1935: 196 ("Corea"); Bey-Bienko and Mishchenko 1951: 252, Fig. 527; ***Diabolocatantops innotabilis***: Hua 2000: 37 (Chinese list).

Distribution. Afghanistan, India, Sri Lanka, China.

Remarks. It must be citing error for *Acridium coreanum* (= *Stenocatantops splendens*) in the same page (Walker 1870: 629).

10. ***Eucoptacra praemorsa*** **(Stål 1860)** 면도날개메뚜기 (Fig. 382)

Acridium (*Catantops*) *praemorsum* Stål 1860. Kongliga Svenska fregatten Eugenies Resa omkring jorden under befäl af C.A. Virgin åren 1851-1853 (Zoologi), 2(1): 330. "Hongkong". Holotype ♀ in Naturhistoriska Riksmuseet, Stockholm.

= *Caloptenus obliterans* Walker 1870. Catalogue of the Specimens of Dermaptera Saltatoria in the Collection of the British Museum, suppl. 5: 70. "Corea". Holotype ♀ (examined) in The Natural History Museum, London. [Bolívar 1918]

Korean records. ***Eucoptacra praemorsa***: Cho 1959: 180, Fig. 64 (manual); Cho 1969: 736, pl. 78 (illustrated encyclopedia); Ju 1969: 24 (North Korean check list).

Distribution. ?Korea, China, Taiwan, Myanmar, Nepal, India.

Remarks. I had studied the *obliterans* in The Natural History Museum, London, it was, however, unfaithful to be collected in Korea. The grasshopper has not been reconfirmed for the past 130 yrs. more, only listed. The genus *Eucoptacra* and its subfamily Coptacrinae mostly distributed throughout the tropical part of Africa, Asia and Australia (Dirsh 1975), truly incorrect labelling is regarded.

11. ***Eucriotettix oculatus transpinosus*** **Zheng 1993**

Eucriotettix transpinosus Zheng 1993. In Huang. Animals of Longqi Mountain: 72. "China: Fujian".

Korean records. ***Eucriotettix oculatus transpinosus***: OSJ 2006: 498 (Korea).

Distribution. China, Japan.

Remarks. Editing error (per. com. with Mr. Ichikawa).

12. *Formosatettix larvatus* Bey-Bienko 1951 볼록모메뚜기

Formosatettix larvatus Bey-Bienko in Bey-Bienko and Mishchenko 1951. Locusts and Grasshoppers of the U.S.S.R. and Adjacent Countries, 1: 102, Fig. 60. "Japan: near Tokyo". Holotype ♀ in Zoological Institute of the Russian Academy of Sciences, St. Petersburg.

Korean records. ***Formosatettix larvatus***: Huh and Kwon 1995: 8 (Is. Jejudo); Kwon et al. 1996: 104 (Korean species list).

Remarks. South Korean *Formosatettix* is *robustus*, not *larvatus* regarded to the Japanese endemic. The genus is not confirmed in Is. Jejudo so far, above records are just considered to the misidentifications of *Tetrix*'s nymph.

13. *Formosatettix slivae* Kostia 1993 각진모메뚜기

Formosatettix slivae Kostia 1993. Acta Zoologica Cracoviensia, 34(3): 423, pl. 1, Fig. 1. "North Korea: Ohomultong". Holotype ♀ in Institute of Systematics and Evolution of Animals, Polish Academy of Sciences, Kraców.

?= *Tetrix subulata* (Linnaeus 1758): *Gryllus* (*Bulla*) *subulatus* Linnaeus 1758. Syst. Nat. Ed. 10: 428, No. 18. "Sweden". Lectotype ♀ in Linnean Society, London. [Paik and Storozhenko 2000]

Korean records. ***Formosatettix slivde*** [!]: Kwon and Huh 1994: 50 (Korean check list); ***Formosatettix slivae***: Kostia 1995: 264, Figs. 15-24 (North Korea); Moon and Yoon 1996: 52 (KEI); Kwon et al. 1996: 104 (Korean species list); Otte 1997: 102 (Orthoptera species file); Ichikawa 2006: 27; ***Tetrix subulata***: Paik and Storozhenko 2000: 23.

Remarks. Paik and Storozhenko (2000) synonymized *F. slivae* as the nymphal state of *subulata*, but it is rather questioned (per. com. with Dr. Lehmann), and species revived (Ichikawa 2006). Judging from the original figures, *F. slivae* having an antegenicular denticle on dorsal carina of hind femur corresponding the adult, but also indistinct valvular serration of ovipositor corresponding the nymph.

14. *Gesonula punctifrons* (Stål 1860) 메뚜기번티기

Acrydium (*Oxya*) *punctifrons* Stål 1860. Kongliga Svenska fregatten Eugenies Resa omkring jorden under befäl af C.A. Virgin åren 1851-1853 (Zoologi), 2(1): 336, No. 87. "China". Holotype ♂ in Stokholm.

Korean records. ***Gesonia*** [!] ***punctifrons***: Doi 1932: 34; ***Gesonula punctifrons***: Ju 1969: 24

(North Korean check list).

Distribution. ?Korea, Japan (Ryukyu: Okinawa), Taiwan, SE China.

Remarks. No specimen confirmed, the Korean records are quite questioned for this South Asian species.

15. *Glyptobothrus dubius* (Zubovsky 1898)

Stenobothrus dubius Zubovsky 1898. Ann. Mus. St. Petersb. 3: 85. "Russia: Omsk". Type in ?

Korean records. ***Chorthippus dubius***: Lee 1957: 11 (Gwangneung); Cho and Lee 1959; 10 (Gwangneung).

Distribution. ?Korea, Northeast China, Mongolia, East Russia.

Remarks. South Korean records must be misidentifications of outwardly similar *Chorthippus* or *Glyptobothrus* spp., however, there is a possibility to find this in North Korea.

16. *Gomphocerippus rufus* (Linnaeus 1758) 북채수염메뚜기

Gryllus (*Locusta*) *rufus* Linnaeus 1758. Systema Naturae per Regna tria naturae (10th ed.), 1: 433, No. 57. "Germany". Holotype ♀ in Linnean Society, London.

Korean records. ***Gomphocerus rufus***: Mori and Cho 1939: 4, pl. 1, Fig. 8 (Chailbong); Cho 1959: 185, Fig. 74 (manual); Cho 1969: 741, pl. 49 (illustrated encyclopedia); Ju 1969: 24 (North Korean check list); Ju 1993: 287 (Mt. Baekdusan); Kwon and Huh 1994: 52 (Korean check list); Moon and Yoon 1996: 53 (KEI).

Distribution. North Korea, North China, Russia, Europe: Transpalaearctic.

17. *Gryllacris signifera* (Stoll 1813) (Fig. 383)

Gryllus (*Tettigonia*) *signifera* Stoll 1813. Spectres ou Phasmes, des Mantes, des Sauterelles, 3: 26, pl. 12a, Fig. 50. "Singapore, Java". Type lost.

= *Gryllacris maculicollis* Audinet-Serville 1831. Annales des Sciences Naturelles, Paris, 22(86): 139. "Java". Syntype in Oxford. [Hemming 1943]

Korean records. ***Gryllacris maculicollis***: Walker 1869: 167 (Corea); ***Gryllacris signifera***: Kirby 1906: 144; Karny 1937: 167 (mislabelled).

Distribution. Indonesia, Malaysia, Singapore.

18. *Landreva clara* (Walker 1869) 작은날개귀뚜라미

Gryllus clarus Walker 1869. Catalogue of the Specimens of Dermaptera Saltatoria in the

Collection of the British Museum, 1: 39, No. 71. "Ceylon = Sri Lanka". Holotype ♀ in The Natural History Museum, London.

Korean records. ***Landreva clara***: Doi 1935: 58; Ju 1969: 20 (North Korean check list).

Distribution. ?Korea, India, Sri Lanka.

Remarks. Possibly the records are misidentifications of some apterous crickets or their nymphs.

19. ***Loxoblemmus spectabilis*** **Gorochov and Kostia 1993** 꽃알락귀뚜라미

Loxoblemmus spectabilis Gorochov and Kostia 1993. Acta Zoologica Cracoviensia, 35(3): 428, Figs. 3, 4, 6. "North Korea: Kujang". Holotype ♂ in Institute of Systematics and Evolution of Animals, Polish Academy of Sciences, Kraców.

Korean records. ***Loxoblemmus spectabilis***: Kwon and Huh 1994: 49 (Korean check list); Kwon et al. 1996: 104 (Korean species list); Storozhenko 2004: 210, Figs. 546, 548.

20. ***Lyperogryllacris maculipes*** **(Walker 1869)** (Fig. 384)

Gryllacris maculipes Walker 1869. Catalogue of the Specimens of Dermaptera Saltatoria in the Collection of the British Museum, 1: 171, No. 13. "Corea, Sarawak". Syntype ♂ (examined) in The Natural History Museum, London.

Korean records. ***Gryllacris maculipes***: Kirby 1906: 144; ***Lyperogryllacris maculipes***: Karny 1937: 171 (mislabelled).

Distribution. Malaysia.

21. ***Mecopoda elongata elongata*** **(Linnaeus 1758)** 긴철써기 (개칭) (Fig. 385)

Gryllus (*Tettigonia*) *elongatus* Linnaeus 1758. Systema Naturae per Regna tria naturae (10th ed.), 1: 429, No. 26. "India". Lectotype ♀ in Linnean Society, London.

= *Decticus tenebrosus* Walker 1869. Catalogue of the Specimens of Dermaptera Saltatoria in the Collection of the British Museum, 2: 263. "Corea, Philippines". Holotype ♀ (examined) in The Natural History Museum, London [Karny 1921]

= *Gryllus* (*Tettigonia*) *rufa* Stoll 1813. Spectres ou Phasmes, des Mantes, des Sauterelles, 2: pl. 9, f. 37. ? Holotype ♀ in The Natural History Museum, London [Karny 1921]

Korean records. ***Mecopoda rufa***: Walker 1870: 458 ("Corea"); ***Mecopoda elongata***: Karny 1924: 158; Mori 1933: 55 (Korean Tettigoniidae); Cho 1959: 159, Fig. 26 (manual); Cho 1969: 754, pl. 50 (illustrated encyclopedia); Ju 1969: 18 (North Korean check list); Lee 1990:

108 (systematic notes); Moon and Yoon 1993: 56 (KEI); Kwon and Huh 1994: 48 (Korean check list); Kwon et al. 1996: 103 (Korean species list); Kim and Kim 2001: 159 (mislablelled).

Distribution. Japan, China, Taiwan, India, Philippines, Indonesia (ssp. *burmeisteri*: ?).

22. *Megaulacobothrus latipennis* (Bolívar 1898) 폭날개애메뚜기 (Fig. 386)

Stenobothrus latipennis Bolívar 1898. Annali del Museo Civico di Storia Naturale 'Giacomo Doria', Genova, 39(19): 83. "Corea, Japan". Syntype ♂ (examined) in Museo Civico di Storia Naturale, Genova.

Korean records. ***Stenobothrus latipennis***: Okamoto 1924: 57 ("Quelpart"); ***Stauroderus latipennis***: Doi 1933: 88; Haku 1937: 73 (Mt. Palgongsan); Kamiya and Miyasaka 1938: 63; Mori and Cho 1940: 19 (Mt. Geumgangsan); Seok 1970: 176 (Is. Jejudo); ***Chorthippus* (*Stauroderus*) *latipennis***: Mori and Cho 1939: 4 (Chailbong); ***Chorthippus latipennis***: Furukawa and Shiraki 1950: 29, Fig. 68; Bey-Bienko and Mishchenko 1951: 505; Cho 1959: 173, Fig. 53 (manual); Cho and Lee 1959; 10 (Gwangneung: 큰날개애메뚜기); Cho 1963: 162 (Is. Jejudo); Cho 1969: 729, pl. 78 (illustrated encyclopedia); Ju 1969: 23 (North Korean check list); Inoue 1985: 121, Figs. 13, 45, 76 (taxonomy with karyomorphology); Tadauchi 1989: 54 (Japanese check list); Otte 1995: 130 (Orthoptera species file); Yin et al. 1996: 164 (synonymic catalogue); Zheng and Xia 1998: 407; Hua 2000: 44 (Chinese list); ***Megaulacobothrus latipennis***: Storozhenko 1986: 301; Kwon and Huh 1994: 52 (Korean check list); Moon and Yoon 1996: 53 (KEI); Kwon et al. 1996: 105 (Korean species list); Bae 1998: 201.

Distribution. ?Korea, Japanese endemic regarded.

Remarks. There are so many referring of the grasshopper in Korea, but I could not found anyone attributable to *M. latipennis,* but alternatively *M. aethalinus* and *M. jejuensis* **sp. nov.** are confirmed in this study. I had examined syntype ♂ labelled as "Corea" (1881, A. Isola) in MNCN (source from the digital images), which could be identified with true Japanese *M. latipennis.* Accordingly, as like to the above cases the type is suspected to bear incorrect data. The other syntype labelled as "Japan" is deposited in Museo Civico di Storia Naturale, Genova (per. com. with Dr. Carolina Martín), therefore lectotype should be subsequently designated with the latter in order to avoid this problem.

23. *Metrioptera koreana* Mori 1933 부채날개여치

Metrioptera koreana Mori 1933. J. Chosen Nat. Hist. Soc. 16: 54, pl. 1, Fig. 3, text-fig b. "North Korea". Type lost.

Korean records. ***Metrioptera koreana***: Zeuner 1941: 43; Cho 1959: 157, Fig. 24 (manual); Cho 1969: 752, pl. 80 (illustrated encyclopedia); Bae 1998: 147.

Remarks. According to Lee (1990), it was synonymous with *Metrioptera ussuriana,* but the treating was questioned (Kim and Kim 2001). Moreover, Storozhenko (2004) proposed the other synonymy with *Uvarovites inflatus*. Yet even in the latter, likely to the former the original descriptions of both are not so corresponded, ie. presence of small prosternal processes (Fig. 98) of *Metrioptera koreana* suggests it belonging to the Drymadusini not Gampsocleidini (sensu Storozhenko 1986). Therefore, it would be rather resonable to consider as nom. dub. incertae cedis when until further evidence found in North Korea.

24. *Natula pallidula* (Matsumura 1910) 금빛귀뚜라미

Anaxiphus pallidula Matsumura 1910. Schdl. Nutzl. Ins. Zuckerr. Formosa: 10, pl. 5, Fig. 2. "Formosa = Taiwan". Holotype ♂ in Hokkaido University, Sapporo.

Korean records. ***Anaxiphus pallidulus***: Doi 1932: 38; Ju 1969: 19 (North Korean check list).

Distribution. ?Korea, Japan, Taiwan, Vietnam.

25. *Oedaleus decorus decorus* (Germar 1826)

Acrydium decorum Germar 1826. Faun. Ins. Eur. asc. 15, pl. 10: 12, tab. 17. "Russia: Daghestan". Neotype ♂ in The Natural History Museum, London.

Korean records. ***Oedaleus decorus***: Fontana et al. 2002: 434 (Korea); Kim and Kim 2005: 91 (editing error).

Distribution. Europe, Southwest Russia, North Africa (ssp. *asiaticus*: Transbaikalia, Mongolia, China).

26. *Oxya agavisa agavisa* Tsai 1931 검은줄벼메뚜기

Oxya agavisa Tsai 1931. Mitteilungen aus dem Zoologischen Museum in Berlin, 17(3): 437, Fig. 1. "China: Sichuan". Holotype ♀ in Museum für Naturkunde der Humbolt Universitat, Berlin.

Korean records. ***Oxya agavisa***: Lee and Lee 1983: 12, Figs. 5-6 ("Geumdang-ri"); Kwon and Huh 1994: 51 (Korean check list); Kwon et al. 1996: 105 (Korean species list).

Distribution. ?Korea, South China (higher altitude ssp. *tinkhami*: Kwangtung).

Remarks. The distributional range of *O. agavisa* is restricted to the montane areas of Southern China (Mishchenko 1952; Hollis 1971), not in Northeastern China (Lee and Lee 1983). Moreover, in latter's diagnosis, *O. agavisa* having the tegmina with anteriorly blackish Sc, R, M and CuA veins that is not coincided with early descriptions, which rather similar to *Mecostethus parapleurus* in Acridinae.

27a. *Pararcyptera microptera microptera* (Fischer von Waldheim 1833)

Oedipoda microptera Fischer von Waldheim 1833. Bull. Soc. Nat. Moscow, 6: 384. "Russia: Siberia". Type lost.

Korean records. ***Arcyptera micropetra***: Ju 1969: 22 (North Korean check list).

Distribution. Europe, West Mongolia, West Russia.

27b. *Pararcyptera microptera meridionalis* (Ikonnikov 1911) 잔날개어리삽사리

Arcyptera flavicosta var. *meridionalis* Ikonnikov 1911. Annuaire du Musée Zoologique de l'Académie Impériale des Sciences de St. Pétersbourg, 14: 251. "Russia: Tsitsikar". Type in Zoological Museum, Moscow University.

= *Arcyptera flavicosta sibirica* Uvarov 1914. Annuaire du Musée Zoologique de l'Acad. des Sciences de l'URSS, 19(1): 170. "Russia: Baikal". Type in ? [Bey-Bienko and Mishchenko 1951]

Korean records. ***Arcyptera micropetra sibirica***: Mori and Cho 1939: 4 (Chailbong); Cho 1959: 180 (manual); Cho 1969: 735, pl. 48 (illustrated encyclopedia); ***Pararcyptera micropetra sibirica***: Furukawa 1940: 63, Fig. 1C (Hoeryeong); ***Pararcyptera microptera meridionalis***: Tsyplenkov 1970: 214 (North Korea); Kwon and Huh 1994: 52 (Korean check list); Moon and Yoon 1996: 53 (KEI); Kwon et al. 1996: 105 (Korean species list).

Distribution. North Korea, Northeast China, East Mongolia, East Russia.

28. *Paratlanticus tsushimensis* Yamasaki 1986

Paratlanticus tsushimensis Yamasaki 1986. Kontyû, 54(4): 728, Figs. 5, 6, 9, 11, 12, 15, 17, 20-22. "Japan". Holotype ♂ in NSM.

Korean records. ***Paratlanticus tsushimensis***: Tadauchi 1989: 53 (Japanese check list).

Remarks. This is Japanese endemic regarded in Is. Tshushima, the Korean record is obvious editing error for *Paratlanticus ussuriensis*.

29. ***Phlaeoba fumida*** **(Walker 1870)** (Fig. 387)

Xiphocera fumida Walker 1870. Catalogue of the Specimens of Dermaptera Saltatoria in the Collection of the British Museum, 3: 528. "Hongkong". Holotype ♂ in The Natural History Museum, London.

= *Xiphocera fumosa* Walker 1870. Catalogue of the Specimens of Dermaptera Saltatoria in the Collection of the British Museum, 3: 528. "Corea". Holotype ♀ (examined) in The Natural History Museum, London. [Kirby 1910]

Korean records. ***Phlaeoba fumida***: Kirby 1910: 138; Wu 1935: 132 (Catalogus Insectorum Sinensium); Bey-Bienko and Mishchenko 1951: 412; Otte 1995: 262 (Orthoptera species file); Hua 2000: 48 (Chinese list); Kim and Kim 2005: 37, Fig. 3 (mislabelled).

Distribution. East China.

30. ***Podismopsis altaica*** **(Zubovsky 1900)** 알타이삽사리

Chrysochraon (*Podismopsis*) *altaica* Zubovsky 1900. Trudy Russkago Entomologicheskago Obshchestva, 34: 2. "Russia: Mt. Altai". Lectotype ♂ in Zoological Institute of the Russian Academy of Sciences, St. Petersburg.

Korean records. ***Podismopsis altaica***: Ikonnikov 1913: 11 ("Juchemsa" = Yujeomsa); Bey-Bienko 1932: 75, Figs. 9, 10, 14; Wu 1935: 138 (Catalogus Insectorum Sinensium); Bey-Bienko and Mishchenko 1951: 421, Fig. 942; Yin et al. 1996: 561 (synonymic catalogue); Hua 2000: 45 (Chinese list); Kim and Kim 2005: 102 (taxonomy).

Distribution. ?Korea, Russian, Mongolian and Chinese Altai Mountains.

Remarks. According to Sergeev (1993), the *P. altaica* is endemic of Mt. Altai in South Siberia, thus the Korean records is quite questioned.

31. ***Prumna plana*** **(Mishchenko 1974)** 잔날개북방밑들이메뚜기 (신칭)

Primnoa plana Mishchenko 1974. Trudy Russkago Entomologicheskago Obshchestva, 57: 20, Figs. 5, 25, 38, 74, 91, 104. "North Korea: Khedzio". Holotype ♂ in Zoological Institute of the Russian Academy of Sciences, St. Petersburg.

Korean records. ***Primnoa plana***: Otte 1995: 439 (Orthoptera species file); Yin et al. 1996: 570 (synonymic catalogue).

Remarks. Only the type materials are known in North Korea.

32. ***Prumna primnoa*** **(Motschulsky 1846)** 북방밑들이메뚜기

Podisma primnoa Motschulsky 1846. In Fischer von Waldheim. Entomographia Imperii Rossici. IV. Orthoptera Imperii Rossici. Nouv. Mém. Soc. Imp. Natur. Moscou, 8: 248. "Russia: Ulan Ude". Type lost. [correct authorship nec Fischer von Waldheim, see Mayer 2004].

Korean records. ***Prumna primnoa***: Ikonnikov 1913: 19; Doi 1933: 88; ***Primnoa primnoa***: Bey-Bienko and Mishchenko 1951: 222, Figs. 478, 486; Mishchenko 1952: 379, Figs. 414, 422; Ju 1969: 26 (North Korean check list); Mishchenko 1974: 26, Figs. 12, 32, 42, 62, 81, 98; Lee and Lee 1984: 70, Figs. 9-10 (taxonomy); Kwon and Huh 1994: 51 (Korean check list); Moon and Yoon 1996: 52 (KEI); Kwon et al. 1996: 105 (Korean species list); Hua 2000: 39 (Chinese list); ***Podisma primnoa***: Cho 1959: 176, Fig. 59 (manual); Cho 1969: 732, pl. 78 (illustrated encyclopedia).

Distribution. ?Korea, Northeast China, Mongolia, East Russia.

Remarks. Since the first Korean record by Ikonnikov (1913) of this the Korean distribution was questioned by Mistschenko (1974).

33. *Prumna primnoides* Ikonnikov 1911 우수리북방밑들이메뚜기

Prumna primnoides Ikonnikov 1911. Annuaire du Musée Zoologique de l'Académie Impériale des Sciences de St. Pétersbourg, 16: 259, pl. 5, Fig. 1. "Russia: Kamen-Rybolov". Lectotype ♂ in Zoological Museum, Moscow University.

Korean records. ***Prumna primnoides***: Ikonnokov 1913: 19; Bey-Bienko 1931: 675; Cho 1959: 178 (manual); Cho 1969: 733 (illustrated encyclopedia); ***Primnoa primnoides***: Bey-Bienko and Mishchenko 1951: 220, Fig. 482; Mishchenko 1952: 375, Figs. 410, 418; Mishchenko 1974: 20, Figs. 6, 26, 53, 75, 92, 105; Lee and Lee 1983: 5 (taxonomy); Lee and Lee 1984: 69 (taxonomy); Storozhenko 1986: 291, Fig. 146 (5, 21); Kwon and Huh 1994: 51 (Korean check list); Moon and Yoon 1996: 52 (KEI); Kwon et al. 1996: 105 (Korean species list); Hua 2000: 39 (Chinese list).

Distribution. ?Korea, Russian Far East.

Remarks. This must be confused with much similar *P. mandshurica*, the reconsideration is needed to do for the early Korean records.

34. *Psophus stridulus stridulus* (Linnaeus 1758)

Gryllus (*Locusta*) *stridulus* Linnaeus 1758. Systema Naturae per Regna tria naturae (10th ed.), 1: 432, No. 50. "Sweden". Holotype ♀ in Linnean Society, London.

Korean records. ***Psophus stridulus***: Bey-Bienko 1929: 102; Bey-Bienko and Mishchenko

1951: 583; Storozhenko 1986: 315, Fig. 143(10); Harz 1975: 458, Figs. 1611, 1645–1657; Ragge and Reynolds 1998: 282, Figs. 711, 712; Zheng and Xia 1998: 135, Fig. 75; Kim and Kim 2005: 91 (editing error); ***Psopha stridula***: Wu 1935: 160 (Catalogus Insectorum Sinensium).

Distribution. ?Korea, Northeast China, Mongolia, Russia, Europe (ssp. *samniticus*: Italy): Transpalaearctic.

35. *Stenocatantops splendens* (Thunberg 1815) 홍다리메뚜기 (Fig. 388)

Gryllus splendens Thunberg 1815. Mémoires de l'Académie Impériale des Sciences de St. Pétersbourg, 5: 236. "China". Holotype ♂ in Zoological Institute, Uppsala University.

= *Acridium coreanum* Walker 1870. Catalogue of the Specimens of Dermaptera Saltatoria in the Collection of the British Museum, 4: 629. "Corea". Holotype ♀ (examined) in The Natural History Museum, London. [Uvarov 1924]

Korean records. ***Catantops splendens***: Uvarov 1924: 297; Wu 1935: 196 (Catalogus Insectorum Sinensium); Bey-Bienko and Mishchenko 1951: 251, Fig. 524; Mishchenko 1952: 518, Figs. 153, 154, 479; Cho 1959: 181, Fig. 65 (manual); Cho 1969: 736, pl. 78 (illustrated encyclopedia); Ju 1969: 23 (North Korean check list); Tadauchi 1989: 54 (Japanese check list); Kwon and Huh 1994: 52 (Korean check list); Kwon et al. 1996: 105 (Korean species list); ***Stenocatantops splendens***: Willemse 1968: 11, Figs. 1–11, 38, 39, 57–59, 76, 77, 86, 99, pl. 1, Figs. 1–3, pl. 2, Fig. 20, pl. 3, Fig. 26, pl. 6, Fig. 49, map 1 (mislabelled); Hua 2000: 39 (Chinese list); ***Cantops*** [!] ***splendens***: Moon and Yoon 1996: 52 (KEI).

Distribution. East China, Taiwan, Thailand, Vietnam, India, Malaysia, Philippines.

36. *Tetrix bipunctata bipunctata* (Linnaeus 1758) 쌍점모메뚜기

Gryllus (*Bulla*) *bipunctatus* Linnaeus 1758. Systema Naturae per Regna tria naturae (10th ed.), 1: 427, No. 17. "Europe". Lectotype ♀ in Linnean Society, London.

Korean records. ***Tetrix bipunctata***: Kostia 1995: 261, Figs. 2, 6, 13 (North Korea).

Distribution. North Korea, Northeast China, Mongolia, Russia, Europe (ssp. *kraussi*: Europe): Transpalaearctic.

37. *Tetrix macilenta* Ichikawa 1993 가는모메뚜기

Tetrix macilenta Ichikawa 1993. Akitu, 135: 5, Figs. 1E 2A–C. "Japan: Nara". Holotype ♀ in ONHM.

Korean records. ***Tetrix macilenta***: Storozhenko et al. 1994: 16, Figs. 45–55; Kim and Kim 2004: 266 (taxonomy).

Remarks. Only one male specimen is known in Storozhenko et al. 1994 (Korea: 1♂, "Shonei–Keinan", 3 vii 1941, Baron Kawasaki).

38. *Uvarovites inflatus* (Uvarov 1923) 반날개여치

Gampsocleis inflata Uvarov 1923. Transactions of the Entomological Society of London, 3–4: 525, pl. 28, Fig. 22. "China: Shantung". Holotype ♂ in Vienna.

Korean records. ***Gampsocleis inflata***: Mori 1933: 53 (Gwangju, Mt. Naejangsan); Cho 1959: 154 (manual); Cho 1969: 749 (illustrated encyclopedia); Ju 1969: 17 (North Korean check list); ***Uvarovites inflatus***: Storozhenko 2004: 109, Figs. 250–257.

Distribution. ?Korea, Northeast China, Russian Far East.

Remarks. According to Lee (1990), the early Korean records of this are misidentification of *Paratlanticus ussuriensis*, but still a little possibility present to find this in North Korea where bordering zone with China.

39. *Valanga nigricornis fumosa* (Walker 1870) 영남메뚜기 (Fig. 389)

Acridium fumosum Walker 1870. Catalogue of the Specimens of Dermaptera Saltatoria in the Collection of the British Museum, 3: 589. "Corea". Holotype ♀ (examined) in The Natural History Museum, London.

Korean records. ***Valanga nigricornis fumosa***: Doi 1932: 35; Bey–Bienko and Mishchenko 1951: 246; Mishchenko 1952: 490; Lee and Lee 1983: 5 (taxonomy); Kwon and Huh 1994: 51 (Korean check list); Otte 1995: 32 (Orthoptera species file); Kwon et al. 1996: 105 (Korean species list); ***Valang*** [!] ***nigricornis fumosa***: Haku 1937: 73 (Daegu).

Distribution. ?Korea (ssp. *nigricornis*: Singapore; *allorensis*: Is. Allor; *aroensis*: Is. Aru; *australiensis*: Queensland; *batuensis*; Is. Batu; *carolinensis*: Is. Caroline; *disparilis*: Is. Christmas; *fortis*: Is. Lesser Sunda: *halmaherae*: Is. Halmaheira; *insularis*: Is. Sipora; *kalaotuae*: Is. Kaola Tua; *keyensis*: Is. Key; *lombokensis*: Lombok: *mangalumensis*; Is. Mangalum; *melanocornis*: Java; *moro*: Davao; *ornata*: Is. Caroline; *rammei*: Is. Caroline; *sakoemiensis*: Sakoemi; *saravakensis*: Nanga–Badau; *sumatrensis*: Pandjang; *waiensis*; Is. Wai).

Remarks. The *fumosa* has been designated to the only Korean subspecies among 23 subspecies of polytypic *nigricornis* since Uvarov (1923). I had studied the type specimen, it

was, however, very unfamiliar grasshopper to be in Korean fauna. The *Valanga* is mainly distributed in Southeastern Asia and Australia (Mishchenko 1952), the locality data is truly erroneous as like to above cases.

40. *Zubovskya morii* (Bey-Bienko 1931) 참민날개밑들이메뚜기

Podisma morii Bey-Bienko 1931. Boletín de la Real Sociedad Española de Historia Natural, 31: 676, Figs. 1-2. "North Korea: Mt. Baekdusan". Holotype ♂ in Zoological Institute of the Russian Academy of Sciences, St. Petersburg.

Korean records. ***Podisma morii***: Mori and Cho 1939: 4, pl. 1, Fig. 9-10 (Chailbong); Cho 1959: 176, Fig. 60A-B (manual: 참밑드리메뚜기); Cho 1969: 733, pl. 78 (illustrated encyclopedia); Park and Park 1987: 676 (Gojindong, Mt. Daeamsan); ***Zubovskya morii***: Bey-Bienko and Mishchenko 1951: 216, Fig. 469; Mishchenko 1952: 354, Fig. 404g; Lee and Lee 1983: 4 (taxonomy); Lee and Lee 1984: 64 (taxonomy); Storozhenko 1986: 290, Fig. 148(1); Storozhenko 1986: 57, Figs. 10, 63-68; Kwon and Huh 1994: 51 (Korean check list); Otte 1995: 443 (Orthoptera species file); Moon and Yoon 1996: 52 (KEI); Kwon et al. 1996: 105 (Korean species list); Yin et al. 1996: 760 (synonymic catalogue).

Remarks. South Korean records of this must be misidentifications of *Zubovskya koreana,* those distribution seems to rather restrict within North Korea.

References

Adelung N.V. 1902. Beitrag zur Kenntnis der paläarctischen Stenopelmatiden (Orthoptera, Locustodea). Ann. Mus. Zool. St. Petersbourg, 7: 55−75.

Adelung N.V. 1910. Über einige bemerkenswerte orthopteren aus dem palaearktischen Asien. Hor. Soc. Ent. Ross. 39: 328−358.

Alexander R.D. 1991. A review of the genus *Gryllus* (Orthoptera: Gryllidae), with a new species from Korea. Great Lakes Entomologist, 24(2): 79−84.

An S.L. and Lee S.M. 1986. Description of new species of *Parapodisma* from Korea (Orthoptera: Acrididae). Insecta Koreana, 6: 115−119.

Ander K. 1949. *Omocestus haemorrhoidalis* Charp. in Sweden. Opusc. ent. 14: 121−149.

Bae J.D. and Lee C.E. 1990a. Morphological comparison of stridulatory apparatus of Korean cricket (Gryllidae, Orthoptera). Nature and Life, 20(1/2): 55−61.

Bae J.D. and Lee C.E. 1990b. Comparative analysis of stridulatory file teeth of Korean cricket (Gryllidae, Orthoptera). Nature and Life, 20(1/2): 63−68.

Bae Y.J. 1998. Orthoptera. In: Insect's life in Korea. Vol 1. Korea University, pp. 260.

Banerjee S.K. and Kevan D.K.McE. 1960. A preliminary revision of the genus *Atractomorpha* Saussure 1862. (Orthoptera: Acridoidea: Pyrgomorphidae) Treubia, 25: 165−189.

Benediktov A.A. 1998. Acoustic communication of Tetrigids of genus *Tetrix* (Orthoptera, Tetrigidae). Ent. Rev. 78(8): 982−985.

Bey−Bienko G. 1929. Notes in the Siberian representatives of the genus *Acrydium* Geoffr. EOS, 5: 365−373.

Bey−Bienko G. 1929. On some Orthoptera from south Japan. Ann. Mag. Nat. Hist. 10(4): 542−550.

Bey−Bienko G. 1929. Studies on the Dermaptera and Orthoptera of Manchuria. Konowia, 8(2): 97−110.

Bey−Bienko G. 1930. A monograph of the genus *Bryodema* Fieb. (Orthoptera, Acrididae) and its nearest allies. Ann. Mus. Zool. Acad. Sci. URSS, 30: 71−127.

Bey−Bienko G. 1930. Further studies on the Dermaptera and Orthoptera of Manchuria. Ann. Mag. Nat. Hist. 10(5): 493−500.

Bey−Bienko G. 1931. On some Orthoptera from Northern Korea. Bol. Soc. Espanola Hist. Nat. 31: 673−678.

Bey-Bienko G. 1933. Records and descriptions of some Orthoptera from USSR. Bol. Soc. Esp. Hist. Nat. 33: 327-329.

Bey-Bienko G. 1949. On the fauna of Dermaptera and Orthoptera of Sakhalin and the Kurile Islands. Ent. Obozr. 30: 308-317. (in Russian)

Bey-Bienko G. 1951. Studies on long-horned grasshoppers (Orthoptera, Tettigoniidae) of the USSR and adjacent countries. Trud. Vsesoyuz. Ent. Obshch. Moscow. 43: 129-170.

Bey-Bienko G. 1954. New species and genera of Orthoptera from USSR and neighbouring regions. Zool. Zhurn. Moscow, 33(2): 461-469.

Bey-Bienko G. 1954. Tettigoniidae, Phaneropterinae. Fauna of USSR, 2(2): 384pp.

Bey-Bienko G. 1955. Studies on fauna and systematic superfamily Tettigonioidea (Orthoptera) of China. Zool. Zhurn. 34: 1250-1271. (in Russian)

Bey-Bienko G. 1971. A revision of bush-crickets of the genus *Xiphidiopsis* (Orthoptera, Tettigonioidea). Ent. Oboz. 50: 827-848.

Bey-Bienko G. and Mishchenko L.L. 1951. Locusts and Grasshoppers of the USSR and adjacent countries. Part 1, 2. 667pp.

Bolívar I. 1890. Diagnosis de Orthopteros nuevos. Ann. Soc. Esp. Hist. Nat. 19: 299-334, Taf. 1.

Bolívar I. 1898. Contributions a l'etude des Acridiens especes de la faune Indo et Austro-Malaisienne du Museo Civico di storia naturale de Genova. Ann. Mus. Genova, 39: 66-101.

Bolívar I. 1901. Zoologische Ergebnisse de dretten Asiatischen Forschungsreise des Grafen Eugen Zichy. Orthoptera, 2: 223-243.

Bolívar I. 1914. Estudios entomologicos, segunda parte. I. El Grupo de los Euprepocnemes. Trab. Mus. Nac. Cienc. Nat. Madrid, 20: 1-40.

Brunner von Wattenwyl C. 1878. Monographie der Phaneropteriden. Verh. zool.-bot. Ges. Wien. 401pp.

Brunner von Wattenwyl C. 1888. Monographie der Stenopelmatiden und Gryllacriden. Verh. zool.-bot. Ges. Wien. 38: 247-394. 5pls.

Bukhvalova M.A. 1993. Acoustic signals of *Arcyptera fusca fusca* (Pall.) and *A. fusca albogeniculata* Ikonn. (Orthoptera, Acrididae). Vestnik Moskovskogo Universiteta Seriya XVI Biologiya. (1): 46-49.

Bukhvalova M.A. 1997. On the synonymy of two species of the genus *Arcyptera* (Orthoptera: Acrididae). Russian Entomological Journal, 6(3-4): 3-5.

Bukhvalova M.A. 1998. New data on taxonomy of species of the *Chorthippus biguttulus* Group (Orthoptera, Acrididae) from Russia and Adjacent territories. Ent. Rev. 78(7): 867−875.

Burr M. 1898. Note on a few Orthoptera from Japan and Korea. Ent. month. Mag. 9(34): 29−30.

Burr M. 1899. [Orthoptera] Notes on the Decticidae with descriptions of new species. Ent. Rec. J. Variation, XI: 295−298, 332−334.

Caudell A.N. 1921. Some new Orthoptera from Mokansham, China. Proc. Ent. Soc. Washington, 23: 27−35.

Caudell A.N. 1927. Orthopteroid insects from the maritime province of Siberia. Proc. U.S. natn. Mus. 71(7): 1−7.

Chang K.S. 1981. Morphological and ecological study on the *Haplotropis brunneriana* Saussure (Orthoptera, Acridiae, Pamphaginae). Sungshin Women's Univ. (A thesis for the degree of Master of Science) 58pp.

Chang K.S.F. 1935. Index of Chinese Tettigoniidae. Notes D'Ent. Chinoise, 2(3): 25−77.

Cho P.S. 1947. The fauna of the Mt. Diamond in Korea. Bull. Zool. Sec. Nat. Sci. Mus. 2(3): 43−100.

Cho P.S. 1955. Entomological observations of Korea. Hum. and Nat. Sci. Korea Univ. 1: 145−197.

Cho P.S. 1958. Sexual dimorphism of Korean Insects (III). Korean J. Zool. 1(1): 30−32.

Cho P.S. 1959. A manual of the Orthoptera of Korea. Hum. and Nat. Sci. Korea Univ. 4: 131−198.

Cho P.S. 1963. Insect of Quelpart Island (Cheju−do). Hum. and Nat. Sci. Korea Univ. 6: 159−243.

Cho P.S. 1965. Beiträge zur Kenntnis der Insekten−Fauna Insel Dagelet (Ulnung−do). Korea Univ. 60 anniversary thesis <Natural Science>. pp. 9−11.

Cho P.S. 1969. Orthoptera. In: Illustrated encyclopedia of fauna and flora of Korea 10(2). Samhwa Publ. Co. pp. 713−800.

Cho P.S. and Lee B.J. 1959. The comparative observation on sulca on thoraxes of larvae and adults of Acrididae from Kwang−Neung, Korea. Bull. Dept. Korea Univ. 2(1−4): 4−16.

Choo J.K. and Choi E.H. 1983. Studies on the geographic adaptation of field cricket. Korean J. Entomol. 13(1): 47−53.

Chopard L. 1925. Descriptions de Gryllides nouveaux (Orthopteres). Ann. Soc. Ent. France, 94: 291−332.

Chopard L. 1928. Revision of the Indian Gryllidae. Records of the Indian Museum, 30(1): 1−36.

Chopard L. 1961. Les divisions du genre *Gryllus* basees sur l'etude de l'appareil copulateur (Orthoptera, Gryllidae). EOS, 37(3): 267−287. lam. 2−14.

Chopard L. 1967. Gryllides. W. Junk Orthopterorum Catalogus. Pars 10, pp. 1−211.

Chung M.G., Kang S.S. and Yeeh Y.E. 1997. Genetic structure in Korean populations of *Atractomorpha lata* (Orthoptera: Pyrgomorphidae). Korean J. Biol. Sci. 1: 535−538.

Čejchan A. 1967. A taxonomic study in Deracanthinae (Orthoptera, Bradyporidae). Acta Entomol. Mus. Nat. Pragae, 37: 607−633.

de Haan W. 1842. Bijdragen tot de Kennis der Orthoptera. In: Temminck K.J. [ed.] Verhandlingen over de Natuurlijke Geschiedenis der Nederlandsche Overzeesche Bezittingers. Leiden, pp. 45−248.

Dirsh V.M. 1927. Studies on the genus *Gampsocleis* Fieb. (Orthoptera, Tettigoniidae). Zbirn. Prats. zool. Mus. Kiev, 7(1): 147−158.

Dirsh V.M. 1958. Two new genera of Acridoidea (Orthoptera). Ann. Mag. Nat. Hist. (12)10: 860−862.

Dirsh V.M. 1975. Classification of the Acridomorphoid insects. E.W. Classey LTD. 171pp.

Dirsh V.M. and Uvarov B.P. 1953. Preliminary diagnosis of new genera and new synonymy in Acrididae. Tijdscr. ent. Amsterdam, 96: 231−237.

Doi H. 1932. Miscellaneous note on Insects. J. Chosen Nat. Hist. Soc. 13: 30−49.

Doi H. 1933. Miscellaneous note on Insects 3. J. Chosen Nat. Hist. Soc. 15: 85−96.

Doi H. 1934. On the female of *Pseudorhynchus japonicus* Shiraki. Mushi, 7(2): 124−125.

Doi H. 1935. Miscellaneous note on Insects 6. J. Chosen Nat. Hist. Soc. 20: 54−61.

Doi H. 1936. Miscellaneous note on Insects 7. J. Chosen Nat. Hist. Soc. 21: 102−108.

Dovnar−Zapolskii D.P. 1933. Zur Kenntnis der palaarktischen Podismini (Orthoptera: Acridoidea) (Vorlaufige Mitteilung). Trav. Inst. Zool. Acad. Sci. USSR. 1: 253−268.

Ebner R. 1939. Tettigoniiden (Orthoptera) aus China. Ling. Sci. Jour. 18: 293−302.

Emelijanov A.F. 1974. Proposals on the classification and nomenclature of area. Entomologischeskoe obozrenie, 53(3): 497−552.

Furukawa H. 1930. Miscellaneous on Japanese Orthoptera [1]. Kontyû, 4(2): 99−111.

Furukawa H. 1938. Orthopteroidea of Miyake−Zima Izu. Annot. Zool. Jap. 17(3−4): 548−562.

Furukawa H. 1939. Insects of Jehol [I] Thysanura et Orthoptera (1). Superfamily Acridoidea. Report of First Scientific Expedition to Manchoukuo, Sec. 5, Div. 1, 5(16): 180pp.

Furukawa H. 1941. A critical note on some species of *Hexacentrus* (Orthopt.). Zool. Mag. Tokyo, 53(7): 367−370.

Furukawa H. 1942. Insects of Shyakujii. Collecting and Breeding, 4(2): 35−37.

Furukawa H. 1970. Two new interesting genera and species of crickets of Japan (Orthoptera). Kontyû, 38(1): 59−66.

Furukawa H. and Shiraki T. 1950. Orthoptera. *In:* Iconographia Insectorum Japonicorum, Tokyo, pp. 22−52.

Galvagni A. 1987. The genus *Miramella* Dovnar−Zapolskij 1933 in the Balkan and Carpathian regions. In: Baccetti B.M. [eds.] Evolutionary biology of Orthopteroid insects. Ellis Horwood LTD. Ch. 13: 208−218.

Gorochov A.V. 1983. Crickets (Orthoptera, Grylloidea) of the Soviet Far East. Syst. ecol.−faun. Sov. Far East, Vladivostok, pp. 39−47.

Gorochov A.V. 1985. Contribution to the cricket fauna of China (Orthoptera, Grylloidea). Ent. Obozr. 64(1): 89−109. [English translated, 1985. Ent. Rev. 64(1): 124−145]

Gorochov A.V. 1993. To the knowledge of the tribe Meconematini (Orthoptera, Tettigoniidae). Zoosystematica Rossica, 2(1): 63−92.

Gorochov A.V. 1995. System and evolution of the suborder Ensifera (Orthoptera) Parts 1, 2. Proc. Zool. Inst. St. Peterburg, Vol 260. 222pp, 214pp.

Gorochov A.V. 1996. New and little known crickets from the collection of the Humboldt University and some other collections (Orthoptera: Grylloidea). Part 1. Zoosystematica Rossica, 4: 81−114.

Gorochov A.V. and Kostia D. 1993. On some species of the genus *Loxoblemmus* Sauss. (Orthoptera: Gryllidae) from North Korea. Acta Zool. Cracov. 35(3): 427−433.

Gorochov A.V., Storozhenko S.Yu. and Kostia D. 1993. Systematic notes on the Tettigoniidae of East Asia (Orthoptera). Zoosystematica Rossica, 2(2): 287−291.

Griffini A. 1914. Le specie orientali del gen. *Neanias* Brunner. Wien Ent. Zeit. 33(7−10): 235−251.

Günther K.K. 1978. Die Tridactyliden Austaliens (Tridactylidae, Caelifera, Orthopteroidea, Insecta). Mitt. Zool. Mus. Berlin, 54(2): 223−255.

Haku K. 1937. A list of insects collected from North Keisho−Do, Korea (No. II). J. Chosen Nat. Hist. Soc. 22: 70−74.

Harz K. 1969. The Orthoptera of Europe I. Dr. W. Junk N. V. The Hague, 749pp.

Hebard M. 1922. Studies in Malayan, Melanesian and Australian Tettigoniidae (Orthoptera).

Proc. Acad. Nat. Sci. Philadelphia, 74: 121−312. pls. XI−XXII.

Hollis D. 1971. A preliminary revision of the genus *Oxya* Audinet−Serville (Orthopdtera: Acridoidea). Bull. Br. Mus. nat. Hist. (Ent.), 26(7): 267−343.

Hua L.Z. [Ed.] 2000. List of Chinese Insect. Zhongshan Univ. Press. pp. 32−57.

Huh E.Y. and Kwon Y.J. 1995. A check list of the Caelifera from Chejudo (Orthoptera). Insecta Koreana Suppl. 5: 7−18.

Ichikawa A. 1993. Four new species of the genus *Tetrix* Latreille (Orthoptera, Tetrigidae) from Japan. Akitu, 135: 1−8.

Ichikawa A. 2001a. New species of Japanese crickets (Orthoptera; Grylloidea) with notes on certain taxa. Tettigonia, 3: 45−58.

Ichikawa A. 2001b. A new genus and some new species of Japanese Orthoptera with taxonomic notes on some taxa. Tettigonia, 3: 59−68.

Ichikawa A. 2002. Contributions to the knowledge of Japanese Orthoptera II. Tettigonia, 4: 29−34.

Ichikawa A. 2006. New status, combination, synonymy and records of Orthoptera from Japan and Korea. Tettigonia, 8: 23−29.

Ichikawa A., Murai T. and Honda E. 2000. Monograph of Japanese crickets (Orthoptera: Grylloidea). Bull. Hoshizaki Green Found. 4: 257−332.

Ichikawa S. 1906. Insects of Quelpart Island. Hakubutsu No Tomo 6(33): 183−186.

Ikonnikov N. 1911. Zur Kenntnis der Acridiodeen Sibiriens. Ann. Mus. Zool. Acad. Sci. St. Petersb. 16: 242−270. pl. 5.

Ikonnikov N. 1913. Über die von P. Schmidt aus Korea mitgebrachten Acridiodeen. Kuznetzk, pp. 1−22.

Inagaki H. and Sugimoto T. 1994. Interspecific microdivergency in male genitalia between two sibling species of the bushcricket genus *Hexacentrus* (Orthoptera: Tettigoniidae). Entomologia Generalis, 18(3/4): 165−170.

Inagaki H., Sugimoto T. and Irisawa S. 1990. Comparison of the pars stridens between two acoustic sibling species of *Hexacentrus* (Orthoptera: Tettigoniidae), *H. japonicus* Karny and *H. unicolor* Serville. C. R. Acad. Sci. Série III, 310(11): 515−519.

Ingrisch S. 1984. The influence of environmental factors on dormancy and duration of egg development in *Metrioptera roeseli* (Orthoptera: Tettigoniidae). Oecologia, 61: 254−258.

Ingrisch S. 1985. Effect of hibernation length on termination of diapause in European Tettigoniidae (Insecta: Orthoptera). Oecologia, 65: 376−381.

Ingrisch S. 1988. Water uptake and drought resistance of the eggs of European bush crickets (Orthoptera: Tettigoniidae). Zool. Jb. Physiol. 92: 117−170.

Ingrisch S. 1990. Significance of seasonal adaptations in Tettigoniidae. Bol. San. Veg. Plagas, 20: 209−218.

Ingrisch S. 1990. Zur Laubheuschrecken−Fauna von Thailand (Insecta: Saltatoria: Tettigoniidae). Senckenbergiana biol. 70(1/3): 89−138.

Ingrisch S. 1998. The genera *Velarifictorus*, *Modicogryllus* and *Mitius* in Thailand (Ensifera: Gryllidae, Gryllinae). Entomologica scandinavica, 29(3): 315−359.

Inoue M. 1979. Two new species of the genus *Parapodisma* from Western Japan (Orthoptera, Acrididae). Proc. Japn. Soc. syst. Zool. 16: 58−64.

Inoue M. 1985. A taxonomic revision of Japanese Acridoidea (Orthoptera) with special reference to their karyomorphology. Trans. Shikoku Ent. Soc. 17(3): 103−183.

Inoue N. 1989. A morphometric comparison on females of three Japanese species of the genus *Ruspoila* (Orthoptera : Tettigoniidae). Bull. Mito Agri. Hi. Sch. 2: 2−11.

Ishikawa H. 1993. A new genus *Alpinanoplophilus* from Japan, with descriptions of seven new species (Orthoptera: Rhaphidophoridae). Transactions of the Shikoku Entomological Society, 20(2): 37−50.

Ishikawa H. 2002. *Anoplophilus* species in Japan (Orthoptera, Rhaphidophoridae, Protogrophilinae). Tettigonia, 4: 7−23.

Ito G. 2003. *Prumna* Motschulsky, a revived name for a grasshopper genus, *Primnoa* Fischer−Waldheim (Orthoptera: Acrididae). Tettigonia, 5: 51−52.

Jago N. D. 1963. A revision of the genus *Calliptamus* Serville (Orthoptera: Acrididae). Bull. Br. Mus. nat. Hist. (Ent.), 13: 289−350.

Jeong C.H. 1997. How formed the Korean peninsula. In: Kim Jeongbae et al. Nature and human of Korea. Uri Gyoyuk. p. 62−69.

Jin X.B. and Xia K.L. 1994. An index−catalogue of Chinese Tettigoniodea (Orthoptera: Grylloptera), J. Orth. Res. 3: 15−41.

Johnston H.B. 1956. Annotated catalogue of African grasshoppers. Cambridge Univ. press, 833pp.

Ju D.R. [ed.] 1993. A series book on the Mt. Baekdusan (Animal). Gwahakwon Publ. Pyeongyang, 391pp.

Ju D.R. 1969. Check list of insect classification. Gwahakwon Publ. Pyeongyang, pp. 16−19.

Kamijo N. 1933. On a collection of insects from North Keisho−Do, Korea II. J. Chosen Nat.

Hist. Soc. 15: 46-63.

Kamiya K. and Miyasaka K. 1938. List of insect specimens in the entomological laboratory of the Tokyo Agricultural University [1]. Science and Industry, 18(2-4): 60-71.

Kang Y.S and Son H.C. 1958. Studies on the Chromosomes of Orthoptera in Korea (1). Korean J. Zool. 1(1): 17-24.

Kang Y.S and Son H.C. 1959. Studies on the Chromosomes of Orthoptera in Korea (2). Korean J. Zool. 2(2): 15-24.

Kanô Y. 1988. New record of the genus *Anapodisma* (Orthoptera, Catantopidae) from Tsushma, Japan. Trans. Essa ent. Soc. Niigata, 66: 39-43.

Kanô Y. 1991. About a species of *Parapodisma* described from Hallasan, Chejudo, Korea. Battarigisu, 89: 27. [In Japanese]

Karny H.H. 1907. Revision Conocephalidarum. Abh. Zool.-bot. Ges. Wien. 4(3): 1-114.

Karny H.H. 1912. Orthoptera. Fam. Locustidae. Subfam. Conocephalinae. Genera Insectorum, 135: 1-17.

Karny H.H. 1921. Katydids (Tettigoniidae) of the Philippine Islands, collected by C.F. Baker. Philippine J. Sci. Manila, 18(5): 607-617.

Karny H.H. 1924. Beiträge zur Malayischen Orthopteren Fauna. Treubia, 5(1-3): 1-234. pl. II.

Kevan D.K.McE. [eds.] 1977. The higher classification of the Orthopteroid insects. Lyman Entomological Museum and Research Laboratory Memoir 4 (Special Publication No. 12). 26pp.

Kevan D.K.McE. 1960. Proposed use of the plenary powers to suppress the specific name *longicorne* Laterille, 1804, as published in the binomen *Acrydium longicorne* (Class Insecta, Order Orthoptera) Z.N. (S) 675. Bull. zool. Nomencl. 17: 203-204.

Kevan D.K.McE. 1974. Land of the grasshoppers. Lyman Entomological Museum and Research Laboratory, 326pp.

Kevan D.K.McE. 1980. The Orthopteroid insects of the Burmudas. Lyman Ent. Mus. Res. Lab. 8: 182pp.

Kevan D.K.McE. 1982. Orthoptera. *In*: Synopsis and classification of living organisms. McGraw-Hill Book Company, Inc. pp. 353-383.

Kevan D.K.McE. and Knipper H. 1955. Zur Systematik, Biologie, insbesondere Schwarmbildung, und Morphometrie afrikanische *Homorocoryphus* (Orth. Tettigon. Conocephalidae). Veroff. Uberseemus. Bremen, (A)2: 277-318.

Key K.H.L. 1986. *Nomadacris* Uvarov 1923: proposed conservation by setting aside the first-reviser action of Jago, 1981. Z. N. (S.) 2525. Bull. Zool. Nomenclature, 43: 102-103.

Key K.H.L. and Rentz D.C.F. 1994. On the scientific name of the Australian "Spur-throated Locust" (Orthoptera: Acrididae). J. Aust. Ent. Soc. 33: 345-346.

Kim C.W., Lee C.E. and Lee B.H. 1988. Insect Systematics in Korea. Kor. Journ. Ent. 18(2): 1-9.

Kim D.H., Lee J.W. and Park W.H. 1987. A cytotaxonomic study of six species of the Korean Orthoptera. Korean J. Entomol. 17(4): 215-223.

Kim J.I. 1981. Etude sur les insectes sabulicoles de la Coree (4) Faune de la dune du sable littoral de la Mer de Jaune. Ent. Res. Bull. Inst. Korea Univ. 8: 61-72.

Kim J.I. and Kim T.W. 2001. Taxonomic review of Korean Phaneropterinae (Orthoptera, Tettigoniidae). Korean J. Entomol. 31(3): 147-156.

Kim J.I. and Kim T.W. 2001. Taxonomic review of Korean Tettigoniinae (Orthoptera, Tettigoniidae). Korean J. Entomol. 31(2): 91-100.

Kim J.I. and Kim T.W. 2002. Taxonomic study of Korean Stenopelmatoidea (Orthoptera: Ensifera). Korean J. Entomol. 32(3): 141-151.

Kim J.K. 1978. A study on the ovarioles of *Oxya japonica* Willemse (Orthoptera). Nature and Life, 8(3): 129-135.

Kim K.H. 1993. Phonotaxis of the African mole crickets, *Gryllotalpha africana* Palisot de Beauvois. Korean J. Appl. Entomol. 32(1): 76-82.

Kim T.W. and Kim J.I. 2001. A taxonomic study on four subfamilies of Tettigoniidae (Orthoptera, Ensifera) in Korea. Korean J. Entomol. 31(3): 157-164.

Kim T.W. and Kim J.I. 2002. Taxonomic study of the genus *Conocephalus* Thunberg in Korea (Orthoptera: Tettigoniidae: Conocephalinae). Korean J. Entomol. 32(1): 13-19.

Kim T.W. and Kim J.I. 2002. Taxonomic study of tribe Copiphorini in Korea (Orthoptera: Tettigoniidae: Conocephalinae). Korean J. Entomol. 32(3): 153-160.

Kim T.W. and Kim J.I. 2003. Two species of Melanoplinae (Orthoptera: Catantopidae) new to Korea. Korean J. Entomol. 33(2): 89-92.

Kim T.W. and Kim J.I. 2004. A taxonomic study of Korean Tetrigidae (Orthoptera: Caelifera: Tetrigoidea). Entomological Research, 34(4): 261-267.

Kim T.W. and Kim J.I. 2005. A taxonomic study of Korean Acridinae (Orthoptera: Caelifera: Acrididae). Entomological Research, 35(1): 33-38.

Kim T.W. and Kim J.I. 2005. Taxonomic study of Korean Chrysochraontini (Orthoptera:

Acrididae: Gomphocerinae). Entomological Research, 35(2): 101−106.

Kim T.W. and Kim J.I. 2005. Taxonomic study of Korean Oedipodinae (Orthoptera: Caelifera: Acrididae). Entomological Research, 35(2): 85−93.

Kim T.W., Kang T.H. and Yoo I.S. 2006. Insects. In: Monitoring of natural resources in Taean Seashore National Park. pp. 163−189.

Kim W.T. and Oh H.S. 1990. Fauna of the insects in seven uninhabited islets around the main island of Cheju−do. Rep. Acad. Surv. un. is. Cheju Isl. pp. 94−134.

Kim W.T. and Oh H.S. 1991. Fauna of the insects in inhabited islets around the main island of Cheju−do. Rep. Acad. Surv. in. is. Cheju Isl. pp. 133−175.

Kirby W.F. 1906. A synonymic catalogue of Orthoptera. Vol. 1, 2, 3. British Museum (Natural History). 562pp

Kishida K. 1934. The world of insects of Jehol, Manchuria. III. Kontyû, 8(3): 183−195.

Kostia D. 1993. A new species of the genus *Formosatettix* Tinkham 1937 (Orthoptera: Tetrigidae) from North Korea. Acta Zool. Cracov. 35(3): 423−425.

Kostia D. 1995. The Tetrigidae (Orthoptera) found in North Korea. Acta Zool. Cracov. 38(2): 257−265.

Kostia D. 1996. The Aemodogryllinae (Orthoptera: Rhaphidophoridae) found in the Korean peninsula. Ins. Koreana, 13: 105−111.

Kwon Y.J. and Huh E.Y. 1994. Order 14. Orthoptera. In: Check list of insects from Korea. Kon−Kuk Univ. Press, pp. 48−53.

Kwon Y.J., Lee J.H., Suh S.J., An S.L., Huh E.Y. and Yeo Y.S. 1996. Korean species list. *Kor. Nat. Coun. Conser. Nat.* pp. 103−104.

Lee B.J. 1957. A taxonomical study on the Acrididae (Orthoptera) in Light−Tomb (Kwang−Neung). Rept. Ins. Biol. K.U. 1(1): 10−12.

Lee H.S. and Lee C.E. 1983. Taxonomic revision of the Catantopinae from Korea (Orthoptera: Acrididae). I. Hieroglyphini and Oxyni. Nature and Life 13(1): 1−22.

Lee H.S. and Lee C.E. 1984. Taxonomic revision of the Catantopinae from Korea (Orthoptera: Acrididae). II. Podismini. Korean J. Entomol. 14(1): 63−80.

Lee H.S. and Lee C.E. 1985. Taxonomic revision of the Catantopinae from Korea (Orthoptera: Acrididae). IV. Calliptamini and Eyprepocnemidni. Korean J. Entomol. 15(1): 21−30.

Lee H.S. and Park S.O. 1992. A new genus of the subfamily Oedipodinae (Orthoptera: Acrididae). J. Basic Sci. Res. Inst. Hyosung Women's Univ. 6: 61−64.

Lee S.M. 1990. Systematic notes on Tettigoniidae of Korea. Insecta Koreana, 7: 104−117.

Lee Y.J. 1995. The cicadas of Korea. Yonah Publ. Seoul, 157pp.

Li H.C. and Xia K.L. 2005. Fauna Sinica Vol. 43. Orthoptera: Acridoidea: Cantantoptidae. Science Press, Beijing. 736pp.

Lincoln R., Boxshall G. and Clark, P. 1998. A dictionary of ecology, evolution and systematics. Cambridge Univ. 323pp.

Liu J.P. 1986. Orthoptera. *In*: Agricultural insects of China. Agricultural Publ. House, pp. 50−103.

Liu X.W. 1993. Orthoptera: Tettigonioidea, Stenopelmatoidea. Animals of Longqi Mountain, pp. 41−55.

Liu X.W. and Jin X.B. 1993. List of Chinese Stenopelmatoidea and Tettigonioidea (Grylloptera). Contr. Shanghai Inst. Entomol. 11: 99−118.

Liu X.W. and Jin X.B. 1997. Orthoptera: Tettigonioidea: Phaneropteridae, Pseudophyllidae, Meconematidae, Conocephalidae and Tettigoniidae. Insects of the three Gorge reservoir area of Yangtze river, pp. 145−171.

Liu Z., Kojima J., Wang Q. and Zheng Z. 1999. Morphometric comparisons of three subspecies of *Locusta migratoria* Linnaeus (Orthoptera: Acrididae; Acrididnae, Oedipodini) in China. Entomological Science, 2(4): 517−523.

Masaki J. 1936. On the insect−fauna of various Islands of Korea (1). Kontyû, 10(5): 251−274.

Masaki S. and Nagase A. 1992. Genetics, variability and origin of tropical, subtropical and temperate life cycles in the *Dianemobius fascipes* species−complex (Orthoptera: Gryllidae). Studies on Neotropical Fauna and Environment, 27(2−3): 69−82.

Matsumura S. and Shiraki T. 1908. Locustiden Japans. J. Coll. Agri. Tohoku Imp. Univ. 3(1): 1−80. pl. 1−2.

Matsuura I. 1988. A taxonomic study of closely related of *Loxoblemmus* (Orthoptera: Gryllidae) in Japan. New Entomol. 37(1−4): 17−23.

Mayer F.L. 2004. *Primnoa* Fischer−Waldheim 1846, *Sharovia* Otte 1997, *Parahagla* Lin 1982, *Phyllophora erosifolia* Piza 1981 and *Archibrunnea* Otte 1997: naming issues resolved. J. Orthopt. Res. 13(1): 161−165.

Mayr E. and Ashlock P.D. 1991. Principles of systematic zoology. McGraw Hill, INC. 475pp.

Miram E. 1906. Zur Orthopteren−Fauna Russlands. Öfversigt af Finska Vetenskaps−Societetens Förhandlingar, 49(6): 1−9.

Mishchenko L.L. 1952. Fauna of the USSR. Orthoptera (Locusts and Grasshoppers), Catantopinae. Izdatel'stvo Akademii Nauk SSSR, 592pp.

Mishchenko L.L. 1968. Orthopteroid insects (Orthopteroidea) collected by the Entomological Expedition of the Zoological Institute of the Academy of Sciences of USSR in the Mongolian people's Republic in 1967. Ent, Obozr. 47(3): 482-497.

Mishchenko L.L. 1974. Revision of the genus *Primnoa* F.-W. (Orthoptera: Acridiae, Catantopinae). Trudy vses. ent. Obshch. 57: 7-37.

Moon T.Y. and Yoon I. 2000. Cultural entomological understanding of "Hwang" in "Samguksagi" Koshin Univ. 25: 147-157. (in Korean)

Moon T.Y. and Yoon I.B. 1993. The list of Orthoptera deposited in the Korean Entomological Institute Ⅰ. Deracanthidae and Tettigoniidae (Tettigonioidea). Entomol. Res. Bull. (KEI), 19: 55-59.

Moon T.Y. and Yoon I.B. 1993. The list of Orthoptera deposited in the Korean Entomological Institute, Ⅰ. Deracanthidae and Tettigoniidae(Tettigonoidea). Entomol. Res. Bull. (KEI), 19 : 55-59.

Moon T.Y. and Yoon I.B. 1994. The list of Orthoptera deposited in the Korean Entomological Institute II. Oecanthidae, Gryllidae and Gryllotalpidae (Grylloidea). Entomol. Res. Bull. (KEI), 20: 105-107.

Moon T.Y. and Yoon I.B. 1996. The list of Orthoptera deposited in the Korean Entomological Institute III. Caelifera. Entomol. Res. Bull. (KEI), 22: 51-54.

Mori T. 1929. Kobaneohkirigiris. J. Chosen Nat. Hist. Soc. 9: 40-41.

Mori T. 1933. The Korean Tettigoniidae. J. Chosen Nat. Hist. Soc. 16: 50-56.

Mori T. 1935. Insects of Jehol [I] . Report of First Scientific Expedition to Manchoukuo, Sec. 5, Div. 1, Part 5, Atr. 1-17.

Mori T. and Cho P.S. 1939. List of Orthoptera from Chailbong (Bujeon Plateau, Hamkyungnam Province). J. Chosen Nat. Hist. Soc. 27: 4.

Mori T. and Cho P.S. 1940. List of Animals, Mt. Kongo. 20pp.

Nagaoka N. 1938. Insect-fauna of Mt. Myōkō in Western Korea. Entomological World, 5(46): 22-29.

Ogawa J. and Ohbayashi N. 2003. Preliminary study of Japanese species of the genus *Tettigonia* (Orthoptera, Tettigoniidae). Jpn. J. syst. Ent. 9(2): 145-158.

Ohmachi F. and Furukawa H. 1929. *Nemobius furumagiensis*, a new species of Grylloidea. Proc. Imp. Acad. Tokyo, 5(8): 374-376.

Ohmachi F. and Matsuura I. 1951. On the Japanese large field cricket and its allied species. Bull. Fac. Agr. Mie Univ. 2: 63−72.

Okamoto H. 1924. The Insect Fauna of Quelpart Island (Saishiu−to). Bulletin of the Agricultural Experiment Station, Government = General of Chosen 1(2): 233pp.

OSJ (Orthopterological Society of Japan) [ed.]. 2006. Orthoptera of the Japanese Archipelago in color. Hokkaido Univ. 687pp.

Otte D. 1994. Orthoptera species file 1: Crickets (Grylloidea). The Orthopterists' Society at the Academy of Natural Sciences of Philadelphia. 120pp.

Otte D. 1994. Orthoptera species file 2: Grasshoppers (Acridomorpha) A. Eumastacoidea, Trigonopterygoidea, Pneumoroidea. The Orthopterists' Society at the Academy of Natural Sciences of Philadelphia. 162pp.

Otte D. 1994. Orthoptera species file 3: Grasshoppers (Acridomorpha) B. Pamphagoidea. The Orthopterists' Society at the Academy of Natural Sciences of Philadelphia. 241pp.

Otte D. 1995. Orthoptera species file 4: Grasshoppers (Acridomorpha) C. Acridoidea: Lentulidae, Pauliniidae, Tristiridae, Romaleidae, Acrididae (part). The Orthopterists' Society at the Academy of Natural Sciences of Philadelphia. 518pp.

Otte D. 1995. Orthoptera species file 5: Grasshoppers (Acridomorpha) D. Acridoidea: Acrididae (part). The Orthopterists' Society at the Academy of Natural Sciences of Philadelphia. 630pp.

Otte D. 1997. Orthoptera species file 6: Tetridoidea and Tridactyloidea. The Orthopterists' Society at the Academy of Natural Sciences of Philadelphia. 261pp.

Otte D. 1997. Orthoptera species file 7: Tettigonioidea. The Orthopterists' Society at the Academy of Natural Sciences of Philadelphia. 373pp.

Otte D. 2000. Orthoptera species file 8: Gryllacrididae, Stenopelmatidae, Cooloolidae, Schizodactylidae, Anastostomatidae, and Rhaphidophoridae. The Orthopterists' Society at the Academy of Natural Sciences of Philadelphia. 97pp.

Otte D. and Alexander R.D. 1983. The Australian crickets (Orthoptera: Gryllidae). The Academy of Natural Sciences of Philadelphia, Monograph 22. 477pp.

Ôshiro Y. 1990. A new species of the genus *Parapteronemobius* (Orthoptera: Gryllidae) from Tokara Islands, The Tokaras, Japan. Akitu, 117: 1−6.

Paik J.C. and Storozhenko S.Yu. 2000. To the synonymy of *Tetrix subulata* L. (Orthoptera: Tetrigidae). Far Eastern Entomologist, 94: 23−24.

Paik W.H. 1977. Data of damages by locusts in "Joseonwangjosilok". Prof. Paik Wunha thesis,

pp. 458−469. (in Korean)

Park K.T. 1976. Historical review of Korean Lepidoptera (Heterocera). Kor. Journ. Ent. 6(2): 51−62.

Park K.T. and Paik J.C. 1995. List of insect fauna in Quelpart Island. Chejudo Fo. Nat. Hist. Mus. 614pp.

Park K.T. and Park U. 1987. Insect survey in the northern part of civilian control line neighbouring DMZ. Northern part of DMZ survey, Gangwondo. pp. 649−677.

Park S.O. 1997. Development of *Eyprepocnemis shirakii* (Orthoptera, Acrididae) at two high temperature regimes. J. Basic Sci. Res. Inst. C.U.T.H. 11(2): 207−211.

Pitkin L.M. 1980. A revision of the Pacific species of *Conocephalus* Thunberg (Orthoptera: Tettigoniidae). Bull. Br. Mus. nat. Hist. (Ent.) 41: 315−355.

Pylnov E. 1914. Contritutions à la faune des Orthoptères de la Russie d'Asie. Rev. Russe d'Ent. 14: 106−110.

Ragge D.R. 1957. A new species of *Phaneroptera* Serville from Formosa (Orthoptera: Tettigoniidae). Proc. R. Ent. Soc. Lond. (B), 26: 123−126.

Ragge D.R. 1961. A revision of the genus *Ducetia* Stål (Orthoptera: Tettigoniidae). Bull. Br. Mus. nat. Hist. (Ent.), 10: 169−208.

Ragge D.R. and Reynolds W.J. 1998. The songs of the grasshoppers and crickets of Western Europe. Harley books, 591pp.

Ramme W. 1939. Beiträge zur Kenntnis der palaearktischen Orthopterenfauna (Tettig. u. Acrid.). III. Mitt. Zool. Mus. Berlin, 24: 41−150.

Randall T.S. 2000. Biological systematics: Principles and applications. Comstock Publishing. Cornell Univ. 236pp.

Randell R.L. 1964. The male genitalia in Gryllinae (Orthoptera: Gryllidae) and a tribial revision. Can. Ent. 96: 1565−1607.

Redtenbacher J. 1891. Monographie der Conocephaliden. Verh. Zool. Bot. Ges. Wien, 41: 315−562.

Rehn J.A.G. 1902. Contributions towards a knowledge of the Orthoptera of Japan and Korea, I. Acrididae. Proc. Acad. Nat. Sci. Philadelphia, 54: 629−637.

Rehn J.A.G. 1928. On the relationship of certain new or previously known genera of the acridine group Chrysochraontes (Orthoptera, Acrididae). Proc. Acad. Nat. Sci. Philad. 80: 189−205, pls 22−23.

Rehn J.A.G. and Grant H.J.Jr. 1961. A monograph of the Orthoptera of North America (North

of Mexico). Volume I. Monographs of the Academy of Natural Sciences of Philadelphia, 12: 1−257.

Rentz D.C. and Miller G.R. 1971. Ecological and faunistic notes on a collection of Orthoptera from South Korea. Ent. News, 82: 253−273.

Rentz D.C.F. 1985. The Tettigoniinae. A monograph of the Tettigoniidae of Australia. Vol 1. CSIRO, 384pp.

Roberts H.R. 1941. Nomenclature in the Orthoptera concerning genotype designations. Transactions of the American Entomological Society, 67: 1−34.

Ross H.H. 1974. Biological systematics. Addison−Wesley Publishing. 345pp.

Seok D.M. 1970. The insect fauna of the Is. Quelpart. Bojinje Publ. Co. Seoul, pp. 175−177.

Sergeev M.G. 1992. Distribution patterns of Orthoptera in North and Central Asia. J. Orth. Res. 1: 14−24.

Sergeev M.G. 1993. The general distribution of Orthoptera in the main zoogeographical regions of North and Central Asia. Acta Zoologica Cracoviensia, 36(1): 53−76.

Shiraki T. 1910. Acrididen Japans. Fukuin printing Co. LTD, Yokohama, 1−90. 2 pls.

Shiraki T. 1930. Orthoptera of the Japanese Empire Part I (Gryllotalpidae and Gryllidae). Insecta Matsumurana 4(4): 181−252.

Shiraki T. 1930. Some new species of Orthoptera. Trans. Nat. Hist. Soc. Formosa, 20(111): 327−355.

Shiraki T. 1962. Order Orthoptera. *In*: Classification of Insects. Hokuryukan Co. LTD. pp. 141−159.

Simpson G.G. 1961. Principles of animal taxonomy. Columbia University Press, New York. 247pp.

Sohn Y.T. 1963. On the genus *Diestrammena* with one unrecorded species in Korea (Stenopelmatidae, Orthoptera). Korean J. Zool. 6(1): 1−2.

Song K.D. 1988. Effect of photoperiodism on development of eggs in the three species of field crickets in Korea. Goshin Univ. thesis 16: 355−361.

Song K.D. 1989. Geographic variation of the head width in the three species of field crickets in Korea. Goshin Univ. thesis 17: 281−287.

Steinmann H. 1967. New Palaerctic *Atractomorpha* Sauss. and *Pyrgomorpha* Serv. species (Orthoptera, Acrididae). Acta ent. Mus. natn. Pragae, 37: 565−575.

Storozhenko S.Yu. 1980. A review of the Tettigoniidae (Orthoptera) of the Soviet Far East. *In*: Taxonomy of the Insects of the Soviet Far East. Vladivostok, pp. 10−19.

Storozhenko S.Yu. 1981. New species of the genus *Formosatettix* Thinkham (Orthoptera: Tetrigidae). In: New data on insects of the Soviet Far East. Far East Sci. Cent. USSR Acad. Vladivostok: pp. 6–8.

Storozhenko S.Yu. 1983. Review of Catantopinae (Orthoptera, Acrididae) of the Soviet Far East. Systematika i ekologofaunisticheskii obzor otdelnikh otrjadov nasekomykh Dalnego Vostoka SSSR. Vladivostok, pp. 48–63. (in Russian)

Storozhenko S.Yu. 1983. Zur synonymie von *Aeropus kudia* Caudell (Orthoptera: Acrididae). Articulata, 2(2): 15–17.

Storozhenko S.Yu. 1986. Order Orthoptera. In: Lehr P.A. (ed.) Keys to insects of the Soviet Far East. 1: 241–317. (in Russian)

Storozhenko S.Yu. 1986. Revision of the genus *Zubovskya* Dov.–Zap. (Orthoptera: Acrididae). Tr. Zool Inst Akad Nauk SSSR, 143: 47–58.

Storozhenko S.Yu. 1990. Review of the Orthopteran subfamily Aemodogryllinae rthoptera: Rhaphidophoridae). Ent. obozr. 69(4): 835–849. [English translated, 1991. Ent. Rev. 70(6): 126–140]

Storozhenko S.Yu. 1991. A new species of *Primnoa* (Orthoptera, Acrididae). Zool. Zhurn. 70(6): 137–138.

Storozhenko S.Yu. 1993. Revision of the genus *Anapodisma* Dov. Zap. (Orthoptera, Acrididae). Russian Entomol. J. 2(3/4): 21–25.

Storozhenko S.Yu. 1994. Review of Orthoptera of Eastern Palearctica: Genus *Tettigonia* Linnaeus (Tettigoniidae, Tettiginiinae). Far Eastern Entomologist, 3: 1–20.

Storozhenko S.Yu. 1998. New data on grasshoppers (Orthoptera, Acididae) of North–East Asia. Far Eastern Entomologist, 64: 6–8.

Storozhenko S.Yu. 2002. To the knowledge of the genus *Chorthippus* Fieber 1852 and related genera (Orthoptera: Acrididae). Far Eastern Entomologist, 113: 1–16.

Storozhenko S.Yu. 2004. Long–horned Orthopterans (Orthoptera: Ensifera) of the Asiatic part of Russia. Vladivostok: Dalnauka 280pp.

Storozhenko S.Yu. and Otte D. 1994. Review of the genus *Stethophyma* Fischer (Orthoptera: Acrididae: Acridinae: Parapleurini). J. Orth. Res. 2: 61–64.

Storozhenko S.Yu. and Paik J.C. 2003. A new species of the genus *Nippancistroger* Griffini 1913 (Orthoptera, Stenopelmatidae) from Korea. Far Eastern Entomologist, 123: 7–8.

Storozhenko S.Yu. and Yamasaki T. 1993. Review of Orthoptera of Eastern Palearctica: Genus *Eobiana* Bey–Bienko (Orthoptera, Tettigoniidae, Platycleidini). Proc. Japan Soc. Syst. Zool.

49: 37−46.

Storozhenko S.Yu., Ichikawa A. and Uchida M. 1994. Review of Orthoptera of the Eastern Palaearctica: Genus *Tetrix* Latreille (Tetrigidae, Tetriginae). Part 1. New Entomol. 43(1/2): 6−19.

Sugimoto M. and Ichikawa A. 2003. Review of Rhaphidophoridae (excluding Protogrophilinae) (Orthoptera) of Japan. Tettigonia, 5: 1−48.

Tadauchi O. [ed.] 1989. Orthoptera. *In*: A Check list of Japanese Insects I. pp. 47−57.

Tanaka S. 1994. Diapause as a pivotal factor for latitudinal and seasonal adaptation in *Locusta migratoria* in Japan. In: Danks H.V. [eds] Insect life−cycle polymorphism: theory, evolution, and ecological consequences for seasonality and diapause control. Kluwer, pp. 173−190.

Tarbinsky S.P. 1932. Studies on Orthoptera of the U.S.S.R. Bull. Leningrad Ingt. Contr. Farm and Forest Pests, 2: 181−205. 12figs.

Tauber M.J., Tauber C.A. and Masaki S. 1986. Seasonal adaptations of insects. Oxford University Press. 411pp.

Tinkham E.R. 1936. Four new species of Orthoptera from Loh Fau Shan, Kwangtung, South China. Ling. Sci. Jour. 15: 401−413. plate 17−18.

Tinkham E.R. 1937. Notes on the identity of Formosan Acrydiinae with descriptions of a new genus and two new species (Orth.: Acrid.). Trans. Nat. Hist. Soc. Formosa, 27(169): 229−243.

Tinkham E.R. 1941. Zoogeographical notes on the genus *Atlanticus* with keys and descriptions of seven new Chinese species. Notes D'Entomologie Chinose, 8(5): 189−243.

Tinkham E.R. 1945. *Sinochlora*, a new Tettigoniid genus from China with description of five new species (Orthoptera). Trans. Am. Ent. Soc. 70: 235−246. pls.vi−VII.

Townsend B.C. 1983. A revision of the Afrotropical mole−crickets (Orthoptera: Gryllotalpidae). Bull. Br. Mus. nat. Hist. (Ent.), 46(2): 175−203.

Tsyplenkov Ye.P. 1970. Grasshoppers (Orthoptera: Acridoidea) of the Korean People's Republic. Ent. Obozr. 49: 355−359.

Uvarov B.P. 1923. A revision of the old world Cyrtacanthacridini (Orthoptera, Acrididae). Part I. Introduction and key to genera. Ann. Mag. nat. Hist. (9)11: 130−144.

Uvarov B.P. 1923. Notes on the Orthoptera in the British Museum. 3. Some less known or new genera and species of the subfamilies Tettigoniinae and Decticinae. Trans. Ent. Soc. London, 3/4: 492−537.

Uvarov B.P. 1924[1923]. Notes on the Orthoptera in the British Museum, 3. Trans. Ent. Soc.

London, pp. 492−537.

Uvarov B.P. 1925. Notes on the Acrididae (Orthoptera) of Central Asia, with descriptions of new species and races. Jour. Bombay Nat. Hist. Soc. 30: 260−272.

Uvarov B.P. 1926. Some Orthoptera from the Russian Far East. Ann. Mag. Nat. Hist. 9(17): 273−291.

Uvarov B.P. 1930. Three new Orthoptera from China. Ann. Mag. Nat. Hist. 10(5): 251−256.

Uvarov B.P. 1931. A preliminary revision of the genus *Aeropus* Gist (*Gomphocerus* auct. partim) (Acrid.). EOS, Madrid, 7: 85−94, 5figs.

Uvarov B.P. 1939. A new *Tettigonia* from Russian Far East (Orthoptera). Ann. Mag. Nat. Hist. 11(3): 614−616.

Vickery V.R. 1973. Notes on *Pteronemobius* and a new genus of the tribe Pteronemobiini (Orthoptera: Gryllidae: Nemobiinae). Can. Ent. 105: 419−424.

Vickery V.R. and Kevan D.K.McE. 1985. The grasshoppers, crickets, and related insects of Canada and adjacent regions. The Insects and Arachnids of Canada 14. 918pp.

Walker F. 1850. List of the specimens of Homopterous insects in the collection of the British Museum. Pt 1.

Walker F. 1859. Characters of some apparently undescribed Ceylon Insects II. Ann. Mag. nat. Hist. (3)4: 217−224.

Walker F. 1869. Catalogue of the specimens of Dermaptera Saltatoria in the British Museum. Pt 2. 261pp.

Wang J.F. and Shi F.M. 2005. A taxonomic review of the genus *Hexacentrus* Serville from China (Orthoptera: Conocephalidae). Acta Entomologica Sinica, 48: 242−246.

Wheeler Q.D. and Meier R. [eds.] 2000. Species concepts and phylogenetic theory: a debate. Columbia University Press. 230pp.

Willemse L.P.M. 2001. Fauna Malesiana: Guide to the pest Orthoptera of the Indo−Malayan region. Backhuys Publishers, Leiden. 150pp.

Winston J.E. 1999. Describing species: Practical taxonomic procedure for biologists. Columbia Univ. 518pp.

Wu C.F. 1935. Catalogus Insectorum Sinensium I. The Fan Memorial Institute of Biology, pp. 15−214.

Xia K.L. and Liu X.W. 1992. Orthoptera: Tettigonioidea and Grylloidea. *In*: Huang, F., Insects of Wuling Mountains Area, Southwestern China. Sci. Publ. Hou. pp. 87−112.

Yamasaki T. 1969. Results of the speleological survey in South Korea 1966 XVII.

Cave-dwelling camel crickets from South Korea. Bull. Nat. Sci. Mus. 12(3): 615-621.

Yamasaki T. 1983. The Meconematinae (Orthoptera, Tettigoniidae) of Northern Honshu, Japan, with descriptions of new taxa. Mem. natn. Sci. Mus. Tokyo, 16: 137-144.

Yamasaki T. 1986. Notes on Korean and Japanese *Paratlanticus* (Orthoptera, Tettigoniidae, Tettigoniinae), with description of a new species. Kontyû, 54(4): 723-733.

Yang J.T. and Yen F.S. 2001. Mogoplistidae (Orthoptera: Grylloidea) of Taiwan with lectotype designations of Shiraki's species. Oriental Insects, 35: 207-246.

Yang S.Y. and Yoon I.B. 1962. The fauna of Kur-moon Island, Korea. Zoologica, Seoul National Univ. 1: 7-16.

Yin X., Shi J. and Yin Z. 1996. A synonymic catalogue of grasshoppers and their allies of the world. Orthoptera: Caelifera. China Forestry Pub. Beijing, 1266pp.

Yin X.C. 1982. On the taxonomic system of Acridoidea from China. Acta Bioloica Plateau Sinica, No. 1: 69-99.

Yoo C.M., Park H.Y., Cho Y.B. and Jeong S.E. 1996. Karyological studies on Orthoptera from Korea. I. Karyotypes in eight species of Acrididae. Korean J. Entomol. 26(1): 79-92.

Yu C.H. 1980. Comparative anatomy of the alimentary canal of the four species of Orthoptera. Korean J. Entomol. 10(2): 13-20.

Zeuner F.E. 1941. The classification of the Decticinae hitherto included in *Platycleis* Fieb. or *Metrioptera* Wesm. (Orthoptera, Saltatoria). Trans. R. ent. Soc. Lond. 91: 1-50.

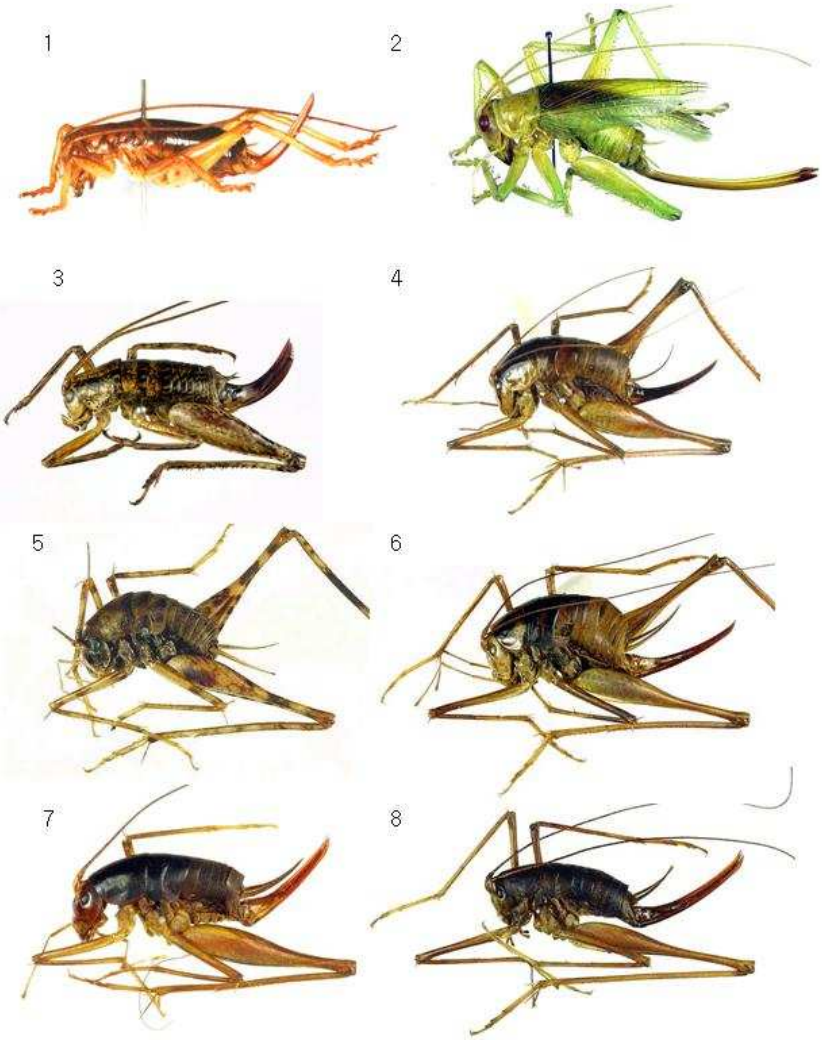
Zubovsky N. 1899. Ueber einige neue turkestanische Acridiodeen. Horae Soc. Ent. Ross. 32: 581-600.

Zubovsky N. 1900. Beitrag zur kenntniss der sibirischen Acridiodeen. Horae Soc. Ent. Ross. 34: 1-23.

Explanation of figures

Figs. 1–8. Habitus of Stenopelmatoidea

1. *Nippancistroger testaceus* (Matsumura and Shiraki) ♀
2. *Prosopogryllacris japonica* (Matsumura and Shiraki) ♀
3. *Anoplophilus coreanus* **sp. nov.** ♀
4. *Diestrammena* (*Aemodogryllus*) *unicolor* Brunner von Wattenwyl ♀
5. *Diestrammena* (*Tachycines*) *asynamora* (Adelung) ♂
6. *Diestrammena* (*Tachycines*) *coreana* (Yamasaki) ♀
7. *Paratachycines* (*Paratachycines*) *ussuriensis* Storozhenko ♀
8. *Paratachycines* (*Hemitachycines*) *boldyrevi* (Uvarov) ♀

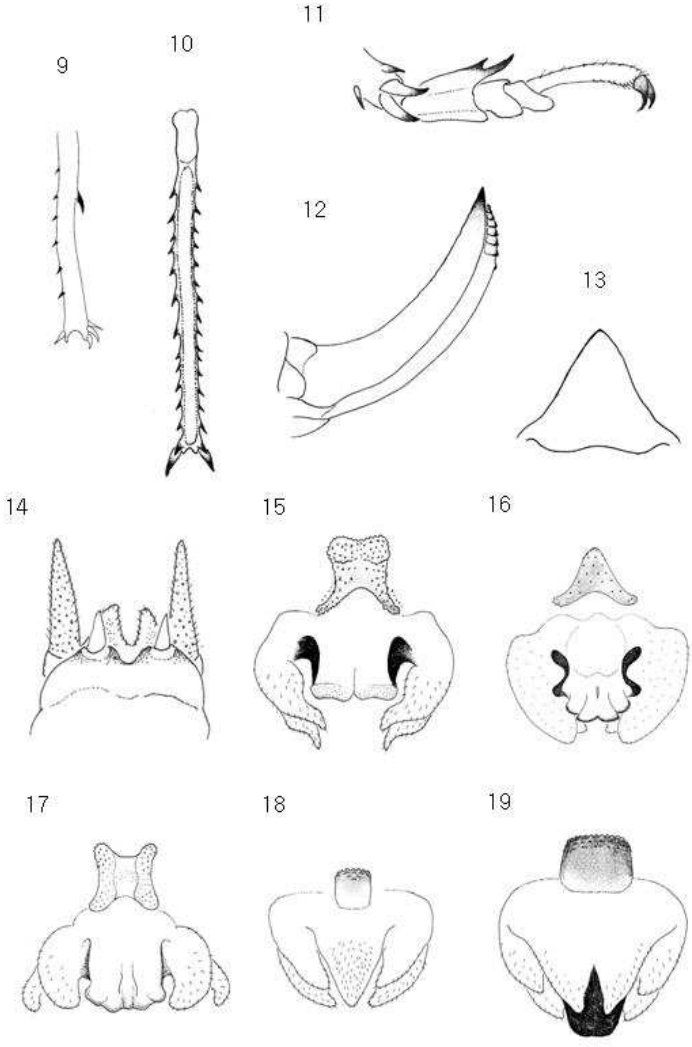

1
2
3
4
5
6
7
8

Figs. 9–19. Specific characters of Stenopelmatoidea

9. Left hind tibia of *Nippancistroger testaceus*

10–14. *Anoplophilus coreanus* **sp. nov.** (10. Left hind tibia, 11. Hind tarsus, 12. ovipositor, 13. female subgenital plate, 14. male abdominal tip, ventral view)

15–19. Phallic lobes and pseudepiphallus of male (15. *Diestrammena unicolor,* 16. *Diestrammena asynamora,* 17. *Diestrammena coreana,* 18. *Paratachycines ussuriensis,* 19. *Paratachycines boldyrevi*)


9
10
11
12
13
14
15
16
17
18
19

Figs. 20–31. Habitus of Phaneropterinae

20. *Elimaea fallax* Bey-Bienko ♂

21–23. *Ducetia japonica* (Thunberg) (21. ♂, 22. Brown ♀, 23. Green ♀)

24–25. *Kuwayamaea sapporensis* Matsumura and Shiraki (24. ♂, 25. ♀)

26. *Phaneroptera nigroantennata* Brunner von Wattenwyl ♀

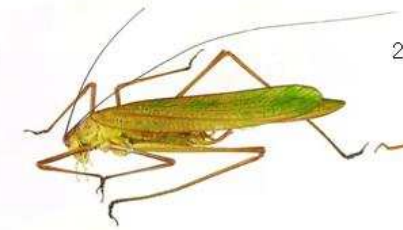
27. *Phaneroptera falcata* (Poda) ♀

28. *Sinochlora longifissa* (Matsumura and Shiraki) ♂

29. *Psyrana japonica* (Shiraki) ♂

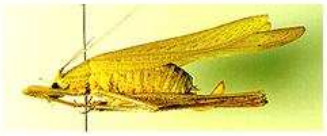
30–31. *Holochlora japonica* Brunner von Wattenwyl (30. ♂, 31. ♀)

20



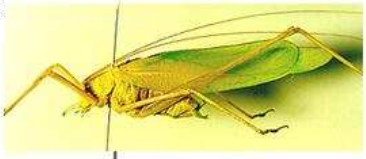
21

22

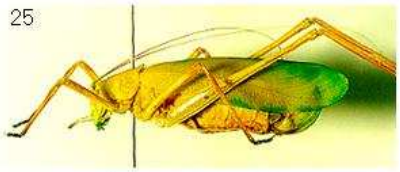


23

24



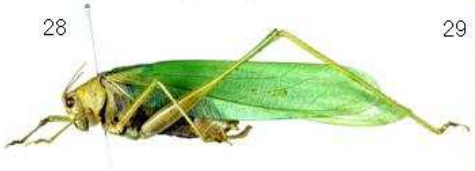
25



26

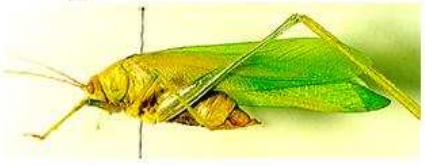
27

28



29

30



31

Figs. 32−45. Specific characters of Phaneropterinae

32−34. *Elimaea fallax* (32. Abdominal end of male, 33. Ventral view of subgenital plate of female, 34. ovipositor)

35−37. *Ducetia japonica* (35. Abdominal end of male, dorsal view, 36. ibid. ventral view, 37. ovipositor)

38. Abdominal end of *Phaneroptera nigroantennata,* dorsal view

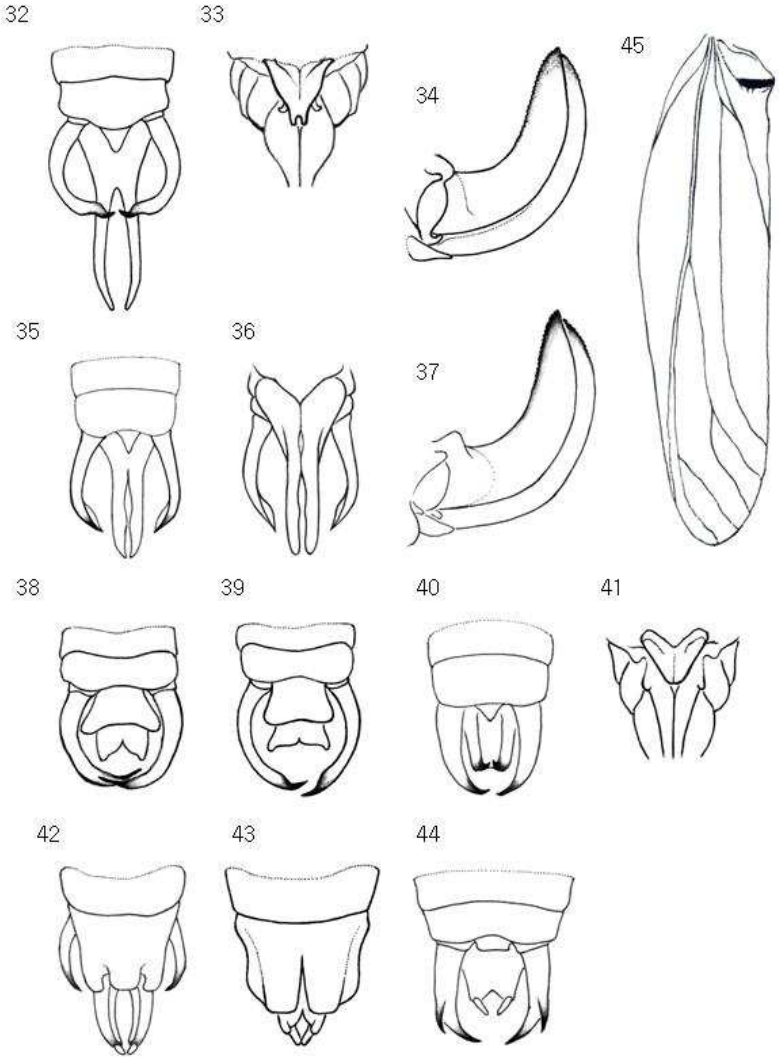
39. Abdominal end of *Phaneroptera falcata,* dorsal view

40−41. *Kuwayamaea sapporensis* (40. Abdominal end of male, dorsal view, 41. Ventral view of subgenital plate of female)

42. Abdominal end of male, *Sinochlora longifissa,* dorsal view

43. Abdominal end of male, *Holochlora japonica,* dorsal view

44−45. *Psyrana japonica* (44. Abdominal end of male, dorsal view, 45. Left tegmen of male)


32
33
34
45
35
36
37
38
39
40
41
42
43
44

Figs. 46–50. Habitus of Meconematinae

46–47. *Cosmetura fenestrata* Yamasaki (46. ♂, 47. ♀)

48. *Kuzicus suzukii* (Matsumura and Shiraki) ♀

49–50. *Xizicus coreanus* (Bey-Bienko) (49. ♂, 50 ♀)

Fig. 51. Habitus of Listroscelidinae

51. *Hexacentrus japonicus* Karny ♂

Fig. 52. Habitus of Mecopodinae

52. *Mecopoda niponensis* (de Haan) ♂

Figs. 53–60. Habitus of Platycleidini

53. *Bicolorana bicolor* (Philippi) ♀

54. *Metrioptera brachyptera* (Linnaeus) ♂

55–56. *Eobiana engelhardti* (Uvarov 1926) ♂ (56. Macropterous type)

57. *Sphagniana monticola* (Kim and Kim) ♂

58. *Sphagniana ussuriana* (Uvarov 1926) ♂

59–60. *Chizuella bonneti* (Bolívar 1890) (59. ♂, 60. ♀)

46

47

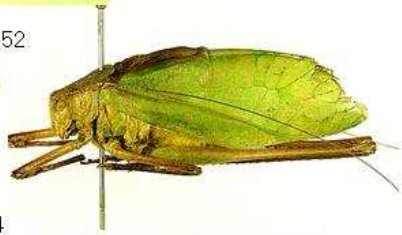
48

49

50

51

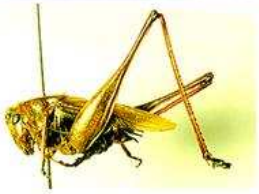
52



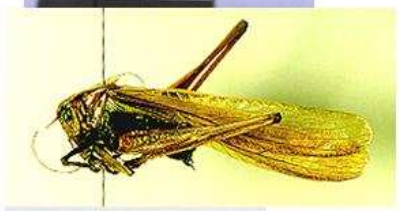
53

54

55



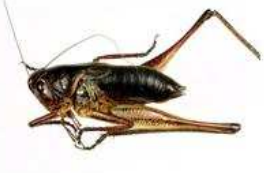
56



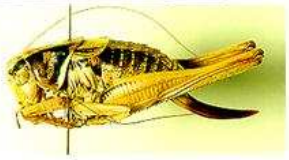
57

58

59



60



Figs. 61–63. Abdominal ends of males of Meconematinae

61. *Cosmetura fenestrata,* dorsal view

62. *Kuzicus suzukii,* ventral view

63. *Xizicus coreanus,* ventral view

Fig. 64. Abdominal end of male of Mecopodinae

64. *Mecopoda niponensis*, dorsal view

Fig. 65–67. Characters of male of *Hexacentrus japonicus*

65. Head and pronotum, dorsal view

66. Abdominal end, dorsal view

67. Tegmina

Figs. 68–79. Specific characters of Platycleidini

68. Ventral view of thorasic sternum (*Chizuella bonneti*)

69. Male cercus of *Sphagniana ussuriana*

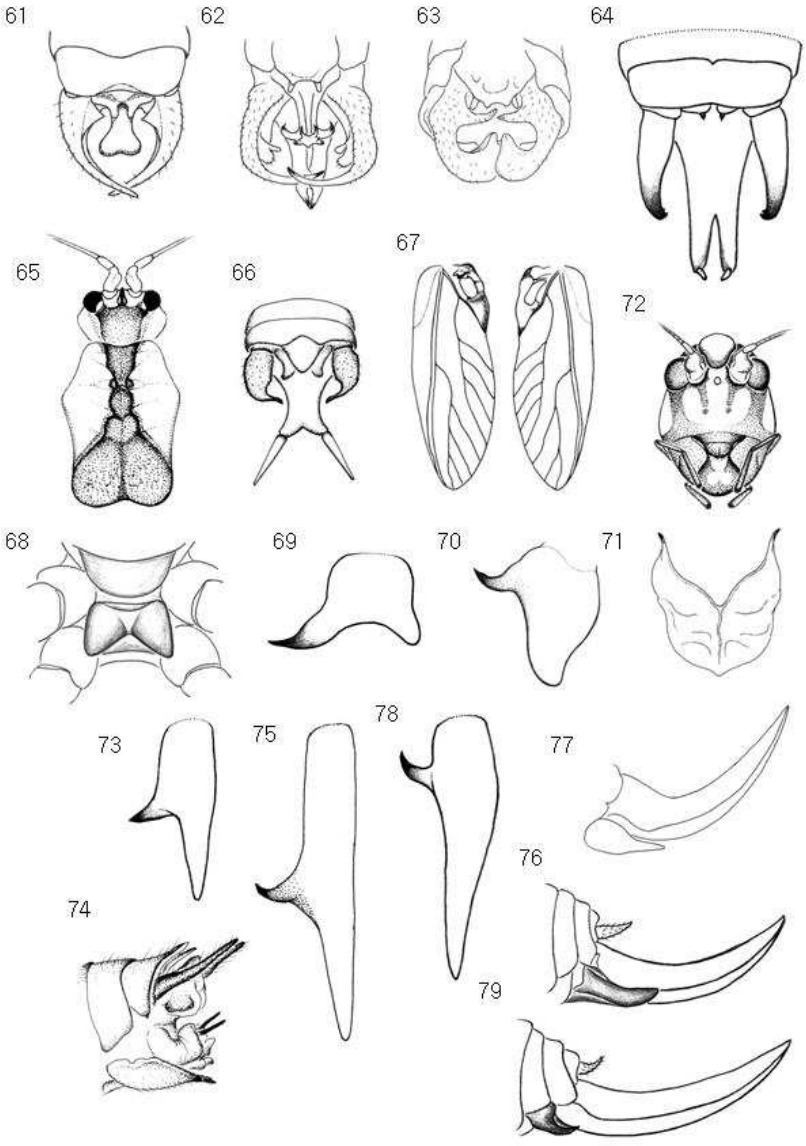
70–72. *Sphagniana monticola* (70. male cercus, 71. female subgenital plate, 72. Head, frontal view)

73. Male cercus of *Metrioptera brachyptera*

74–76. *Eobiana engelhardti* (74. Abdominal end of male, lateral view, 75. Male cercus, 76. Ovipositor)

77. Ovipositor of *Bicolorana bicolor*

78–79. *Chizuella bonneti* (78. Male cercus, 79. Ovipositor)


61
62
63
64
65
66
67
72
68
69
70
71
73
75
78
77
74
76
79

Figs. 80–95. Habitus of Tettigoniini

80–81. *Paratlanticus ussuriensis* (Uvarov) (80. ♂, 81. ♀)

82–83. *Atlanticus brunneri* (Pylnov) (82. ♂, 83. ♀)

84–85. *Anatlanticus koreanus* Bey–Bienko (84. ♂, 85. ♀)

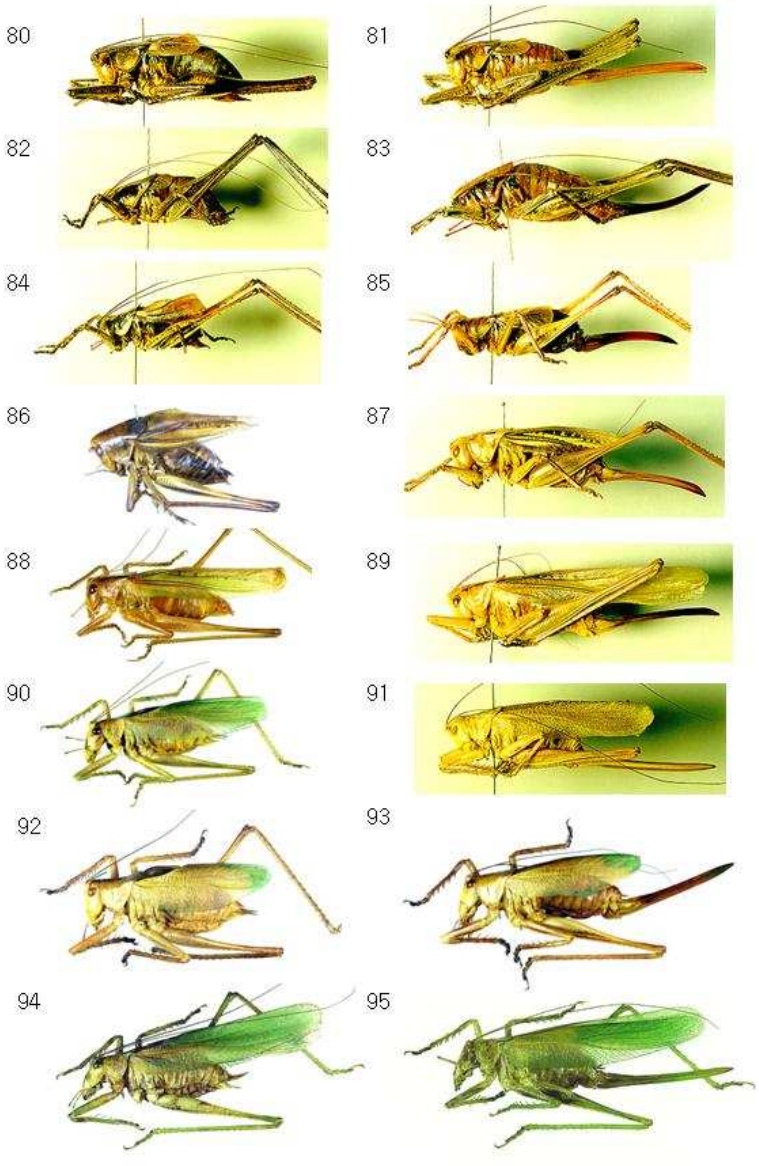
86–87. *Gampsocleis sedakovii obscura* (Walker) (86. ♂, 87. ♀)

88–89. *Gampsocleis ussuriensis* Adelung (88. ♂, 89. ♀)

90–91. *Tettigonia ussuriana* Uvarov (90. ♂, 91. ♀)

92–93. *Tettigonia ussuriana* collected in Is. Jejudo (92. ♂, 93. ♀)

94–95. *Tettigonia dolichoptera dolichoptera* Mori (94. ♂, 95. ♀)


80
81
82
83
84
85
86
87
88
89
90
91
92
93
94
95

Figs. 96–112. Specific characters of Korean Tettigoniini

96–97. Upper half of body (96. *Anatlanticus koreanus,* 97. *Atlanticus brunneri*)

98–99. Ventral view of thorasic sternum (98. *Paratlanticus ussuriensis,* 99. *Tettigonia ussuriana*)

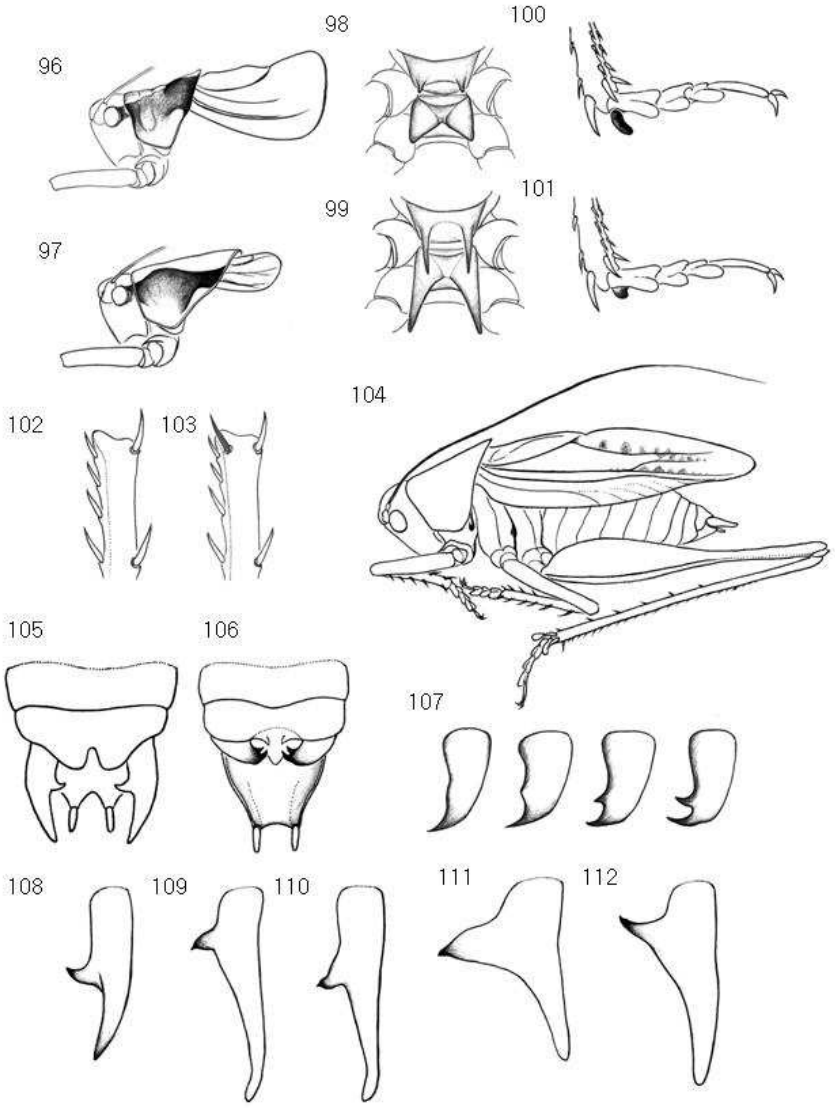
100–101. Hind tarsi and plantulae (100. *Gampsocleis sedakovii obscura,* 101. *Tettigonia ussuriana*)

102–103. Right fore tibiae (102. *Atlanticus brunneri,* 103. *Paratlanticus ussuriensis*)

104. Lateral view of *Gampsocleis sedakovii obscura*

105–106. Abdominal end of male, dorsal view (105. *Atlanticus brunneri,* 106. *Anatlanticus koreanus*)

107–112. Male cerci (107. *Paratlanticus ussuriensis,* 108. *Atlanticus brunneri,* 109. *Tettigonia dolichoptera,* 110. *Tettigonia ussuriana,* 111. *Gampsocleis sedakovii obscura,* 112. *Gampsocleis ussuriensis*)


96
98
100
97
99
101
102
103
104
105
106
107
108
109
110
111
112

Figs. 113–120. Habitus of *Conocephalus* spp.

113. *Conocephalus bambusanus* Ingrisch ♀

114. *Conocephalus japonicus* (Redtenbacher) ♀

115–116. *Conocephalus exemptus* (Walker) (115. ♂, 116. ♀)

117–118. *Conocephalus chinensis* (Redtenbacher) (117. ♂, 118. ♀)

119–120. *Conocephalus maculatus* (le Guillou) (119. ♂, 120. ♀)

Figs. 121–130. Habitus of Copiphorini

121–122. *Euconocephalus varius* (Walker) (121. ♂, 122. ♀)

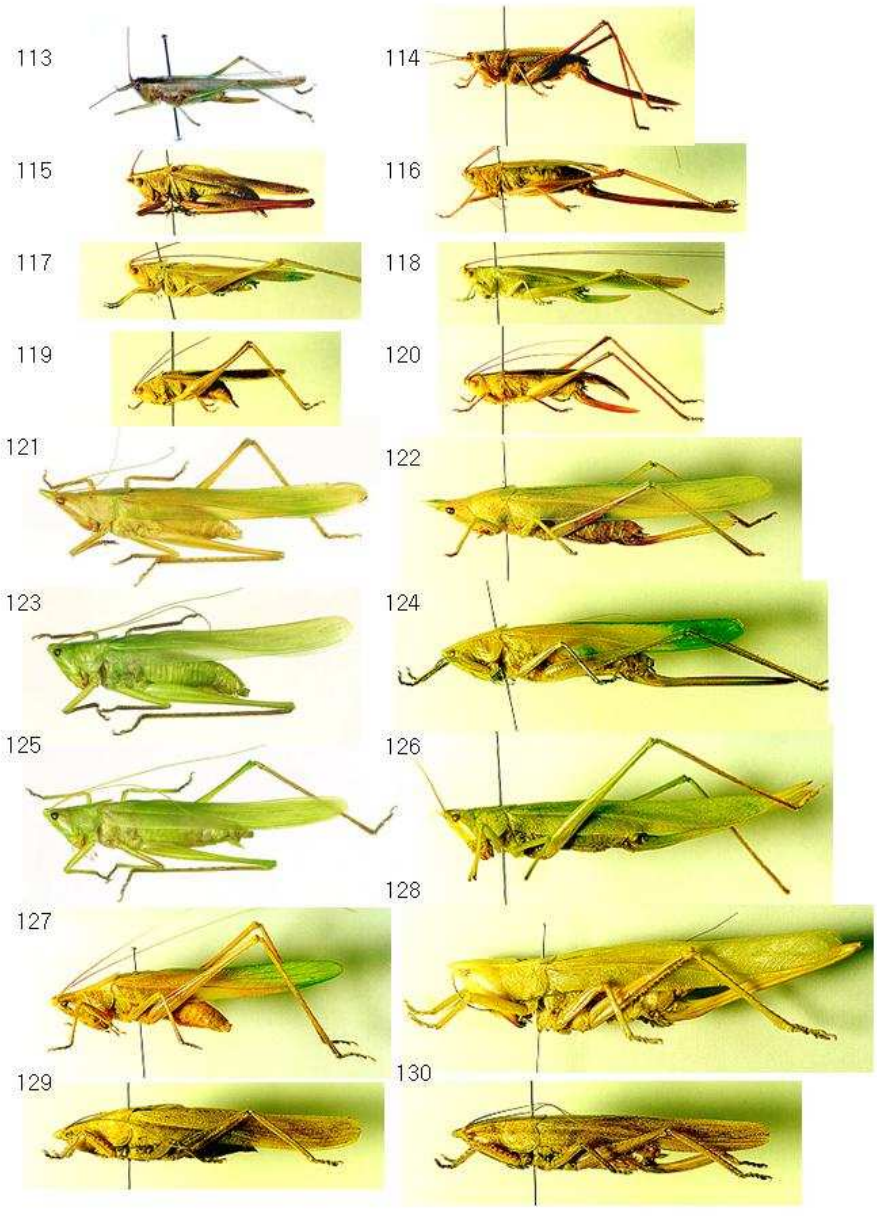
123–124. *Ruspolia lineosa* (Walker) (123. ♂, 124. ♀)

125–126. *Ruspolia dubia* (Redtenbacher) (125. ♂, 126. ♀)

127. *Ruspolia* sp. ♂

128. *Pseudorhynchus japonicus* Shiraki ♀

129–130. *Xestophrys javanicus* Redtenbacher (129. ♂, 130. ♀)


113
114
115
116
117
118
119
120
121
122
123
124
125
126
128
127
129
130

Figs. 131–150. Specific characters of Conocephalinae

131–132. Frontal view of fastigium of vertex (131. *Conocephalus exemptus,* 132. *Conocephalus chinensis*)

133–137. Male cerci of *Conocephalus* spp. (133. *Conocephalus bambusanus,* 134. *Conocephalus chinensis,* 135. *Conocephalus exemptus,* 136. *Conocephalus maculatus,* 137. *Conocephalus japonicus*)

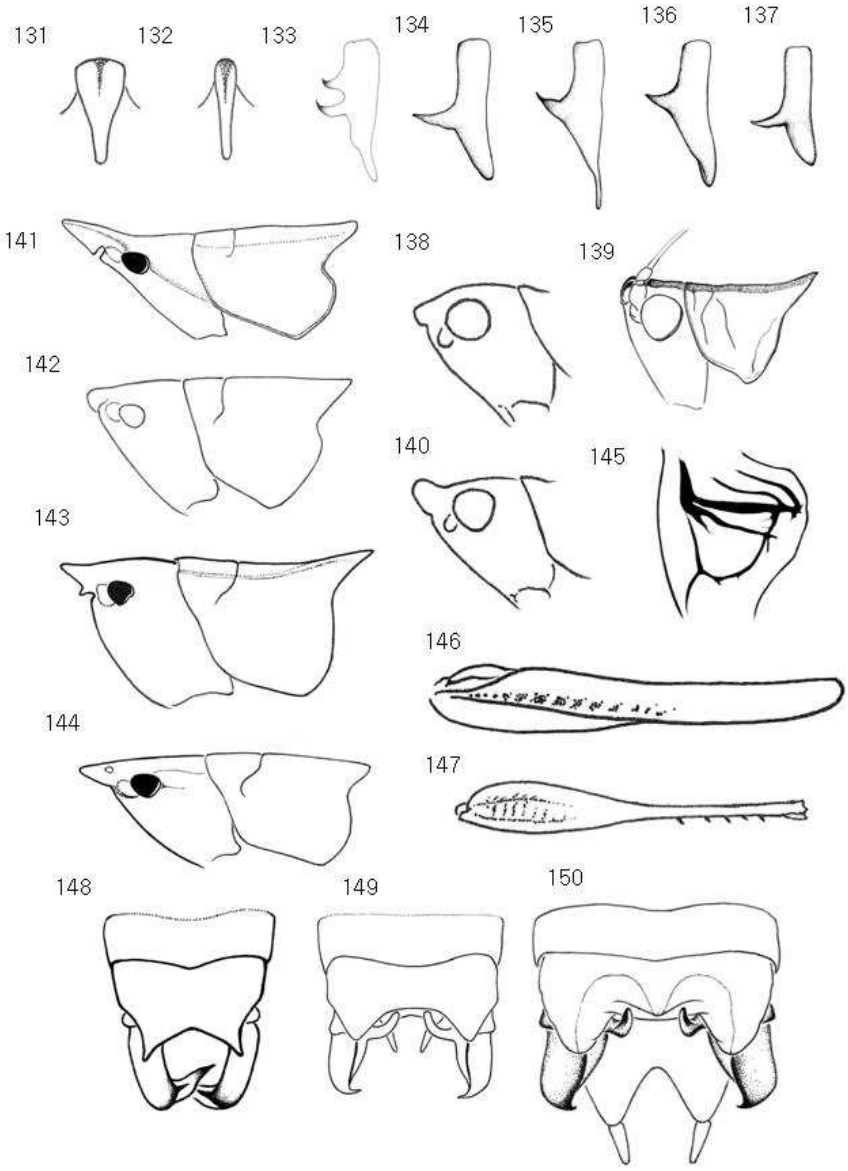
138–144. Lateral view of head shape (138. *Conocephalus bambusanus,* 139. *Conocephalus exemptus,* 140. *Conocephalus japonicus,* 141. *Euconocephalus varius,* 142. *Ruspolia lineosa,* 143. *Pseudorhynchus japonicus,* 144. *Xestophrys javanicus*)

145. Left base of tegmen, stridulatory veins of *Ruspolia* sp.

146. Tegmen of *Conocephalus maculatus*

147. Hind femur of *Conocephalus japonicus*

148–150. Abdominal end of Copiphorini (148. *Euconocephalus varius,* 149. *Xestophrys javanicus,* 150. *Pseudorhynchus japonicus*)


131
132
133
134
135
136
137
141
138
139
142
140
145
143
146
144
147
148
149
150

Figs. 151−166. Habitus of Gryllinae

151−152. *Gryllodes supplicans* (Walker) (151. ♂, 152. ♀)

153. *Gryllus sibiricus* (Chopard) ♂

154. *Gryllus bimaculatus* de Geer ♀

155. *Teleogryllus infernalis* (Saussure) ♂

156. *Teleogryllus emma* (Ohmachi and Matsuura) ♂

157. *Modicogryllus siamensis* Chopard ♂

158. *Mitius minor* (Shiraki) ♀

159. *Loxoblemmus doenitzi* Stein ♂

160. *Loxoblemmus magnatus* Matsuura ♂

161. *Loxoblemmus campestris* Matsuura ♂

162. *Loxoblemmus equestris* Saussure ♂

163. *Velarifictorus aspersus* (Walker) ♂

164. *Velarifictorus micado* (Saussure) ♂

165. *Velarifictorus ornatus* (Shiraki) ♂

166. *Comidogryllus nipponensis* (Shiraki) ♂

151
152
153
154
155
156
157
158
159
160
161
162
163
164
165
166

Figs. 167–181. Frontal view of head shapes of Gryllidae

167. *Gryllodes supplicans* (Walker)

168. *Gryllus sibiricus* (Chopard)

169. *Duolandrevus ivani* (Gorochov)

170. *Teleogryllus infernalis* (Saussure)

171. *Teleogryllus emma* (Ohmachi and Matsuura)

172. *Modicogryllus siamensis* Chopard

173. *Mitius minor* (Shiraki)

174. *Loxoblemmus doenitzi* Stein

175. *Loxoblemmus magnatus* Matsuura

176. *Loxoblemmus campestris* Matsuura

177. *Loxoblemmus equestris* Saussure

178. *Velarifictorus aspersus* (Walker)

179. *Velarifictorus micado* (Saussure)

180. *Velarifictorus ornatus* (Shiraki)

181. *Comidogryllus nipponensis* (Shiraki)

167

168

169

170

171

172

173

174

175

176

177

178

179

180

181

Figs. 182–191. Habitus of Nemobiinae

182. *Caconemobius sazanami* (Furukawa) ♂

183. *Caconemobius takarai* (Ôshiro) ♀

184. *Dianemobius csikii* (Bolívar) ♀

185. *Dianemobius furumagiensis* (Ohmachi and Furukawa) ♂

186. *Dianemobius nigrofasciatus* (Matsumura) ♀

187. *Polionemobius flavoantennalis* (Shiraki) ♂

188. *Polionemobius mikado* (Shiraki) ♂

189. *Pteronemobius yezoensis* (Shiraki) ♂

190. *Pteronemobius nitidus* (Bolívar) ♂

191. *Pteronemobius gorochovi* Storozhenko ♂

Figs. 192–195. Habitus of Trigonidiinae

192. *Trigonidium japonicum* Ichikawa ♀

193–194. *Svistella bifasciata* (Shiraki) (193. ♂, 194. ♀)

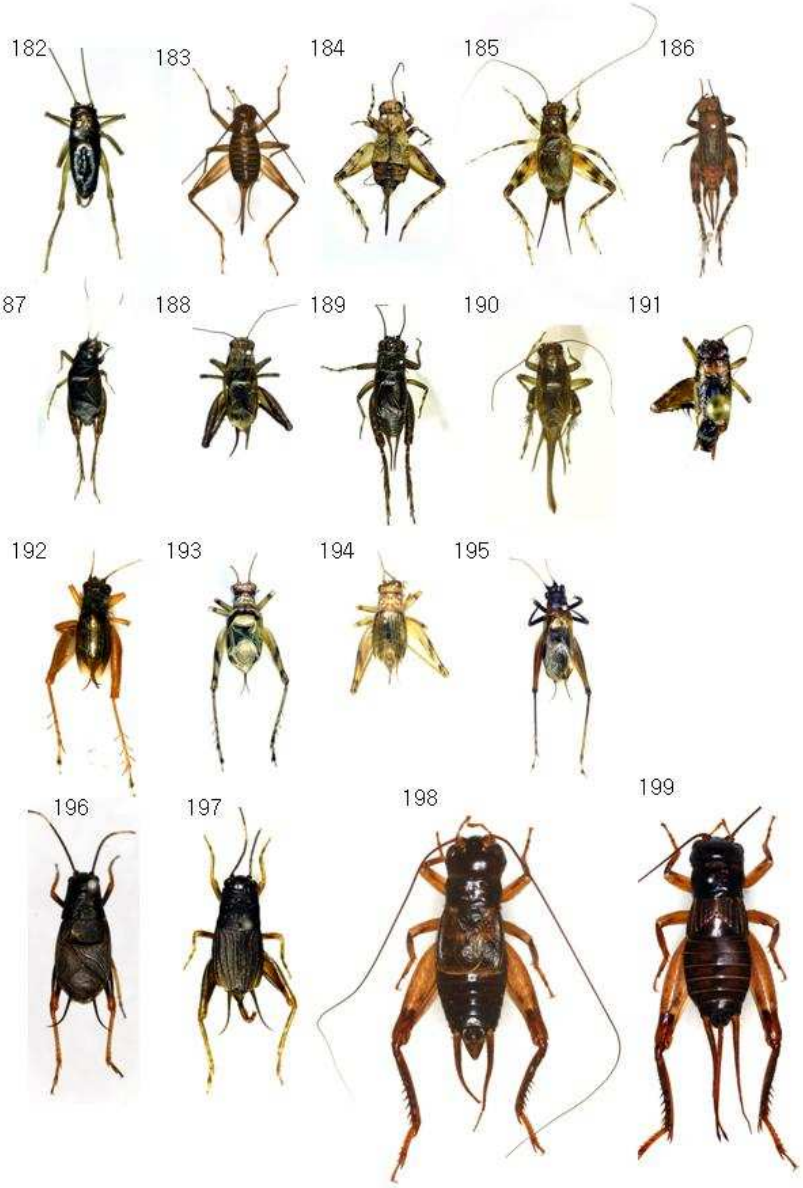
195. *Homoeoxipha obliterata* (Caudell) ♂

Figs. 196–197. Habitus of Sclerogryllinae

196–197. *Sclerogryllus punctatus* (Brunner von Wattenwyl) (196. ♂, 197. ♀)

Figs. 198–199. Habitus of Landrevinae

198–199. *Duolandrevus ivani* (Gorochov) (198. ♂, 199. ♀)


182
183
184
185
186
187
188
189
190
191
192
193
194
195
196
197
198
199

Figs. 200–199. Tegmina of male of Grylloidea

200. *Gryllotalpa orientalis* Burmeister
201. *Gryllodes supplicans* (Walker)
202. *Gryllus sibiricus* (Chopard)
203. *Mitius minor* (Shiraki)
204. *Modicogryllus siamensis* Chopard
205. *Teleogryllus emma* (Ohmachi and Matsuura)
206. *Teleogryllus infernalis* (Saussure)
207. *Loxoblemmus doenitzi* Stein
208. *Loxoblemmus campestris* Matsuura
209. *Loxoblemmus equestris* Saussure
210. *Velarifictorus aspersus* (Walker)
211. *Velarifictorus micado* (Saussure)
212. *Velarifictorus ornatus* (Shiraki)
213. *Comidogryllus nipponensis* (Shiraki)
214. *Oecanthus longicauda* Matsumura
215. *Oecanthus euryelytra* Ichikawa
216. *Dianemobius csikii* (Bolívar)
217. *Dianemobius nigrofasciatus* (Matsumura)
218. *Dianemobius furumagiensis* (Ohmachi and Furukawa)
219. *Pteronemobius yezoensis* (Shiraki)
220. *Pteronemobius nitidus* (Bolívar)
221. *Pteronemobius gorochovi* Storozhenko
222. *Polionemobius flavoantennalis* (Shiraki)
223. *Polionemobius mikado* (Shiraki)
224. *Homoeoxipha obliterata* (Caudell)
225. *Svistella bifasciata* (Shiraki)

Figs. 226–227. Genitalia of male of *Caconemobius* spp.

226. *Caconemobius sazanami* (Furukawa)
227. *Caconemobius takarai* (Ôshiro)

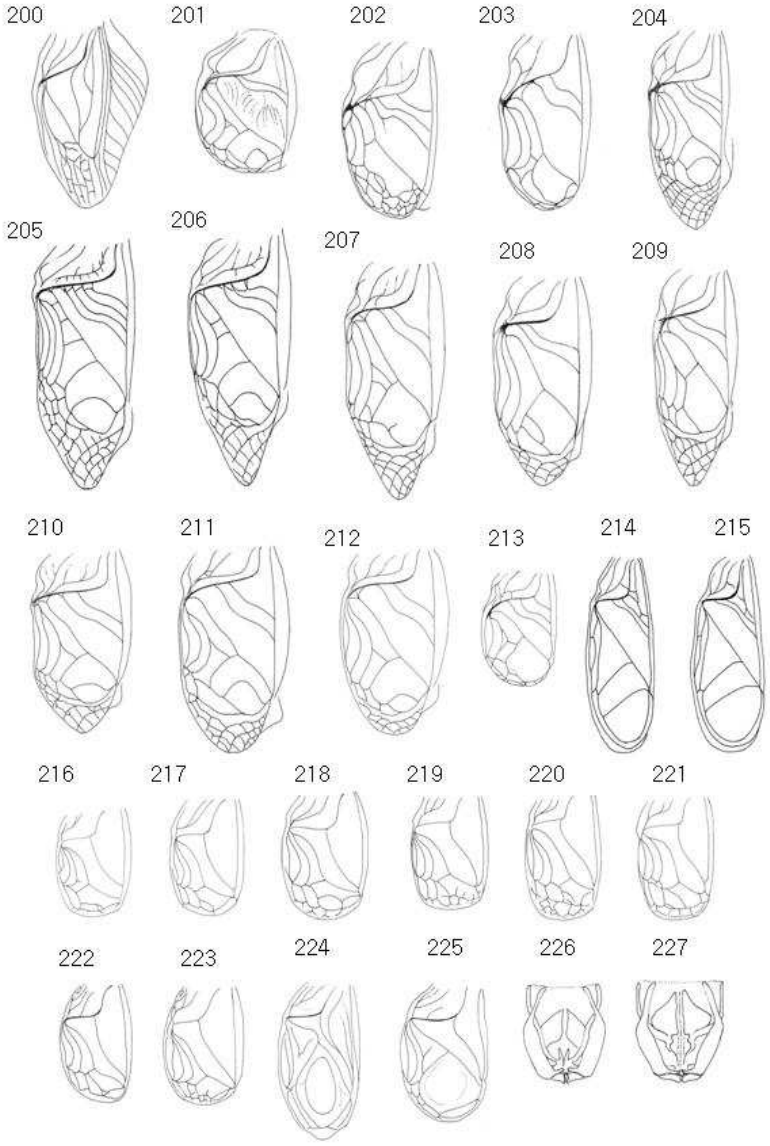

200
201
202
203
204
205
206
207
208
209
210
211
212
213
214
215
216
217
218
219
220
221
222
223
224
225
226
227

Fig. 228. Habitus of Gryllotalpidae

228. *Gryllotalpa orientalis* Burmeister ♀

Figs. 229–232. Habitus of Mogoplistidae

229–230. *Ornebius kanetataki* (Matsumura) (229. ♂, 230. ♀)

231–232. *Ectatoderus annulipedus* (Shiraki) (231. ♂, 232. ♀)

Fig. 233. Habitus of Myrmecophilidae

233. *Myrmecophilus* sp. ♀

Figs. 234–235. Habitus of Oecanthinae

234. *Oecanthus euryelytra* Ichikawa ♂

235. *Oecanthus longicauda* Matsumura ♂

Figs. 236–237. Habitus of Cachoplistinae

236–237. *Meloimorpha japonicus* (de Haan) (236. ♂, 237. ♀)

Fig. 238. Habitus of Euscyrtinae

238. *Euscyrtus japonicus* Shiraki ♂

Figs. 239–240. Habitus of Eneopterinae

239–240. *Xenogryllus marmoratus* (de Haan) (239. ♂, 240. ♀)

Figs. 241–242. Habitus of Podoscirtinae

241–242. *Truljalia hibinonis* (Matsumura) (241. ♂, 242. ♀)

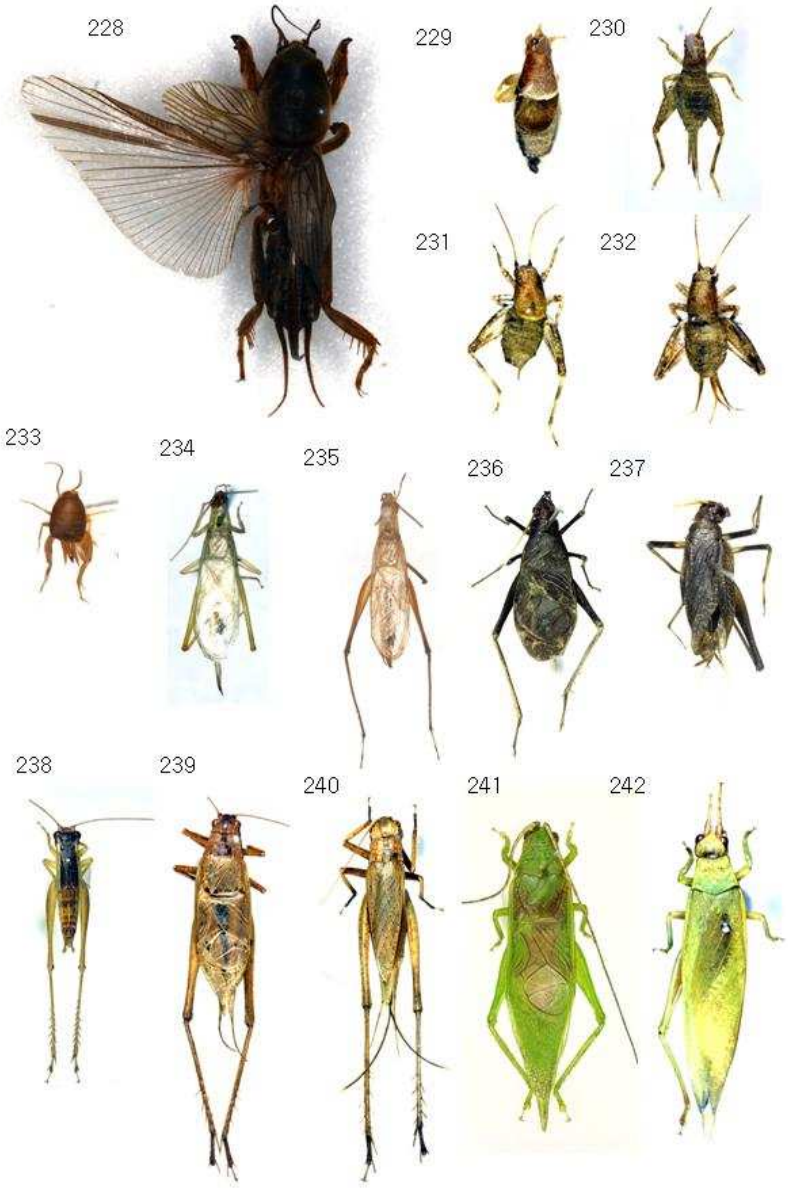

228
229
230
231
232
233
234
235
236
237
238
239
240
241
242

Fig. 243. Habitus of Tridactylidae

243. *Xya japonica* (de Haan) ♀

Figs. 244–252. Habitus of Tetrigidae

244. *Criotettix japonicus* (de Haan) ♀

245. *Euparatettix insularis* Bey-Bienko ♀

246. *Formosatettix robustus* Storozhenko ♀

247. *Clinotettix ussuriensis* Bey-Bienko ♀

248. *Tetrix simulans* (Bey-Bienko) ♀

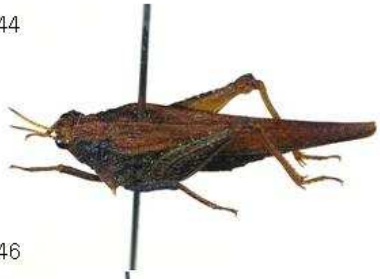
249. *Tetrix silvicultrix* Ichikawa ♀

250–251. *Tetrix japonica* (Bolívar) ♀ (251. Macropterous type ♀)

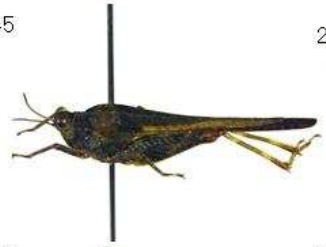
252. *Tetrix minor* Ichikawa ♀

243

244



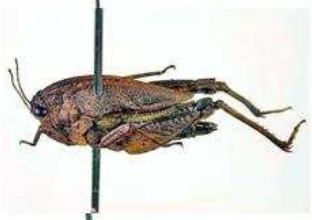
245



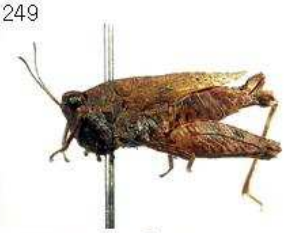
246

247

248



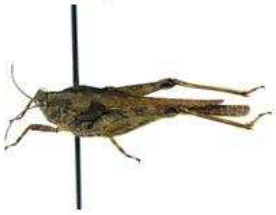
249



250

251

252



Figs. 253–257. Specific characters of *Xya japonica*

253. Fore leg

254. Middle leg

255. Male tegmen

256. Abdominal end of male

257. Hind leg

Figs. 258–267. Specific characters of Tetrigidae

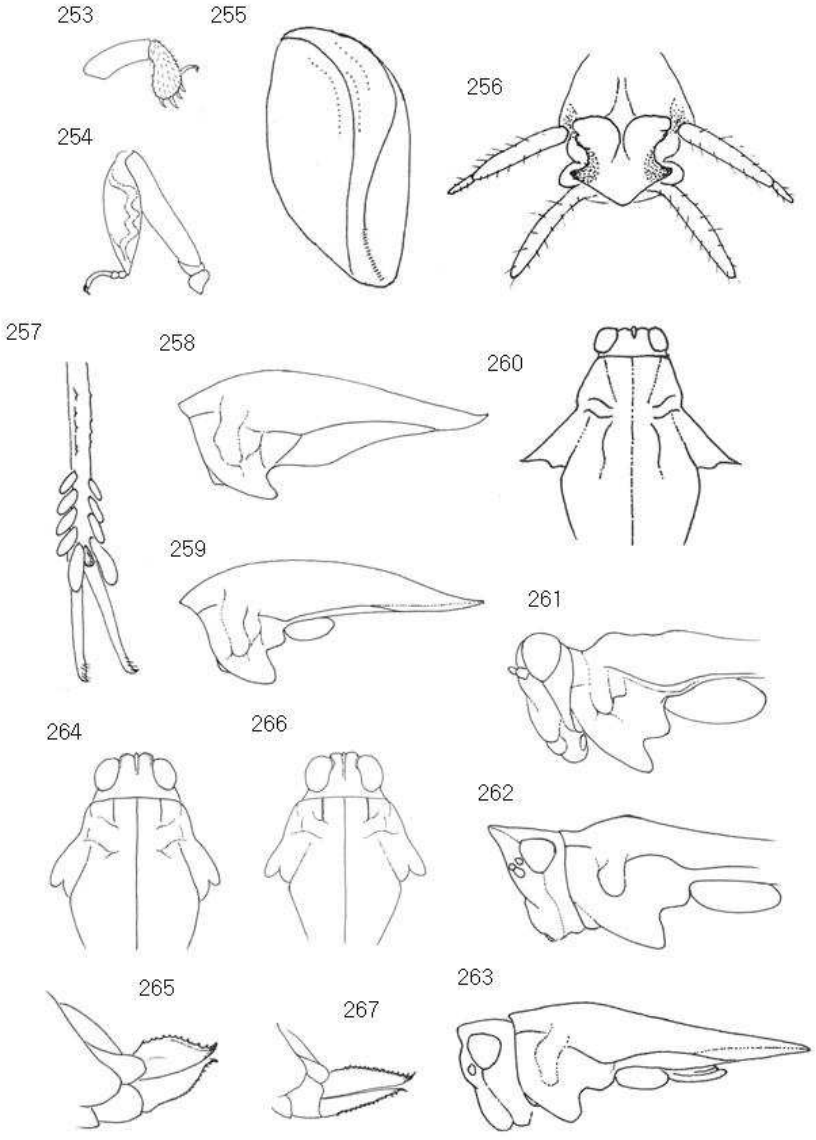
258–259. Lateral view of pronotum (258. *Formosatettix robustus,* 259. *Tetrix simulans*)

260. Dorsal view of anterior half of body (*Criotettix japonicus*)

261–263. Lateral view of anterior body (261. *Euparatettix insularis,* 262. *Clinotettix ussuriensis,* 263. *Tetrix silvicultrix*)

264–265. *Tetrix japonica* (Bolívar) (264. Dorsal view of anterior half of body, 265. ovipositor)

266–267. *Tetrix minor* Ichikawa (266. Dorsal view of anterior half of body, 267. ovipositor)


253
255
254
256
257
258
260
259
261
264
266
262
265
267
263

Figs. 268–269. Habitus of Pamphagidae

268–269. *Haplotropis brunneriana* Saussure (268. ♂, 269. ♀)

Figs. 270–271. Habitus of Pyrgomorphidae

270. *Atractomorpha sinensis* Bolívar ♂

271. *Atractomorpha lata* (Motschulsky) ♂

Figs. 272–274. Habitus of Oxyinae

272–273. *Oxya chinensis sinuosa* Mishchenko (272. ♂, 273. ♀)

274. *Oxya hyla intricata* (Stål) ♀

Figs. 275–276. Habitus of Eyprepocneminae

275–276. *Shirakiacris shirakii* (Bolívar) (275. ♂, 276. ♀)

Figs. 277–278. Habitus of Calliptaminae

277–278. *Calliptamus abbreviatus* Ikonnikov (277. ♂, 278. ♀)

Figs. 279–280. Habitus of Cyrtacanthacridinae

279–280. *Nomadacris japonica* (Bolívar) (279. ♂, 280. ♀)

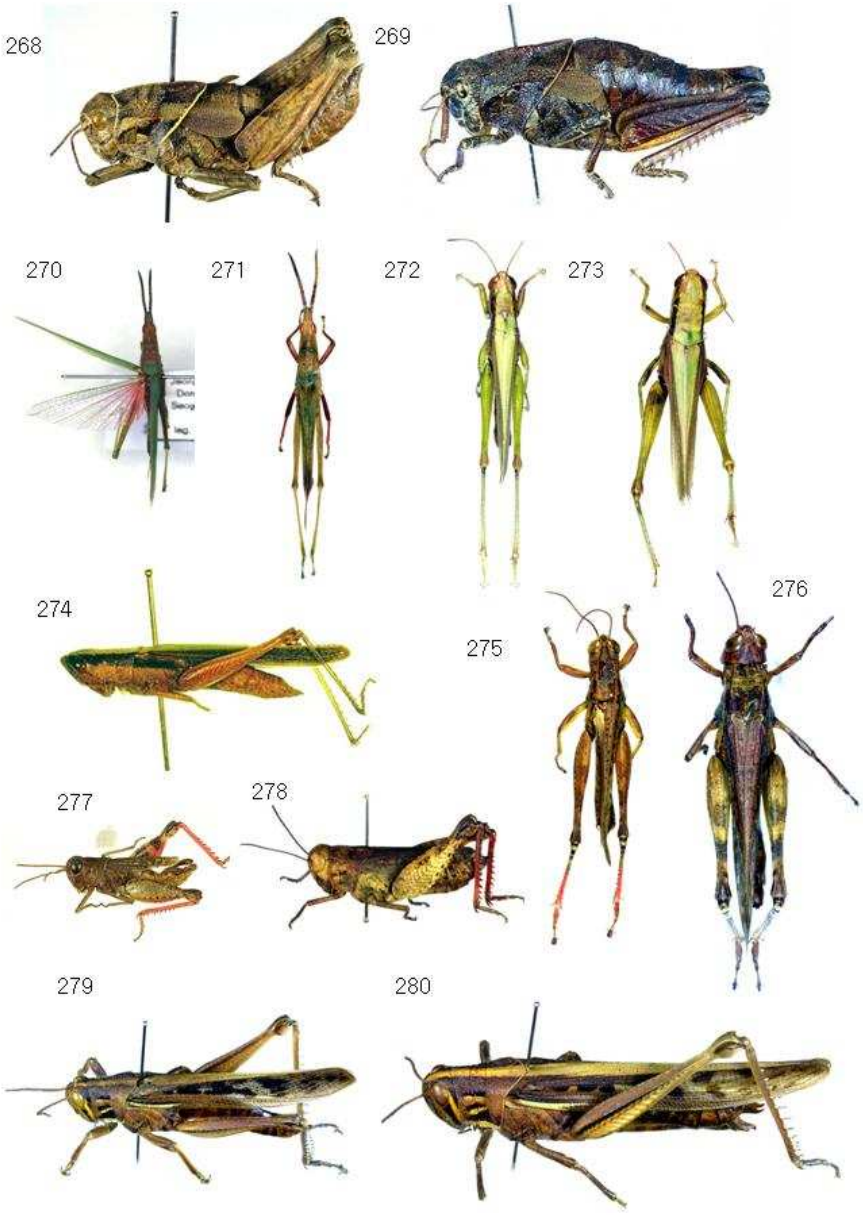

268
269
270
271
272
273
274
275
276
277
278
279
280

Fig. 281. Ovipositor of *Oxya hyla intricata* (Stål)

Figs. 282–283. *Atractomorpha lata* (Motschulsky) ♂

282. Epiphallus, 283. Abdominal end, dorsal view

Fig. 284. Thorasic sternums of *Nomadacris japonica* (Bolívar)

Figs. 285–286. Phallic complex of *Anapodisma* spp.

285. *Anapodisma beybienkoi* Rentz and Miller

286. *Anapodisma miramae* Dovnar-Zapolskii

Figs. 287–288. Male cerci of Calliptaminae and Eyprepocneminae

287. *Calliptamus abbreviatus* Ikonnikov

288. *Shirakiacris shirakii* (Bolívar)

Figs. 289–290. Ovipositor of *Podismopsis* spp.

289. *Podismopsis genicularibus* (Shiraki)

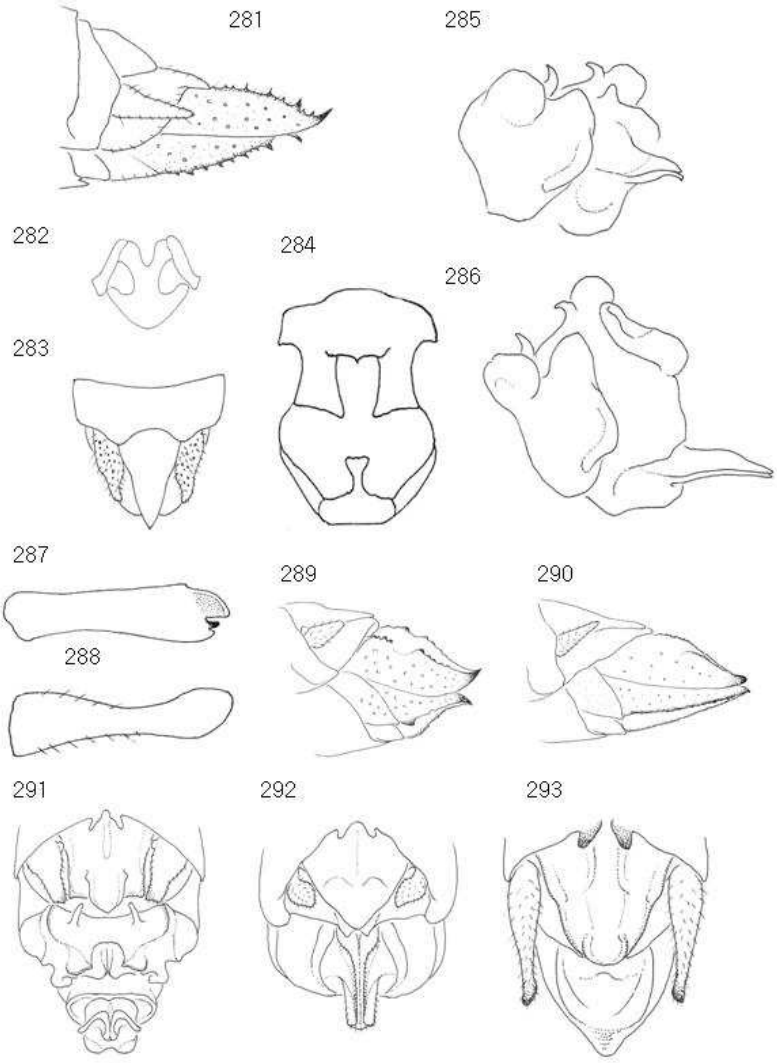
290. *Podismopsis ussuriensis* Ikonnikov

Figs. 291–293. Abdominal end of male

291. *Prumna halrasana* (Lee and Lee) (Phallic complex extracted)

292. *Prumna mandshurica* Ramme

293. *Zubovskya koreana* Mishchenko


281
285
282
284
286
283
287
289
290
288
291
292
293

Figs. 294–310. Habitus of Melanoplinae

294. *Zubovskya koeppeni parvula* (Ikonnikov) ♂

295–296. *Zubovskya koreana* Mishchenko (295. ♂, 296. ♀)

297. *Ognevia sergii* Ikonnikov ♂

298–299. *Ognevia longipennis* (Shiraki) (298. ♂, 299. ♀)

300–301. *Prumna halrasana* (Lee and Lee) (300. ♂, 301. ♀)

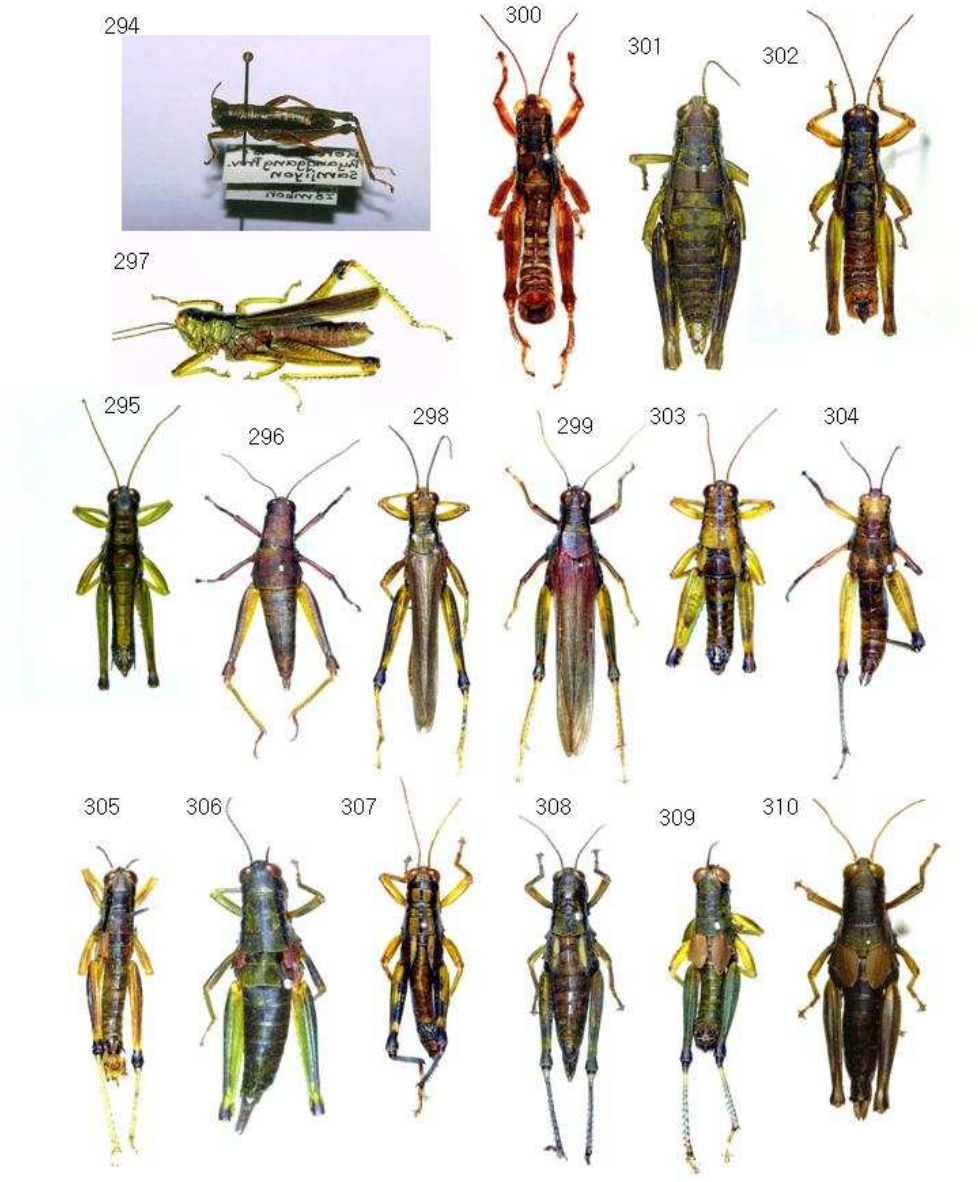
302. *Prumna mandshurica* Ramme ♂

303–304. *Podisma aberrans* Ikonnikov (303. ♂, 304. ♀)

305–306. *Anapodisma miramae* Dovnar-Zapolskii (305. ♂, 306. ♀)

307–308. *Miramella solitaria* (Ikonnikov) (307. ♂, 308. ♀)

309–310. *Parapodisma setouchiensis* Inoue (309. ♂, 310. ♀)


294
300
301
302
297
295
296
298
299
303
304
305
306
307
308
309
310

Figs. 311–317. Anterior half of body of Melanopline genera

311. *Parapodisma*

312. *Podisma*

313. *Ognevia*

314. *Miramella*

315. *Anapodisma*

316. *Zubovskya*

317. *Prumna*

311

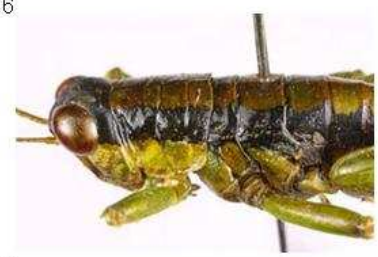
312

313

314

315

316



317

Figs. 318–322. Habitus of Acridinae

318. *Acrida cinerea* (Thunberg) ♂

319. *Gonista bicolor* (de Haan) ♀

320. *Ceracris nigricornis laeta* (Bolívar) ♂

321. *Stethophyma magister* (Rehn) ♂

322. *Mecostethus parapleurus* (Hagenbach) ♀

Figs. 323–328. Habitus of Chrysochraontini

323. *Chrysochraon dispar major* (Uvarov) ♂

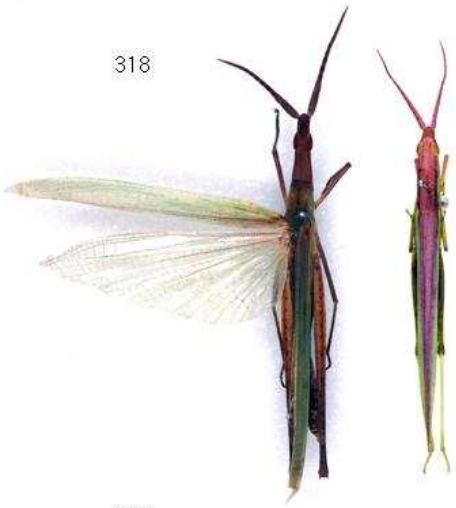
324. *Podismopsis ussuriensis* Ikonnikov ♂

325–326. *Podismopsis genicularibus* (Shiraki) (325. ♂, 326. ♀)

327–328. *Mongolotettix japonicus japonicus* (Bolívar) (327. ♂, 328. ♀)

319

318



320

321

322

323

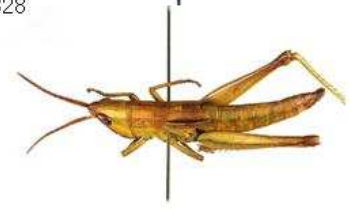
324

325

326

327

328



Figs. 329–333. Male tegmina of Gomphocerinae

329. *Arcyptera coreana* Shiraki

330. *Mongolotettix japonicus japonicus* (Bolívar)

331. *Chorthippus hammarstroemi* (Miram)

332. *Podismopsis genicularibus* (Shiraki)

333. *Schmidtiacris schmidti* (Ikonnikov)

Figs. 334–338. Phallic complex of Acridinae

334. *Acrida cinerea* (Thunberg)

335. *Gonista bicolor* (de Haan)

336. *Ceracris nigricornis laeta* (Bolívar)

337. *Mecostethus parapleurus* (Hagenbach)

338. *Stethophyma magister* (Rehn)

Figs. 339–340. Apex of head

339. *Aiolopus*

340. *Epacromius*

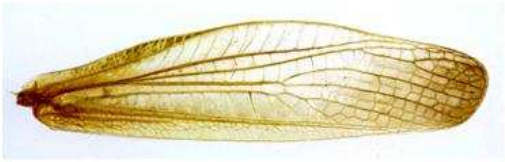
Figs. 341–343. *Epacromius japonicus* (Shiraki)

341. Abdominal end of male, dorsal view

342. Phallic complex

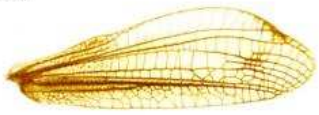
343. Ovipositor, lateral view

329



330

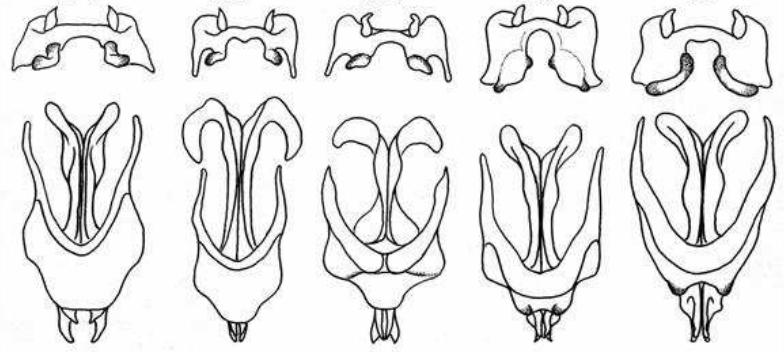
331



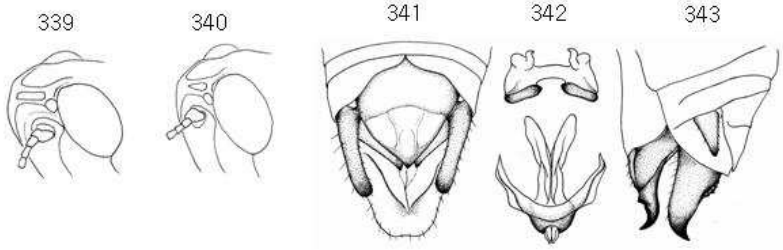
332

333

334 335 336 337 338



339 340 341 342 343



Figs. 344–357. Habitus of Gomphocerini (except for *Glyptobothrus* and *Megaulacobothrus* spp.)

344–345. *Arcyptera coreana* Shiraki (344. ♂, 345. ♀)

346–347. *Omocestus haemorrhoidalis* (Charpentier) (346. ♂, 347. ♀)

348. *Omocestus viridulus* (Linnaeus) ♂

349. *Gomphocerus kudia* Caudell ♂

350. *Chorthippus montanus* (Charpentier) ♂

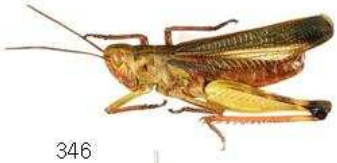
351. *Chorthippus fallax* (Zubovsky) ♀

352–353. *Chorthippus hammarstroemi* (Miram) (352. ♂, 353. ♀)

354–355. *Euchorthippus unicolor* (Ikonnikov) (354. ♂, 355. ♀)

356–357. *Schmidtiacris schmidti* (Ikonnikov) (356. ♂, 357. ♀)

344



345

346

347

348

349

350

351

352

353

354

355

356

357

Figs. 358–364. Habitus of *Megaulacobothrus* spp.

358–359. *Megaulacobothrus aethalinus* (Zubovsky) (358. ♂, 359. ♀)

360–364. *Megaulacobothrus jejuensis* **sp. nov.** (360. ♂, 361. ♀, 362. ♂ tegmen, 362. ♀ tegmen, 364. Phallic complex)

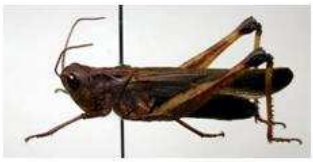
Figs. 365–371. Habitus of *Glyptobothrus* spp.

365–366. *Glyptobothrus maritimus* (Mishchenko) (365. ♂, 366. ♀)

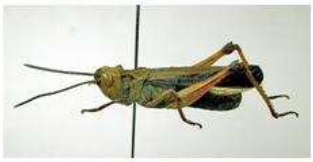
367–371. *Glyptobothrus tamna* **sp. nov.** (367. ♂, 368. ♀, 369. ♂ tegmen, 370. ♀ tegmen, 371. Phallic complex)

358

359



360

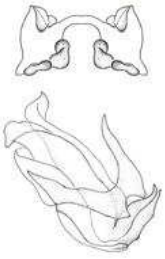


361

362

363

364



365

366

367

368

369

370

371

Figs. 372–381. Habitus of Oedipodinae

372. *Aiolopus thalassinus tamulus* (Fabricius)

373. *Epacromius japonicus* (Shiraki)

374. *Epacromius pulverulentus* (Fischer von Waldheim)

375. *Sphingonotus mongolicus* Saussure

376. *Bryodemella tuberculata diluta* (Stroll)

377. *Celes skalozubovi akitanus* (Shiraki)

378. *Trilophidia annulata* (Thunberg)

379. *Oedaleus infernalis* Saussure

380. *Gastrimargus marmoratus* (Thunberg)

381. *Locusta migratoria* (Linnaeus)

372

373

374

375

376

377

378

379

380

381

Figs. 382–391. Habitus of mislabelled species and Korean type materials

382. *Caloptenus obliterans* Walker 1870. Holotype ♀ in The Natural History Museum, London.

383. *Gryllacris maculicollis*; Walker 1869: 167. ♀ in The Natural History Museum, London.

384. *Gryllacris maculipes* Walker 1869. Syntype ♂ in The Natural History Museum, London.

385. *Decticus tenebrosus* Walker 1869. Holotype ♀ in The Natural History Museum, London.

386. *Stenobothrus latipennis* Bolívar 1898. Syntype ♂ in Museo Civico di Storia Naturale, Genova.

387. *Xiphocera fumosa* Walker 1870. Holotype ♀ in The Natural History Museum, London.

388. *Acridium coreanum* Walker 1870. Holotype ♀ in The Natural History Museum, London.

389. *Acridium fumosum* Walker 1870. Holotype ♀ in The Natural History Museum, London.

390. *Tedla sellata* Walker 1869. Syntype ♂ in The Natural History Museum, London.

391. *Xiphidium exemptum* Walker 1869. Holotype ♀ in The Natural History Museum, London.

382

383

384

385

386

387

388

389

390

391

Subject index

Acanthalobus **204**
Acrida **313**
Acrida cinerea **313**
Acrida lata **313**
Acrida turrita koreana **313**
Acrididae **228**
Acridinae **312**
Acridium coreanum **368**
Acridoidea **220**
Aemodogryllinae **15**
Aemodogryllus **17**
Aeropus **292**
Aeropus sibiricus **293**
Aiolopus **326**
Aiolopus japonicus **328**
Aiolopus thalassinus tamulus **326**
Amurocephalus **94**
Anapodisma **258**
Anapodisma beybienkoi **258**
Anapodisma miramae **260**
Anatlanticus **74**
Anatlanticus koreanus **74**
Anaxiphus pallidulus **364**
Anisoptera **94**
Anoplophilus **14**
Anoplophilus coreanus **sp. nov. 14**
Arcyptera **286**
Arcyptera albogeniculata **356**
Arcyptera coreana **286**
Arcyptera fusca albogeniculata **356**
Arcyptera micropetra **365**
Arcyptera micropetra sibirica **365**
Atlanticus **76**
Atlanticus brunneri **76**
Atlanticus jeholensis **76**
Atlanticus sinensis **76**
Atlanticus ussuriensis **71**
Atractomorpha **221**
Atractomorpha bedeli **221**
Atractomorpha brevicornis **222**
Atractomorpha heteroptera **221**
Atractomorpha lata **221**
Atractomorpha sinensis **225**
Bicolorana **66**
Bicolorana bicolor **67**
Bryodema gebleri **357**
Bryodema tuberculatum dilutum **346**
Bryodema tuberculatum sibirica **346**
Bryodemella **345**
Bryodemella tuberculata diluta **346**
Cachoplistinae **188**
Caconemobius **165**
Caconemobius sazanami **166**
Caconemobius takarai **167**
Caelifera **199**
Calliptaminae **266**
Calliptamus **266**
Calliptamus abbreviatus **267**
Calliptamus doii **267**
Caloptenus obliterans **359**
Catantops innotabilis **359**
Catantops splendens **368**
Celes **331**

Celes affinis **357**
Celes akitanus **332**
Celes scalozubovi orientalis **332**
Celes skalozubovi akitanus **332**
Celes variabilis **357**
Ceracris **318**
Ceracris nigricornis laeta **319**
Ceracris nigricornis nigricornis **319**
Chizuella **62**
Chizuella bonneti **62**
Chondracris rosea **357**
Chorthippus **309**
Chorthippus aethalinus koreanus **294**
Chorthippus biguttulus **298**
Chorthippus brunneus **299**
Chorthippus dubius **361**
Chorthippus fallax **311**
Chorthippus hammarstroemi **309**
Chorthippus intermedius **357**
Chorthippus latipennis **363**
Chorthippus longicornis **311**
Chorthippus montanus **311**
Chorthippus nakazimai **306**
Chorthippus schmidti **306**
Chrysochraon **279**
Chrysochraon dispar major **279**
Chrysochraon genicularibus **276**
Chrysochraon japonicus **280**
Chrysochraontini **274**
Clinotettix **212**
Clinotettix ussuriensis **212**
Comidogryllus **145**
Comidogryllus nipponensis **146**
Conocephalinae **91**
Conocephalini **92**
Conocephalus **92**
Conocephalus bambusanus **93**
Conocephalus chinensis **98**
Conocephalus exemptus **100**
Conocephalus gladiatus **100**
Conocephalus japonicus **94**
Conocephalus longipenne **98**
Conocephalus maculatus **95**
Conocephalus melaenus **357**
Copiphorini **103**
Cosmetura **50**
Cosmetura fenestrata **51**
Criotettix **204**
Criotettix japonicus **204**
Cyrtacanthacridinae **263**
Decma (*Idiodecma*) *improvisum* **358**
Decticus tenebrosus **362**
Deracantha onos **358**
Deracantha transversa **358**
Dianemobius **173**
Dianemobius csikii **173**
Dianemobius fascipes nigrofasciatus **176**
Dianemobius furumagiensis **174**
Dianemobius nigrofasciatus **175**
Diestrammena **16**
Diestrammena apicalis **21**
Diestrammena asynamora **19**
Diestrammena coreana **21**
Diestrammena goliath **17**
Diestrammena japanica **19**
Diestrammena japonica **19**

Diestrammena marmorata **19**
Diestrammena unicolor **17**
Ducetia **39**
Ducetia chinensis **42**
Ducetia japonica **39**
Ducetia sapporensis **43**
Ducetia thymifolia **39**
Duolandrevus **132**
Duolandrevus coulonianus **133**
Duolandrevus ivani **132**
Ectatoderus **196**
Ectatoderus annulipedus **196**
Eirenephilus **242**
Eirenephilus debilis **242**
Elimaea **31**
Elimaea fallax **31**
Elimaea grandis **31**
Eneopterinae **192**
Ensifera **8**
Eobiana **67**
Eobiana engelhardti **68**
Eoxizicus coreanus **54**
Epacromia coerulipes **329**
Epacromius **328**
Epacromius japonicus **328**
Epacromius pulverulentus **329**
Euchorthippus **303**
Euchorthippus unicolor **303**
Euconocephalus **104**
Euconocephalus acuminatus **105**
Euconocephalus nasutus **105**
Euconocephalus thunbergi **105**
Euconocephalus varius **105**
Eucoptacra praemorsa **359**
Eucriotettix oculatus transpinosus **359**
Euparatettix **207**
Euparatettix insularis **207**
Euscyrtinae **190**
Euscyrtus hemelytrus **190**
Euscyrtus japonicus **190**
Euthystira pavlovskii **280**
Eyprepocneminae **270**
Eyprepocnemis shirakii **271**
Formosatettix **209**
Formosatettix larvatus **360**
Formosatettix robustus **209**
Formosatettix slivae **360**
Gampsocleis **79**
Gampsocleis buergeri **79**
Gampsocleis gratiosa **82**
Gampsocleis inflata **369**
Gampsocleis mikado **79**
Gampsocleis obscura hokusenensis **82**
Gampsocleis sedakovii **82**
Gampsocleis sedakovii obscura **82**
Gampsocleis ussuriensis **79**
Gastrimargus **337**
Gastrimargus marmoratus **337**
Gastrimargus transversus **337**
Gelastorhinus rotundatus **317**
Gesonula punctifrons **360**
Glyptobothrus **298**
Glyptobothrus dubius **361**
Glyptobothrus maritimus **298**
Glyptobothrus tamna **sp. nov. 302**
Gomphocerinae **274**

Gomphocerini 284
Gomphocerippus rufus 361
Gomphocerus 292
Gomphocerus kudia 292
Gomphocerus rufus 361
Gomphocerus sibiricus 293
Gonista 316
Gonista bicolor 316
Gryllacrididae 9
Gryllacridoidea 9
Gryllacris japonica 12
Gryllacris maculicollis 361
Gryllacris maculipes 362
Gryllacris signifera 361
Gryllidae 125
Gryllinae 133
Gryllodes 135
Gryllodes berthellus 159
Gryllodes sigillatus 136
Gryllodes supplicans 136
Grylloidea 121
Grylloptera 8
Gryllotalpa 122
Gryllotalpa africana 122
Gryllotalpa orientalis 122
Gryllotalpidae 121
Gryllus 137
Gryllus bimaculatus 138
Gryllus mitratus 141
Gryllus nigrohirsutus 139
Gryllus sibiricus 139
Haplotropis 226
Haplotropis brunneriana 226
Hemitachycines 27
Hexacentrus 117
Hexacentrus japonicus 117
Hexacentrus unicolor 117
Hieroglyphus seungmoi 246
Holochlora 45
Holochlora japonica 46
Holochlora longifissa 48
Homoeogryllus japonicus 189
Homoeoxipha 185
Homoeoxipha obliterata 185
Homorocoryphus 106
Homorocoryphus jezoensis 111
Homorocoryphus lineosus 107
Homorocoryphus nitidulus 110
Kuwayamaea 42
Kuwayamaea sapporensis 42
Kuzicus 51
Kuzicus suzukii 52
Landreva clara 361
Landrevinae 132
Listroscelidinae 116
Locusta 333
Locusta danica 333
Locusta migratoria 333
Loxoblemmus 150
Loxoblemmus arietulus 154
Loxoblemmus campestris 154
Loxoblemmus coreanus 153
Loxoblemmus doenitzi 151
Loxoblemmus equestris 157
Loxoblemmus magnatus 153
Loxoblemmus spectabilis 362

Lyperogryllacris maculipes **362**
Madasumma hibinonis **194**
Meconematinae **50**
Mecopoda **57**
Mecopoda elongata **362**
Mecopoda niponensis **57**
Mecopoda rufa **362**
Mecopodinae **56**
Mecostethus **320**
Mecostethus alliaceus **321**
Mecostethus magister **323**
Mecostethus parapleurus **320**
Megaulacobothrus **293**
Megaulacobothrus aethalinus **294**
Megaulacobothrus jejuensis **sp. nov. 297**
Megaulacobothrus latipennis **363**
Melanoplinae **236**
Meloimorpha **188**
Meloimorpha japonicus **188**
Metioche insularis **183**
Metrioptera **65**
Metrioptera bonneti **62**
Metrioptera brachyptera **65**
Metrioptera engelhardti **68**
Metrioptera japonica **68**
Metrioptera koreana **363**
Metrioptera monticola **59**
Metrioptera ussuriana **61**
Microgastrimargus **340**
Microgastrimargus taeguensis **340**
Miramella **256**
Miramella solitaria **256**
Mitius **147**
Mitius minor **147**
Modicogryllus **148**
Modicogryllus minor **147**
Modicogryllus nipponensis **146**
Modicogryllus siamensis **149**
Mogoplistidae **195**
Mongolotettix **280**
Mongolotettix japonicus **280**
Mongolotettix japonicus vittatus **284**
Myrmecophilidae **198**
Myrmecophilus **199**
Natula pallidula **364**
Nemobiinae **164**
Nemobius yezoensis **168**
Nigrogryllus **137**
Nippancistroger **10**
Nippancistroger koreanus **10**
Nippancistroger testaceus **10**
Nomadacris **264**
Nomadacris japonica **264**
Oecanthinae **126**
Oecanthus **126**
Oecanthus euryelytra **127**
Oecanthus indicus **128**
Oecanthus longicauda **128**
Oedaleus **339**
Oedaleus decorus **364**
Oedaleus infernalis **340**
Oedaleus infernalis amurensis **341**
Oedaleus nigrofasciatus **340**
Oedipodinae **324**
Ognevia **342**
Ognevia ikonnikovi **245**

Ognevia longipennis **242**
Ognevia sergii **245**
Ognevia sergii ikonnikovi **246**
Omocestus **289**
Omocestus haemorrhoidalis **289**
Omocestus viridulus **291**
Ornebius **197**
Ornebius kanetataki **197**
Oxya **229**
Oxya agavisa **364**
Oxya chinensis **231**
Oxya chinensis sinuosa **232**
Oxya formosana **231**
Oxya hyla intricata **230**
Oxya japonica **232**
Oxya manzhurica nakaii **231**
Oxya velox **232**
Oxya vicina **231**
Oxya yezoensis **232**
Oxyinae **229**
Pachytylus cinerascens **334**
Pamphagidae **226**
Parapleurus **320**
Parapleurus alliaceus **321**
Parapodisma **248**
Parapodisma bandii **249**
Parapodisma setouchiensis **249**
Parapteronemobius sazanami **166**
Pararcyptera microptera **365**
Pararcyptera microptera meridionalis **365**
Paratachycines boldyrevi **27**
Paratachycines ussuriensis **25**
Paratettix histricus **207**
Paratlanticus **70**
Paratlanticus palgongensis **71**
Paratlanticus tsushimensis **365**
Paratlanticus ussuriensis **70**
Paratrigonidium bifasciatum **186**
Patanga **264**
Perena concolor **221**
Phaneroptera **34**
Phaneroptera falcata **34**
Phaneroptera grandis **31**
Phaneroptera nakanoensis **36**
Phaneroptera nigroantennata **36**
Phaneropterinae **30**
Phlaeoba fumida **366**
Platycleidini **58**
Podisma **250**
Podisma aberrans **251**
Podisma koeppeni **240**
Podisma morii **370**
Podismopsis **275**
Podismopsis altaica **366**
Podismopsis genicularibus **276**
Podismopsis shareiensis **278**
Podismopsis ussuriensis **278**
Podoscirtinae **194**
Polionemobius **178**
Polionemobius flavoantennalis **178**
Polionemobius mikado **179**
Primnoa **252**
Primnoa koreana **252**
Prosopogryllacris **12**
Prosopogryllacris japonica **12**
Protoglophilinae **13**

Prumna **252**
Prumna halrasana **252**
Prumna mandshurica **254**
Prumna plana **366**
Prumna primnoa **366**
Prumna primnoides **367**
Pseudorhynchus **114**
Pseudorhynchus concisus **114**
Pseudorhynchus japonicus **114**
Psophus stridulus **367**
Psyrana **44**
Psyrana japonica **44**
Pteronemobius **168**
Pteronemobius concolor **170**
Pteronemobius csikii **173**
Pteronemobius fascipes **175**
Pteronemobius gorochovi **170**
Pteronemobius nitidus **171**
Pteronemobius ohmachii **170**
Pteronemobius taprobanensis **180**
Pteronemobius yezoensis **168**
Pyrgomorphidae **220**
Rhaphidophoridae **13**
Ruspolia **106**
Ruspolia dubia **110**
Ruspolia jezoensis **111**
Ruspolia lineosa **107**
Saltatoria **8**
Scapsipedus aspersus **160**
Scapsipedus mandibularis **159**
Scelimeninae **204**
Schmidtiacris **305**
Schmidtiacris schmidti **306**
Sclerogryllinae **130**
Sclerogryllus **130**
Sclerogryllus punctatus **131**
Shirakiacris **270**
Shirakiacris shirakii **271**
Sinochlora **47**
Sinochlora longifissa **48**
Sphagniana **59**
Sphagniana monticola **59**
Sphagniana ussuriana **61**
Sphingonotus **348**
Sphingonotus japonicus **348**
Sphingonotus mongolicus **348**
Stenocatantops splendens **368**
Stenopelmatoidea **9**
Stethophyma **322**
Stethophyma magister **323**
Stethophyma tscherskii **323**
Svistella **186**
Svistella bifasciata **186**
Tachycines **19**
Tachycines asynamorus **19**
Tachycines coreanus **21**
Tachycines uenoi **27**
Tartarogryllus ritsemae **139**
Tedla sellata **117**
Teleogryllus **141**
Teleogryllus emma **141**
Teleogryllus infernalis **144**
Teleogryllus yesoemma **144**
Tetriginae **206**
Tetrigoidea **203**
Tetrix **213**

Tetrix bipunctata **368**
Tetrix japonica **216**
Tetrix macilenta **368**
Tetrix minor **218**
Tetrix silvicultrix **214**
Tetrix simulans **214**
Tetrix subulata **360**
Tettigonia **85**
Tettigonia cantans **86**
Tettigonia dolichoptera **88**
Tettigonia dolichoptera maritima **91**
Tettigonia orientalis **86**
Tettigonia ussuriana **86**
Tettigonia viridissima **88**
Tettigoniinae **58**
Tettigoniini **69**
Tettigonioidea **29**
Tettix longulus **207**
Tridactyloidea **200**
Tridactylus japonicus **201**
Trigonidiinae **182**
Trigonidium **182**
Trigonidium cicindeloides **183**
Trigonidium japonicum **183**
Trilophidia **342**
Trilophidia annulata **342**
Trilophidia japonica **343**
Trilophidia velnerata **343**
Troglophilinae **13**
Truljalia **194**
Truljalia hibinonis **194**
Uvarovites inflatus **369**
Valanga nigricornis fumosa **369**
Velarifictorus **159**
Velarifictorus aspersus **159**
Velarifictorus micado **161**
Velarifictorus ornatus **163**
Velarifictorus parvus **149**
Xenogryllus **192**
Xenogryllus marmoratus **193**
Xestophrys **115**
Xestophrys javanicus **115**
Xiphidion **94**
Xiphidiopsis suzukii **52**
Xiphocera fumosa **366**
Xizicus **54**
Xizicus coreanus **54**
Xya **201**
Xya japonica **201**
Zubovskya **237**
Zubovskya koeppeni **240**
Zubovskya koeppeni parvula **240**
Zubovskya koreana **237**
Zubovskya morii **370**
가는모메뚜기 **368**
가시모메뚜기 **204**
가시모메뚜기아과 **204**
각시메뚜기 **264**
각시메뚜기아과 **263**
각진모메뚜기 **360**
갈색여치 **70**
강변메뚜기 **348**
개미집귀뚜라미 (신칭) **199**
개미집귀뚜라미과 **198**
개미집귀뚜라미아과 **199**
거품여치 **61**

검은귀뚜라미 139
검은다리실베짱이 36
검은줄벼메뚜기 364
검은테베짱이 44
검정꼽등이 25
검정무릎삽사리 276
검정물팍삽사리 276
검정수염메뚜기 319
고산밑드리메뚜기 242
고산밑들이메뚜기 256
곰방울벌레 131
곰방울벌레아과 130
광대모메뚜기 214
구대륙메뚜기 291
굴꼽등이 27
귀뚜라미 160
귀뚜라미과 125
귀뚜라미상과 121
귀뚜라미아과 133
귀뚜라미여치 12
극동귀뚜라미 161
극동실베짱이 42
극동애메뚜기 298
금빛귀뚜라미 364
금빛삽사리 279
긴꼬리 128
긴꼬리쌕쌔기 100
긴꼬리아과 126
긴날개밑들이메뚜기 242
긴날개여치 79
긴날개중베짱이 88
긴수염애메뚜기 311
긴어리여치 71
긴철써기 (개칭) 362
꼬마모메뚜기 218
꼬마여치베짱이 115
꼭지메뚜기 303
꼽등이 21
꼽등이과 13
꼽등이아과 15
꽃메뚜기 357
꽃알락귀뚜라미 362
끝검은메뚜기 323
나카노실베짱이 36
날베짱이 48
남알락방울벌레 170
남쪽귀뚜라미 149
남쪽알락귀뚜라미 157
담색방울벌레 (신칭) 170
대나무쌕쌔기 93
대륙메뚜기 289
더듬이알락방울벌레 178
도이땅딸보메뚜기 267
동방애메뚜기 357
동양알락방울벌레 173
두꺼비메뚜기 342
등검은메뚜기 271
등검은메뚜기아과 270
등줄어리쌕쌔기 54
딱대기부치 317
딱따기 316
땅강아지 122
땅강아지과 121
땅강아지아과 121
땅딸보메뚜기 267
뚱보귀뚜라미 (신칭) 132

뚱보귀뚜라미아과 132
뚱보주름메뚜기 226
루루곰귀뚜라미 146
만주중베짱이 86
매부리 107
매부리족 103
매붙이 107
먹귀뚜라미 (신칭) 139
먹종다리 183
먹종다리붙이 183
메뚜기과 228
메뚜기목 8
메뚜기번티기 360
메뚜기상과 220
메뚜기아과 312
메뚜기아목 199
면도날개메뚜기 359
모대가리귀뚜라미 151
모래방울벌레 173
모메뚜기 216
모메뚜기과 203
모메뚜기상과 203
모메뚜기아과 206
무늬바다방울벌레 (신칭) 167
민꼽등이 17
민날개밑들이메뚜기 240
민어리쌕쌔기 51
민어리여치 10
민충이 358
밑드리메뚜기 261
밑들이메뚜기 260
밑들이메뚜기아과 236
바다방울벌레 166
반날개삽사리 276
반날개여치 369
반디밑들이메뚜기 249
발톱메뚜기 329
발해애메뚜기 306
방아깨비 313
방울벌레 188
방울벌레아과 188
백두산민날개밑들이메뚜기 240
백두산밑드리메뚜기 240
백두산삽사리 278
벙어리귀뚜라미 191
베짱이 117
베짱이붙이 46
베짱이아과 116
벼룩메뚜기 201
벼메뚜기 232
벼메뚜기붙이 320
벼메뚜기아과 229
볼록모메뚜기 360
부엌귀뚜라미 136
부채날개여치 363
북방밑들이메뚜기 366
북방방울벌레 171
북방베짱이 86
북방실베짱이 42
북방애메뚜기 (신칭) 311
북방여치 79
북방울벌레 171
북방좀날개여치 76
북채수염메뚜기 361
북채수염수중다리메뚜기 292
분홍날개섬서구메뚜기 (신칭) 225

비늘귀뚜라미 (신칭) 196
빨간종아리메뚜기 357
뿔모메뚜기 212
사마귀메뚜기 343
산꼽등이 14
산꼽등이아과 13
산삽사리 278
산애기메뚜기 311
산여치 59
삽사리 280
삽사리아과 274
삽사리족 274
새볼록모메뚜기 209
새왕귀뚜라미 144
섬나라메뚜기 281
섬서구메뚜기 221
섬서구메뚜기과 220
섬서구메뚜기아과 220
솔귀뚜라미 193
솔귀뚜라미아과 192
수염치레애메뚜기 306
습지방울벌레 168
시라끼메뚜기 271
시베리아애메뚜기 309
실베짱이 34
실베짱이아과 30
쌍별귀뚜라미 138
쌍색여치 (신칭) 67
쌍점모메뚜기 368
쐑쌔기 98
쐑쌔기붙이 52
쐑쌔기아과 91
쐑쌔기족 92
알락귀뚜라미 154
알락꼽등이 19
알락방울벌레 175
알락방울벌레아과 164
알타이삽사리 366
애귀뚜라미 159
애기가는여치 357
애기벼메뚜기 230
애매부리 110
애매붙이 111
애메뚜기 299
애메뚜기족 284
애여치 68
애여치족 58
애콩중이 340
야산모메뚜기 214
야산알락귀뚜라미 157
어리귀뚜라미 197
어리귀뚜라미과 195
어리귀뚜라미아과 196
어리삽사리 356
어리쐑쌔기 52
어리쐑쌔기아과 50
어리여치 12
어리여치과 9
어리여치상과 9
어리여치아과 9
여름귀뚜라미 (신칭) 163
여울알락방울벌레 174
여치 82
여치과 29
여치베짱이 114
여치상과 29

여치아과 58
여치아목 8
여치족 69
영남메뚜기 369
왕귀뚜라미 141
왕매부리 112
우리굴꼽등이 22
우리귀뚜라미 139
우리벼메뚜기 232
우리북방밑들이메뚜기 252
우리어리쌕쌔기 358
우리여치 74
우수리북방밑들이메뚜기 367
우수리여치 61
원산밑들이메뚜기 245
작은날개귀뚜라미 361
잔날개벼메뚜기 232
잔날개북방밑들이메뚜기（신칭） 366
잔날개어리삽사리 365
잔날개여치 62
장삼모메뚜기 207
장수꼽등이 17
점박이쌕쌔기 95
제주밑들이메뚜기 249
제주청날개애메뚜기（신칭） 297
조선알락귀뚜라미 153
좀날개여치 76
좀매부리 105
좀밑드리메뚜기 261
좀방울벌레 179
좀쌕쌔기 94
좁쌀메뚜기 201
좁쌀메뚜기상과 200
좁쌀메뚜기아과 201
주름메뚜기과 226
주름메뚜기아과 226
줄베짱이 39
중국벼메뚜기 231
중베짱이 86
쩌리메뚜기 267
참민날개밑들이메뚜기 370
참밑드리메뚜기 370
참밑들이메뚜기 251
참볼록모메뚜기 209
참북방밑들이메뚜기 254
참어리삽사리 286
참홍날개메뚜기 346
철써기 57
철써기아과 56
청날개애메뚜기 294
청다리메뚜기 332
청분홍메뚜기 326
청솔귀뚜라미 194
청솔귀뚜라미아과 194
콩중이 337
큰날개애메뚜기 363
큰실베짱이 31
큰알락귀뚜라미（신칭） 153
큰홀쭉귀뚜라미 193
탈귀뚜라미（개칭） 159
탐라애메뚜기（신칭） 302
팔공산밑들이메뚜기 258
팔공여치 71
팟중이 340
팥중이 340
폭날개애메뚜기 363

푸른씩씨리 194
풀귀뚜라미 186
풀무치 333
풀무치아과 324
풀종다리 186
풀종다리아과 182
한국땅딸보메뚜기 267
한국민날개밑들이메뚜기 237
한라북방밑들이메뚜기 252
해변메뚜기 328
해변방울벌레 173
홀쭉귀뚜라미 190
홀쭉귀뚜라미아과 190
홍가슴종다리 (신칭) 185
홍날개메뚜기 332
홍다리메뚜기 368
희시무루귀뚜라미 136
흰배긴꼬리 127
흰수염방울벌레 178