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REVIEW OF THE MYMARIDAE (HYMENOPTERA, CHALCIDOIDEA) OF PRIMORSKII KRAI: GENERA *ANAGROIDEA* GIRAULT AND *EUBRONCUS* YOSHIMOTO, KOZLOV ET TRJAPITZIN

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Five species of *Anagroidea*, including the newly described *A. marina* **sp. n.** from Primorskii krai, Russia, and two species of *Eubroncus* are reviewed and keyed. New synonymy is proposed: *A. dubia* (Girault, 1913) = *Dahmsia australiensis* Doutt, 1975, **syn. n.** *A. dryas* Girault and *E. prodigiosus* (Yoshimoto, Kozlov et Trjapitzin) are redescribed and illustrated.

KEY WORDS: Hymenoptera, Mymaridae, *Anagroidea*, *Eubroncus*, taxonomy.

С. В. Тряпицын, В. В. Березовский. Обзор семейства Мумариде (Hymenoptera, Chalcidoidea) Приморского края: роды *Anagroidea* Girault и *Eubroncus* Yoshimoto, Kozlov et Trjapitzin // Дальневосточный энтомолог. 2002. N 114. С. 1-17.

Дан обзор 5 видов рода *Anagroidea*, включая описание *A. marina* **sp. n.** (Приморский край), и 2 видов рода *Eubroncus*. Приведены определительные таблицы видов. Дается новая синонимия: *A. dubia* (Girault, 1913) = *Dahmsia australiensis* Doutt, 1975, **syn. n.** Переописываются *A. dryas* Girault и *E. prodigiosus* (Yoshimoto, Kozlov et Trjapitzin).

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INTRODUCTION

Yoshimoto et al. (1972) described two genera of Mymaridae, *Eubroncus* Yoshimoto, Kozlov et Trjapitzin, 1972 and *Stomarostrum* Yoshimoto, Kozlov et Trjapitzin, 1972. The latter was synonymized under *Eubroncus* by Triapitsyn & Huber (2000). The original diagnosis of the group treated as the subfamily Eubroncinae by Yoshimoto et al. (1972), was based mainly on the peculiar shape and structure of the head (triangular, wedge-like in lateral view) and mandibles (strongly developed and about as long as head height) in *Eubroncus*. *Anagroidea* Girault, 1915 is the sister genus to *Eubroncus*. In both genera the mandibles are narrow and elongate, directed ventrally away from head and not crossing, and the blade of the hind wing, which begins at the wing base and is relatively broad beyond the venation, is usually with a broadly rounded apex (Figs 4, 10, 18). Unlike *Eubroncus*, the head of *Anagroidea* is oval or sometimes almost trapezoidal (e.g., in some undescribed species from New Zealand) in lateral view and the mandibles are less developed, much shorter than head height (Triapitsyn & Huber, 2000).

Neither *Anagroidea* or *Eubroncus* were included in the revision of the Holarctic genera of Mymaridae by Schauff (1984). In the Palaearctic region, both sexes of *Anagroidea* and *Eubroncus* species may be recognized using the generic key by Triapitsyn & Huber (2000). One unidentified species of *Anagroidea* from Primorskii krai was mentioned in the annotation to that key (p. 613); we later found it to be new to science and describe it below as *A. marina* sp. n. Also described is the male of *Eubroncus prodigiosus* (Yoshimoto, Kozlov et Trjapitzin, 1972), whose occurrence in southern Primorskii krai was mentioned by Triapitsyn & Huber (2000).

Biology and hosts of *Anagroidea* and *Eubroncus* are unknown; Yoshimoto et al. (1972) supposed that *Eubroncus* species might be specialized parasitoids of flattened insect eggs. We can add that such an egg would likely have a very strong chorion, considering the well-developed mandibles in *Anagroidea* and especially large ones in *Eubroncus*. However, the unusually enlarged mandibles of *Eubroncus* are rather an adaptation to its biology than a characteristic feature of the whole group. Similar enlargement of the mandibles is not unique among egg parasitoids within Chalcidoidea: for instance, the male of *Ufens beneficus* Dozier, 1932 (Trichogrammatidae) from Haiti (we have examined the allotype male in USNM), has very large mandibles, unlike the small mandibles of the female of the same species, and comparable in size to those of many *Anagroidea* species. In his description of *U. beneficus*, Dozier (1932) overlooked this interesting character, which is clearly associated with the necessity for the male to make an exit hole (for himself and the females who emerge later, as members of *Ufens* are normally gregarious) through the very strong chorion of the flattened egg of its host, an unidentified katydid (Tettigoniidae). Consequently, because there is no apparent mandible size dimorphism between the two sexes in either *Anagroidea* or *Eubroncus*, it is quite likely that their members are solitary parasitoids. The strong body sclerotization and presence of a short ovipositor indicate that females of *Anagroidea* and *Eubroncus* may search for more or less free-laying or just slightly concealed host eggs in leaf litter or upper soil.

Collecting and preservation methods of the material are described by Triapitsyn & Berezovskiy (2001). Terms for morphological features are those of Gibson (1997). All measurements were taken from slide-mounted specimens (except for the total body length and head length of *A. marina* n. sp., that had been taken from dry-mounted specimens before the slides were made) and are given in micrometers (μm), as length or, where necessary, as length/width. The average is followed by the range in parentheses. Abbreviations used are: F = funicle segment in the female sex or flagellomere in the male sex; MT = Malaise trap; YPT = yellow pan trap.

It would be premature to provide diagnoses of *Anagroidea* and *Eubroncus* here without a thorough examination of all the material now available in museum collections, but that is beyond the scope of this study. Therefore, some generic, rather than specific, characters are inevitably included in the descriptions and redescriptions of the taxa that we treat in this paper.

Acronyms for the depositories of specimens are as follows: CAS, California Academy of Sciences, San Francisco, California, USA; CNCI, Canadian National Collection of Insects, Ottawa, Ontario, Canada; EMEC, Essig Museum, University of California, Berkeley, California, USA; IBPV, Institute of Biology and Pedology, Vladivostok, Russia; QMBA, Queensland Museum, Brisbane, Queensland, Australia; UCRC, Entomology Research Museum, University of California, Riverside, California, USA; USNM, National Museum of Natural History, Washington, D.C., USA; ZIN, Zoological Institute, Russian Academy of Sciences, St. Petersburg, Russia.

Genus *Anagroidea* Girault, 1915

Anagroidea Girault, 1915: 164. Type species: *Eustochus dubius* Girault, 1913, by original designation.

Anagroidea: Annecke & Doutt, 1961: 18; Noyes & Valentine, 1989: 25, 66 (Figs. 29-34); Yoshimoto, 1990: 42-43; Huber, 1997: 505, 510; Triapitsyn & Huber, 2000: 613.

Dahmsia Doutt, 1975: 254. Type species: *Dahmsia australiensis* Doutt, 1975, by original designation; synonymized with *Anagroidea* by Noyes & Valentine, 1989: 25.

COMMENTS. The most comprehensive diagnosis of *Anagroidea* was given by Noyes & Valentine (1989). However, it is incomplete because it is based on a limited number of species from a single zoogeographical region and therefore does not reflect the whole range of morphological characters displayed within the genus. We have seen several undescribed species of *Anagroidea* from the Oriental and Australasian regions and from Central and South America.

Key to the species, females

- 1. Head with weak, inconspicuous setae (New World) 1. *A. boweni*
- Head with very strong ocellar, supraorbital, and preorbital setae (Old World) 2

2. F1 notably shorter than pedicel (Fig. 2); hind wing relatively narrow (Fig. 4), about 12 x as long as wide 2. *A. dryas*
 – F1 at least as long as pedicel, usually a little longer (as in Fig. 7); hind wing relatively wide (as in Fig. 10), at most 9 x as long as wide 3
3. Forewing blade with a single row of setae along posterior margin behind marginal and stigmal veins (Viggiani, 1973, Fig. I, 3) 3. *A. dubia*
 – Forewing blade with several rows of setae along posterior margin behind marginal and stigmal veins (Fig. 8) 4
4. Clava 3.1 x as long as wide, slightly shorter than scape (including radicle); base of forewing with a well-defined row of 6-7 setae on and very close to submarginal vein (Fig. 5) 4. *A. himalayana*
 – Clava 4.0-4.3 x as long as wide, slightly longer than scape (including radicle); base of forewing with a few scattered setae on blade between submarginal vein and the long, median row of setae (Fig. 9) 5. *A. marina* sp. n.

1. *Anagroidea boweni* Yoshimoto, 1990

Anagroidea boweni Yoshimoto, 1990: 89-91 (holotype - ♀, Jacksonville, Florida, USA [CNCI], examined).

MALE. Known (Yoshimoto, 1990).

DIAGNOSIS. See Yoshimoto (1990) and comments below.

DISTRIBUTION. USA: Florida, Georgia, and Texas (Huber, 1997).

COMMENTS. This and several other undescribed species of *Anagroidea* from the New World, including those mentioned by Yoshimoto (1990), appear to form a distinct species group within the genus. In addition to the features mentioned in the key, the head in most species of New World *Anagroidea*, particularly *A. boweni*, appears to be relatively more strongly sculptured (see: Yoshimoto, 1990, fig. 132) than in any Old World species we have seen.

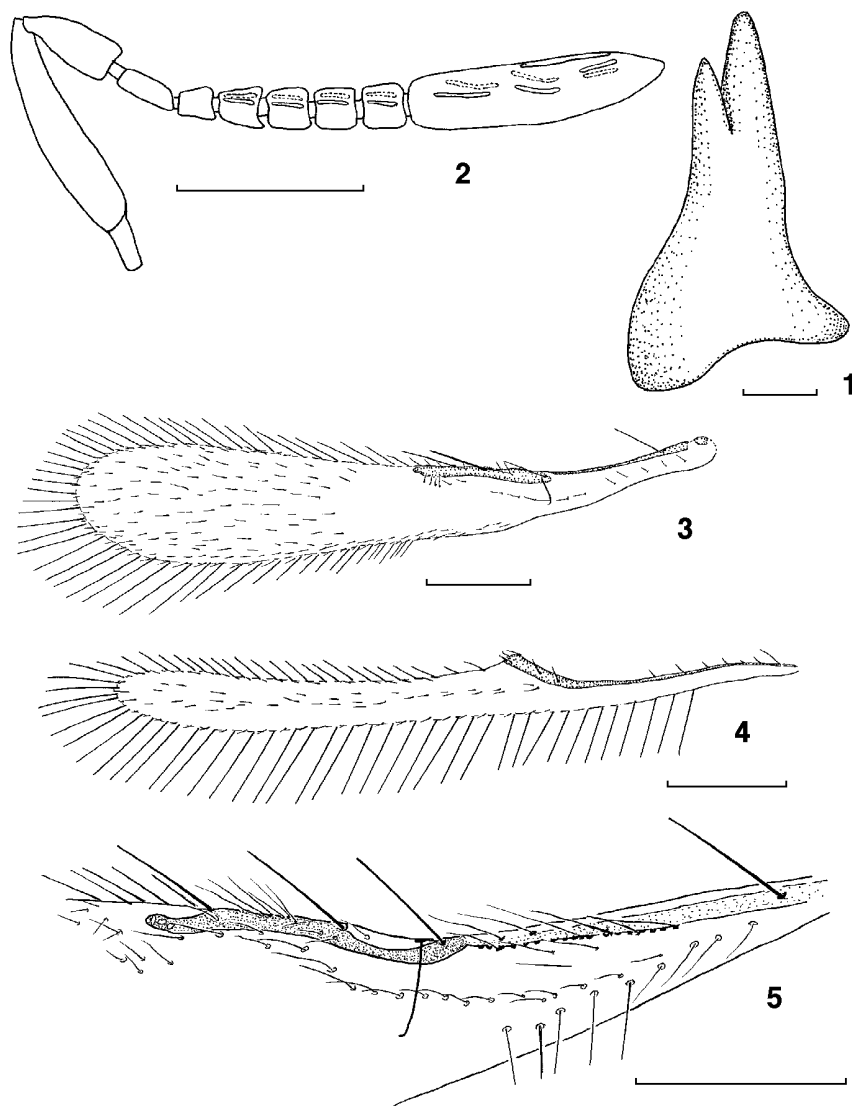
2. *Anagroidea dryas* Girault, 1938

Figs 1-4

Anagroidea dryas Girault, 1938: 390 (holotype - ♀ (on slide): "*Anagroidea dryas* Girault ♀ type Sydney, N.S.W. forest. 28 Oct. 1917. 3591 Ent. Div. Dep. Ag. & Stk., Qld. 3591" [QMBA], examined).

Anagroidea dryas: Viggiani, 1973: 255; Dahms, 1983: 231.

MATERIAL. Australia, Queensland, Indooroopilly, X 1929, 1 ♀, ("on window") [QMBA]. Mounted under the larger (outer) coverslip on the same slide with a female of *A. dubia* (Girault, 1913) and other chalcidoids, as mentioned by Dahms (1983); the senior author identified all but one of them, as follows: a female *Aphelinoidea* sp. and a female *Oligosita* sp. (Trichogrammatidae), a female *Gonatocerus* sp. (from the *sulphuripes* species group), a female *Stethynium* sp. and a male *Stethynium* sp. (a different species from the female) (Mymaridae), as well as a female tetrastichine (Eulophidae).



Figs 1-5. *Anagroidea*. 1-4) *A. dryas*, female from Indooroopilly, Queensland, Australia: 1) mandible, 2) antenna, 3) forewing, 4) hind wing; 5) *A. himalayana*, holotype, female, base of forewing. Scale bars for figs 2-5 = 0.1 mm, for fig. 1 = 0.01 mm.

REDESCRIPTION. FEMALE. General color brown to dark brown. Head with strong setae at eye orbits. Face abruptly angled at toruli. Vertex transversely striate. Mandible bidentate, a little longer than wide (Fig. 1).

Antenna (Fig. 2) sparsely setose, radicle and scape elongate, scape with light reticulate sculpturing; pedicel markedly longer than F1; F1 cylindrical, F2 and F3 slightly longer than wide, F4, F5 and F6 subquadrate; F1 and F2 narrower than following segments and without longitudinal sensilla; F3-F6 each with 2 longitudinal sensilla; clava shorter than funicle, about 4 x as long as wide, with 7 longitudinal sensilla and numerous placoid sensilla.

Mesosoma with strong reticulate sculpturing and with strong adnotaular and axillar setae.

Wings. Forewing (Fig. 3) about as long as body, hyaline; rather narrow for the genus, 5.1 x as long as wide; length of longest marginal cilia about 0.77 x greatest width of wing; 8-9 rows of microtrichiae on distal half of blade. Hind wing very narrow for the genus, about 12 x as long as wide; disc with 1-2 irregular rows of microtrichia (Fig. 4); longest marginal cilia much longer than maximum width of wing.

Metasoma. Petiole very short and inconspicuous; gaster much shorter than mesosoma; bristles on anal plate very long. Ovipositor very short, not exerted beyond apex of gaster.

Measurements (n=1): Body: 582; head: 118; mesosoma: 255; metasoma: 209; ovipositor: 116. Antenna: radicle: 33; scape (excluding radicle): 117; pedicel: 55; F1: 36; F2: 22; F3: 26; F4: 26; F5: 26; F6: 27; clava: 139. Forewing: 592/117; longest marginal cilia: 91. Hind wing: 555/48; longest marginal cilia: 88. Legs (given as coxa, femur, tibia, tarsus): fore: 73, 131, 106, 117; middle: 44, 117, 131, 146; hind: 77, 149, 183, 139.

MALE. Unknown.

DIAGNOSIS. This species is the most easily recognizable among the described species of *Anagroidea* by the narrow wings as well as by F1 of the female antenna notably shorter than pedicel.

DISTRIBUTION. Australia: New South Wales and Queensland.

COMMENTS. The holotype of *A. dryas* is incomplete (only head and one scape as well as parts of mesosoma and metasoma present, with prosternum and forelegs separated, other appendages are missing except a part of one hind leg; some of other legs are in excess balsam (not under the coverslip) and mounted poorly (uncleared). The above redescription and measurements are made based on the second, non-type specimen, which is mounted laterally and is in much better condition than the holotype.

3. *Anagroidea dubia* (Girault, 1913)

Eustochus dubius Girault, 1913: 128-129 (holotype - ♂ (on slide), Gordonvale (= Nelson), Queensland, Australia [QMBA], not examined).

Anagroidea dubia: Girault, 1915: 164; Viggiani, 1973: 253; Dahms, 1983: 232.

Eustochus dubius: Dahms, 1983: 235.

Dahmsia australiensis Doult, 1975: 256, figs 1-7 (holotype - ♀, Minyon Falls, New South Wales, Australia [QMBA], not examined; paratypes - 2 ♀ on slides, labeled: "by sweeping, Minyon Falls, N.S.W., Australia, Sept. 9, 1965, R. Doult, coll." [EMEC], examined), **syn. n.**

MATERIAL. Australia, Queensland: Acacia Ridge near Brisbane, 22.IX 1979, G. Gordh, E. C. Dahms, 1 ♀. Cooloola State Forest, IX-X 1979, G. Gordh, E. C. Dahms, 2 ♀ [UCRC]. Indooroopilly, VIII 1931, 1 ♀ [QMBA]; Nambour, 18-27.XI 2000, C. Freebairn, 2 ♀, 1 ♂ [UCRC]. New Caledonia, Summit Pic Ningua, 21°44'47"S, 116°08'16"E, 1350 m, 11.VII 1993, 26.VII 1993, and 22.I 1995, 3 ♀, 6 ♂ [CAS].

FEMALE. Redescribed and illustrated by Viggiani (1973). The vertex is reticulate; the forewing is slightly infuscated behind marginal vein.

MALE. Similar to female (Viggiani, 1973).

DIAGNOSIS. Besides the forewing character mentioned in the key, which it shares with *A. dryas*, this species has characteristic carinae on both first gastral tergum and first gastral sternum, as illustrated by Viggiani (1973, figs. I, 6 and I, 7). Although the presence of such carinae is not unique among *Anagroidea* species, both their arrangement and the degree of development may be of specific value. The head of *A. dubia* is almost trapezoidal in lateral view, very close to the shape of the head of *A. dryas*; these two very distinct Australian species are apparently closely related. F1 of the female antenna in *A. dubia* is about the same length as the pedicel.

DISTRIBUTION. Australia (New South Wales and Queensland) and New Caledonia (new record).

COMMENTS. *A. dubia* appears to be the most common species of *Anagroidea* in Australia. Examination of the two female paratypes of *D. australiensis* revealed no significant differences between them and the females of *A. dubia* from Queensland, hence the above synonymy.

4. *Anagroidea himalayana* (Mani et Saraswat, 1973)

Fig. 5

Anaphes himalayanus Mani et Saraswat, 1973: 101, ♀ non ♂ (holotype - ♀ (on slide): "HOLOTYPE ANAPHES HIMALAYANUS MANI & SARASWAT 1-2. Kalatop, Dalhousie, Coll. Mani & party 22.v.1971. School of Entomology, St. John's College, Agra-2, INDIA" [USNM], examined).

Anagroidea himalayana: Subba Rao & Hayat, 1983: 131-132; Subba Rao, 1989: 131.

MALE. Unknown.

DIAGNOSIS. This species is most closely related to *A. marina* n. sp., described below, but is larger; other distinguishing characters between these two species are given in the key. F1 of the female antenna in *A. himalayana* is a little longer than the pedicel.

DISTRIBUTION. India. Besides the type locality (Dalhousie), this species is known also from two other locations in Himachal Pradesh, (Hayat, 1992) as well as from Darjiling, West Bengal (Subba Rao, 1989).

COMMENTS. The described male of *A. himalayana* (as an allotype) (Mani & Saraswat, 1973) actually is an unidentified species of *Anaphes* Haliday, 1833 (Subba Rao & Hayat, 1983, as *Patasson* Walker, 1846).

5. *Anagroidea marina* S. Triapitsyn et Berezovskiy, sp. n.
Figs 6-12

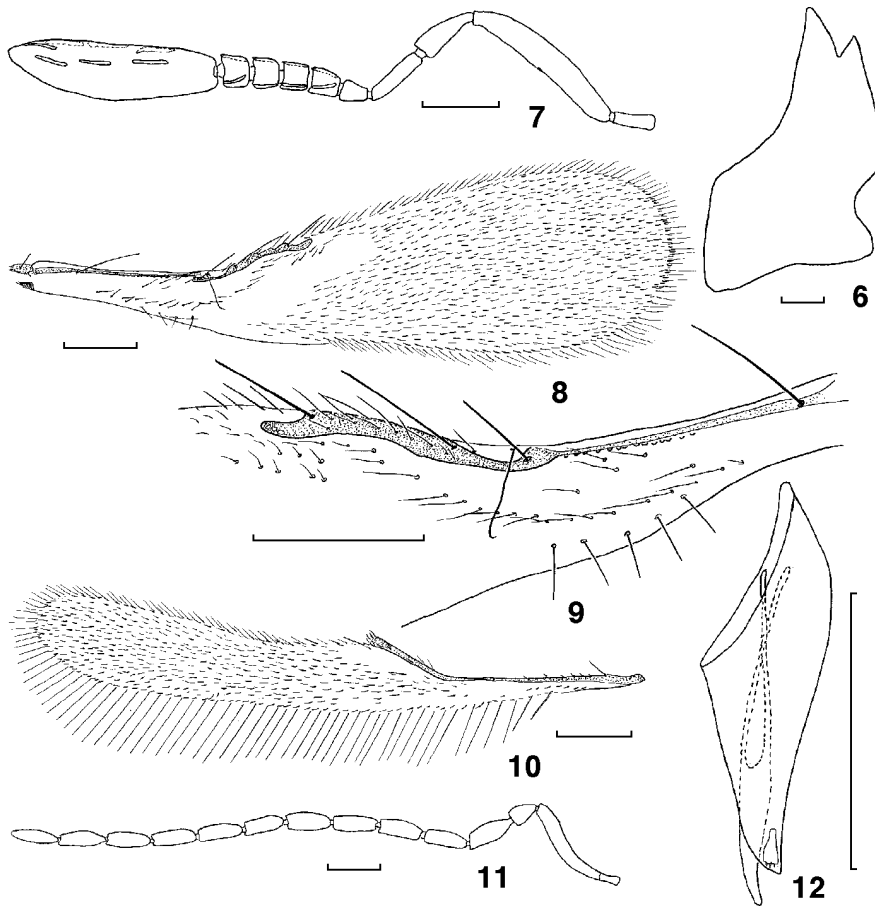
Anagroidea sp.: Triapitsyn & Huber, 2000: 613, fig. 347, 3.

MATERIAL. Holotype - ♀ (on slide) [ZIN]: Russia, Primorskii krai, Ussuriysk district, Gornotayozhnoye, 21-24.X.1999, M. V. Michailovskaya, MT. Paratypes (same locality and collector as the holotype): 15-17.VIII.1999, 2 ♂ on points, YPT; 22-28.VIII.1999, 14 ♂ on points, YPT; 27-28.VIII.1999, 2 ♀, 7 ♂, YPT near mulberry (*Morus* sp.); VIII.1999, 1 ♂ on slide and 4 ♂ on points, MT; VIII.1999, 4 ♀, 6 ♂ on points, YPT; 10-15.IX.1999, 1 ♀, 2 ♂ on slides and 16 ♂ on points, YPT; 11-12.IX.1999, 3 ♀, 2 ♂ on cards, YPT; 25-26.IX.1999, 1 ♀ on slide, YPT; 21-24.X.1999, 1 ♀, 2 ♂ on points, MT; 1-10.VIII.2000, 3 ♀ on points, MT; 5-6.VIII.2000, 1 ♀ on point, YPT; 7-9.VIII.2000, 2 ♀ on points, YPT; VIII.2000, 8 ♀, 21 ♂ on points and cards, YPT [CNCI, IBPV, UCRC, ZIN].

DESCRIPTION. FEMALE. Color. Head, flagellum, mesosoma, and metasoma dark brown; scape (including radicle), pedicel, wing venation, and legs light brown to brown; eyes dirty pink.

Head. Much wider than long in dorsal view, rounded in anterior view, and more or less oval in lateral view. Transverse trabecula slightly below mid level of eyes. Vertex large, transversely striate, rounded posteriorly, with 3 pairs of strong and 1 (posterior) pair of weak ocellar setae; ocelli in very obtuse triangle, much closer to occipital sulcus than to transverse trabecula. Supraorbital (especially) and preorbital (including strongly developed preorbital suture) trabeculae long; 4 strong setae in between them and inner eye margin in addition to a very long, strong posterior supraorbital seta. Face broadly rounded in lateral view, not strongly angulate at toruli as in the two Australian species discussed above, with inconspicuous, uneven sculpture and numerous weak setae, medial face with 4 pairs of longer intertollular setae in 2 rows; toruli almost at lower level of eyes. Mandible bidentate (Fig. 6), rather small for the genus (length of mandible about 1/5 of head height).

Antenna (Fig. 7) densely setose (setae on flagellar segments very short), a little shorter than body, double-elbowed at scape-pedicel and F1-F2 articulations. Radicle narrow and smooth, fused with the rest of scape but distinct; scape elongate, slightly sculptured, about 6 x as long as wide; pedicel slightly shorter than F1; F2-F6 subequal in length, F2 subcylindrical, markedly narrower than following funicle segments, which are subquadrate (except F3 slightly longer than wide); F1 and F2 without longitudinal sensilla, F3-F6 each with 2 longitudinal sensilla; clava 4.0-4.3 x as long as wide, with 7 longitudinal sensilla.



Figs 6-12. *Anagroidea marina* sp. n. (holotype and paratypes). 6) mandible, female, lateral view, 7) antenna, female, 8) forewing, female, 9) base of forewing, female, 10) hind wing, female, 11) antenna, male, 12) male genitalia, lateral view. Scale bars for figs 7-12 = 0.1 mm, for fig. 6 = 0.01 mm;

Mesosoma. Pronotum unevenly sculptured, narrow medially in dorsal view (sloping down anteriorly and thus hardly visible from above), divided mediolongitudinally, each side lobe with a row of 4 strong setae along posterior margin and several irregular rows of smaller setae; propleura large, broadly jointed medially. Mesoscutum with reticulate sculpture, much wider than long (3:1), with a pair of strong adnotaular setae and a strong seta at posterolateral angle. Axilla large, lightly sculptured, with a very strong seta. Scutellum faintly sculptured, slightly longer than mesoscutum, divided into distinct anterior and posterior parts by what appears to be a well-developed frenal line, with coinciding transverse row of large

but shallow foveae; anterior scutellum slightly shorter and much narrower than posterior scutellum, both 2.6-2.7 x wider than long, scutellar placoid sensilla next to anterior margin and very close, almost touching each other. Metanotum lightly reticulate, band-like, about 1/2 length of posterior scutellum, with defined dorsellum. Propodeum transverse, about as long as mesoscutum, more or less smooth medially and laterally, with a complicated pattern of submedial carinae and reticulate sculpturing, and with one pair of propodeal setae mediolaterally. Propodeal spiracle small. Mesophragma broadly V-shaped, almost reaching posterior margin of propodeum.

Wings. Forewing (Fig. 8) 3.2-3.6 x as long as wide. Venation typical of the genus (Fig. 9); hypochaeta not reaching posterior margin; stigmal vein with 4 placoid sensilla at apex; blade faintly infuscated throughout, more so behind marginal vein; chaetotaxy on base of blade as in Fig. 9, with a large bare area behind and partially beyond marginal and stigmal veins (Fig. 8), and apical half of blade densely setose; longest marginal cilia about 1/5 of greatest width of wing. Hind wing (Fig. 10) broad, 7.3-7.6 x as long as wide; blade slightly (less than forewing) infuscated, densely, more or less uniformly, setose beyond venation, with about 11-13 irregular rows of microtrichia in the broadest part; longest marginal cilia shorter than maximum width of wing.

Legs. Coxae reticulate, metacoxa more coarsely so; protibial spur comb-like.

Metasoma. Petiole very short, about 4 x as wide as long. Gaster a little longer than mesosoma; first gastral tergum and first gastral sternum with prominent sclerotized ridges and carinae; second gastral tergum the largest, occupying 0.28-0.29 of total length of gaster, with a pair of long, fine setae; ovipositor short, almost perpendicular to body axis, not exerted beyond its apex; cercal plates with very long bristles.

Measurements (n=3, holotype, which was the largest specimen, and paratypes): Body: 1068 (925-1156); head: 144 (133-150)/283 (277-288)/; mesosoma: 419 (410-428); gaster: 532 (473-591); ovipositor: 199 (197-200). Antenna: radicle: 65 (62-68); scape (excluding radicle): 240 (234-245); pedicel: 87 (82-91); F1: 92 (91-95); F2: 42 (41-44); F3: 46 (44-47); F4: 41 (39-43); F5: 42 (39-44); F6: 43 (40-46); clava: 303 (288-316). Forewing: 914 (910-992)/272 (248-286); longest marginal cilia: 53 (49-59). Hind wing: 895 (855-965)/120 (116-127); longest marginal cilia: 111 (106-113). Legs (given as femur, tibia, tarsus): fore: 225 (215-230), 196 (190-208), 217 (212-223); middle: 229 (219-234), 299 (290-314), 251 (241-256); hind: 249 (241-288), 332 (321-354), 244 (226-255).

MALE. Similar to female except for normal sexually dimorphic characters and the following. Head with less pronounced, rather faint sculpture on vertex and face; only 3 strong setae between supraorbital and preorbital trabeculae and inner eye margin (excluding supraorbital seta). Antenna (Fig. 11) slightly longer than body, with scape and pedicel almost smooth; flagellomeres roughly subequal in length, longer than wide, each with several longitudinal sensilla. Forewing 3.4-3.6 x as long as wide; longest marginal cilia about 1/3 of maximum wing width. Hind wing relatively longer than in female, 7.8-8.4 x as long as wide; longest marginal cilia about as long as maximum width of wing. Gaster about as long as mesosoma. Genitalia (Fig. 12) rather simple; digitus with 3 small spines.

Measurements (n=3, paratypes): Body: 980 (925-1024). Antenna: radicle: 51 (51-51); scape (excluding radicle): 206 (203-208); pedicel: 61 (58-64); F1: 99 (95-102); F2: 91 (89-92); F3: 92 (89-94); F4: 90 (89-90); F5: 93 (91-94); F6: 89 (88-89); F7: 93 (91-94); F8: 93 (91-94); F9: 94 (94-94); F10: 96 (95-96); F11: 99 (98-99). Forewing: 1058 (1037-1091)/306 (300-310). Hind wing: 977 (956-1001)/120 (118-122). Genitalia: 142 (141-143).

DIAGNOSIS. The new species is most closely related to *A. himalayana*, from which it differs by the characters given in the key. These two taxa, as well as several others, undescribed Old World species of *Anagroidea*, mainly from the Oriental region, form a distinct species group defined by the characteristic shape of the head (more or less oval in lateral view) and the chaetotaxy on the forewing blade.

DISTRIBUTION. Russia: Primorskii krai (known from the type locality only).

ETYMOLOGY. The specific epithet is noun and dedicated to Dr. Marina V. Michailovskaya, who discovered the rich fairyfly fauna of Primorskii krai.

Genus *Eubroncus* Yoshimoto, Kozlov et Trjapitzin, 1972

Eubroncus Yoshimoto, Kozlov et Trjapitzin, 1972: 879. Type species: *Eubroncus orientalis* Yoshimoto, Kozlov et Trjapitzin, 1972, by original designation.

Eubroncus: Triapitsyn & Huber, 2000: 613.

Stomatrotrum Yoshimoto, Kozlov et Trjapitzin, 1972: 879. Type species: *Stomatrotrum prodigiosum* Yoshimoto, Kozlov et Trjapitzin, 1972, by original designation; synonymized with *Eubroncus* by Triapitsyn & Huber (2000).

COMMENTS. The original diagnosis of *Eubroncus* by Yoshimoto et al. (1972) is based on a male. The female of this genus was also diagnosed in the same publication under *Stomatrotrum*. As with *Anagroidea*, providing a detailed diagnosis of *Eubroncus* is beyond the scope of this study. We have seen undetermined specimens of *Eubroncus* from the eastern Palearctic, Oriental, Australasian, and Afrotropical regions.

Key to the species, males

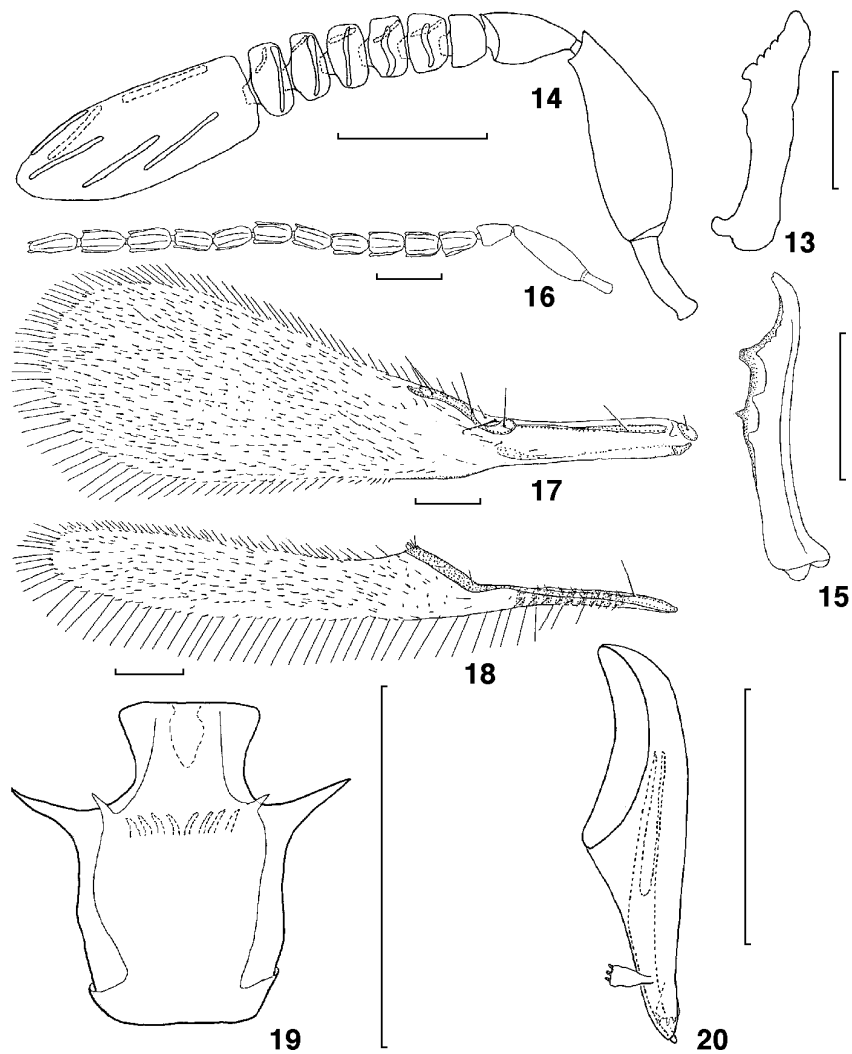
1. Pronotum undivided; mesosoma dark brown 1. *E. prodigiosus*
– Pronotum divided mediolongitudinally; mesosoma brown 2. *E. orientalis*

1. *Eubroncus prodigiosus* (Yoshimoto, Kozlov et Trjapitzin, 1972)

Figs 13-20

Stomatrotrum prodigiosum Yoshimoto, Kozlov et Trjapitzin, 1972: 882 (holotype - ♀ (on point), near Vladivostok, Primorskii krai, Russia [ZIN], examined).

Eubroncus prodigiosus: Triapitsyn & Huber, 2000: 613.



Figs. 13-20. *Eubroncus prodigiosus* from Gornotayozhnoye, Primorskii krai, Russia. 13) mandible, female, anterior view, 14) antenna, female, 15) mandible, male, lateral view, 16) antenna, male, 17) forewing, male, 18) hind wing, male, 19) petiole, male, dorsal view, 20) male genitalia, lateral view, Scale bars = 0.1 mm.

MATERIAL. Russia, Primorskii krai, Ussuriysk district, Gornotayozhnoye, M. V. Michailovskaya: 27-29.V 1999, 2 ♂; 21-22.VI 1999, 1 ♀; 3-4.VII 1999, 1 ♀; 21-22.VII 1999, 2 ♂; 5-6.VIII 1999, 2 ♀; 1-4.VIII 1999, 1 ♂; 30.VI-1.VII 2000, 1 ♂; 4-5.VII 2000, 2 E [IBPV, UCRC, ZIN].

DESCRIPTION. FEMALE (redescription). It must be noted here that both the illustration of the habitus (in lateral view) and that of the body (in dorsal view) of the female *E. prodigiosus*, accompanying the original description (Yoshimoto et al., 1972, figs. 6 and 7 respectively), are rather sketchy and thus many of the details are missing.

Color. Body and appendages dark brown (gaster slightly lighter than head and mesosoma) except mandible, radicle, wing venation, and legs light brown to brown; eyes dirty pink.

Head. Longer than wide in dorsal view (length/width ratio 1.2-1.3:1), appearing triangular (wedge-shaped) in lateral view due to presence of a long beak, but in reality somewhat narrowly trapezoidal and more or less oval in anterior view. Eye round and small, less than half length of vertex. Transverse trabecula well below lower level of eyes, as best seen from above. Vertex almost smooth, large, about as long as wide, its posterior margin wider than anterior margin; ocelli in an obtuse triangle, much closer to vertexal suture and occipital foramen than to transverse trabecula, with a pair of moderately long, thin setae anterior to each ocellus. Supraorbital trabecula very long; several moderately long, fine setae in between it and inner eye margin as well as on large, triangular space between preorbital trabecula and eye margin. Face with uneven, wrinkled sculpture, face medially in same plane with vertex, forming a large rostrum or beak, and strongly projecting forward beyond level of toruli; remainder of face at a substantial angle to vertex, with toruli at anterior margin of head. Mandible directed down, perpendicular to body axis; narrow and long, slightly longer than head height, its complex shape and structure, such as presence of a variety of teeth, are best seen in combination of anterior (Fig. 13), posterior, and lateral (as in fig.15) views.

Antenna (Fig. 14) densely setose (setae on clava very short), much shorter than body. Radicle narrow and smooth, distinct from the rest of scape; scape with light reticulate sculpture, about 3 x as long as wide; pedicel longer than F1; all funicle segments short and transverse, F1 without longitudinal sensilla, F2-F6 each with 2 longitudinal sensilla; clava 2.5-2.6 x as long as wide, with 6 visible longitudinal sensilla.

Mesosoma. Pronotum smooth, 1.2-1.3 x as long as wide, entire, dorsally with 3 rows of setae in anterior half and another row of setae along posterior margin; prosternum and propleuron with reticulate sculpture, propleura large, broadly jointed medially. Mesoscutum faintly sculptured, much wider than long (2.4:1), with a pair of strong adnotaular setae and a strong seta at posterolateral angle. Axilla lightly sculptured, with one strong seta. Scutellum faintly sculptured, wider than long, almost as long as mesoscutum, undivided (but superficially appearing as incompletely divided) into anterior and posterior parts, with a transverse row of large foveae medially; scutellar placoid sensilla close to anterior margin and at about the same distance from lateral margins of scutellum as from each other. Metanotum band-like; dorsellum strongly reticulate. Propodeum transverse, about as long as mesoscutum; with strong reticulate sculpture medially but less conspicuously

sculptured laterally. Propodeal setae (1 pair) weak; propodeal spiracle small and close to anterior margin. Mesophragma broadly V-shaped, almost reaching posterior margin of propodeum.

Wings. Forewing about 3.7 x as long as wide; venation (as in fig. 17) typical of the genus, also very similar to that of Anagroidea; hypochaeta not reaching posterior margin, stigmal vein with 4 placoid sensilla at apex; membrane infuscated throughout; blade bare behind venation (except for a row of setae behind marginal vein and a few scattered microtrichia) and with a small bare spot beyond stigmal vein anteriorly; apical half of blade densely setose; longest marginal cilia about 1/4 of greatest width of wing. Hind wing broad, 7.8-8.2 x as long as wide; with base (both submarginal vein and membrane behind it) "striped" by alternating hyaline and infuscated areas (as in fig. 18, this feature appears to be characteristic of the whole genus); rest of the blade slightly infuscated, similar to forewing; blade densely, more or less uniformly, setose beyond venation, with about 10 or 11 irregular rows of microtrichia in the broadest part. Longest marginal cilia shorter than maximum width of wing (about 3/4).

Legs. Coxae with reticulate sculpture, metacoxa most coarsely sculptured; protibial spur comb-like.

Metasoma. Petiole (as in fig. 19) distinct, about as long as wide, with spine-line projections anteriolaterally, and with coarse cellulate sculpture dorsally. Gaster shorter than mesosoma; first gastral tergum and first gastral sternum with prominent and numerous sclerotized ridges and carinae; ovipositor very short, almost perpendicular to body axis, not exerted beyond its apex; cercal plates with very long bristles.

Measurements (n=2): Body: 1189 (1139-1238); head: (256-321)/ (196-255); mesosoma: 478 (473-482); pronotum: 204/164; gaster: 433 (410-455); ovipositor: 163 (162-164). Antenna: radicle: 60 (59-61); scape (excluding radicle): 141 (141-141); pedicel: 58 (57-58); F1: 24 (23-24); F2: 26 (26-26); F3: 22 (21-22); F4: 21 (21-21); F5: 21 (21-21); F6: 24 (23-24); clava: 164 (164-164). Forewing: 732-(810-855)/222 (218-227); longest marginal cilia: 56 (52-59). Hind wing: 785 (751-819)/98 (91-105); longest marginal cilia: 76 (71-82). Legs (given as femur, tibia, tarsus): fore: 186 (182-190), 140 (139-141), 152 (150-153); middle: 159 (157-161), 183 (183-183), 176 (175-176); hind: 221 (219-223), 260 (256-263), 213 (207-219).

MALE. Similar to female except for normal sexually dimorphic characters and the following. Gaster relatively lighter than head and mesosoma than in female. Mandible (Fig. 15) similar to that of female. Antenna (Fig. 16) slightly shorter than body, with scape lightly sculptured, about 3.3 x as long as wide; pedicel and basal flagellomeres subequal in length, distal flagellomeres slightly longer; all flagellomeres longer than wide, each with several longitudinal sensilla. Pronotum with fewer setae, and dorsellum more weakly sculptured medially than in female. Forewing (Fig. 17) relatively wider than in female, 3.4-3.5 x as long as wide; longest marginal cilia about 1/4 of maximum wing width. Hind wing (Fig. 18)

8.2-8.3 x as long as wide; longest marginal cilia shorter than maximum wing width (ratio 0.7:1). Petiole as in fig. 19. Gaster about as long as mesosoma. Genitalia (Fig. 20) simple, very similar in shape and structure to those of *A. marina* sp. n. (Fig. 12), thus providing us with yet another indication that *Eubroncus* and *Anagroidea* are indeed very closely related.

Measurements (n=2): Body: 1173 (1090-1255). Antenna (n=1): radicle: 54; scape (excluding radicle): 141; pedicel: 56; F1: 56; F2: 57; F3: 56; F4: 57; F5: 59; F6: 61; F7: 63; F8: 66; F9: 71; F10: 72; F11: 80. Forewing: 926 (883-969)/268 (255-282). Hind wing: 864 (819-910)/104 (97-111). Genitalia: 146 (139-153).

DIAGNOSIS. Males of *E. prodigiosus* can be distinguished from those of *E. orientalis*, the only other described species in the genus, by the characters given in the key. The above key might work also for the females of these two taxa; however, occurrence and degree of sexual dimorphism of those characters among the species of *Eubroncus* (other than *E. prodigiosus*) are unknown.

DISTRIBUTION. Russia: southern Primorskii krai.

COMMENTS. All but one specimens of *E. prodigiosus* from Gornotayozhnoye were collected in yellow pan traps, that indicates that its females may search for host eggs in leaf litter at the ground. If so, flight intercept traps may also be an efficient tool for collecting this species and perhaps other members of *Eubroncus*.

2. *Eubroncus orientalis* Yoshimoto, Kozlov et Trjapitzin, 1972

Eubroncus orientalis Yoshimoto, Kozlov et Trjapitzin, 1972: 880 (holotype - ♂ (on point), paratype - ♂ (on slide), University of Malaya Field Station, 16 km E of Gombak, 03°19'30"N, 101°45'12"E, Selangor, Malaysia [CNCI], both examined).

FEMALE. Unknown.

DIAGNOSIS. See the key above. This species belongs to an undefined group of several undescribed species from the Oriental and Australasian regions.

DISTRIBUTION. Known only from the type locality.

COMMENTS. Because the female of *E. orientalis* is unknown, associating one with the male types and a detailed redescription of this species based on such a female would be the two most important steps towards its recognition.

The scape, pedicel, and mesosoma of the holotype male are light brown; head, flagellum and metasoma are dark brown. The hind wing is not as in the illustration accompanying the original description (Yoshimoto et al., 1972, fig. 5) but has the longest marginal cilia (on the posterior margin) about as long as the maximum hind wing width, and with the blade beginning at the wing base.

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SHORT COMMUNICATION

S. Yu. Storozhenko¹⁾ & J. K. Park²⁾. A NEW GENUS OF THE ICE CRAWLERS (GRYLLOBLATTIDA: GRYLLOBLATTIDAE) FROM KOREA. – Far Eastern Entomologist. 2002. N 114: 18-20.

С. Ю. Стороженко, Ё. К. Пак. Новый род гриллоблаттид (*Grylloblattida: Grylloblattidae*) из Кореи. // Дальневосточный энтомолог. 2002. N 114. С. 18-20.

Galloisiana biryongensis Namkung, 1974 has been described by adult male and female exuvia from limestone cave “Biryong dong-gul” in Gangwon Province of Korea [1]. The adult female of this species is found recently. Until now the taxonomic position of *G. biryongensis* was uncertain. Firstly placed in the genus *Galloisiana* [1, 2] it was transferred to the genus *Grylloblattella* [3], but later return to *Galloisiana* [4, 5]. The re-examination of morphological characters of both male and female show that this species is separated from all known genera of the family Grylloblattidae. Therefore a new genus is described below.

Namkungia Storozhenko et Park, gen. n.

Type species – *Galloisiana biryongensis* Namkung, 1974.

DESCRIPTION. Body largest for family. Lacinia with two teeth. Posterior margin of pronotum broadly rounded. Cervical sclerite with 9-10 spine-like setae (macrotrichiae) on external margin; internal margin without setae. Pulvilli on the tarsal segments relatively long. Supra-anal plate of male symmetrical, with broad truncate median projection on posterior margin. Cerci 12-segmented (including weakly separated 1st and 2nd segments).

ETYMOLOGY. New genus is dedicated to Dr. J. Namkung (Seoul, Korea).

COMPARISION. A key to the all genera of family Grylloblattidae is given below.

1(4) Posterior margin of pronotum with short median projection and two poorly sclerotized zones (rest of paranotum).

2(3) Lacinia with one tooth. Tarsal pulvilli short. Male supra-anal plate asymmetrical, posterior margin without projection. Cerci 8-9-segmented. *Grylloblatta* Walker, 1914

3(2) Lacinia with two teeth. Pulvilli on the tarsal segments long. Supra-anal plate of male symmetrical, posterior margin with short triangular median projection. Cerci 9-10-segmented. *Grylloblattina* Bey-Bienko, 1951

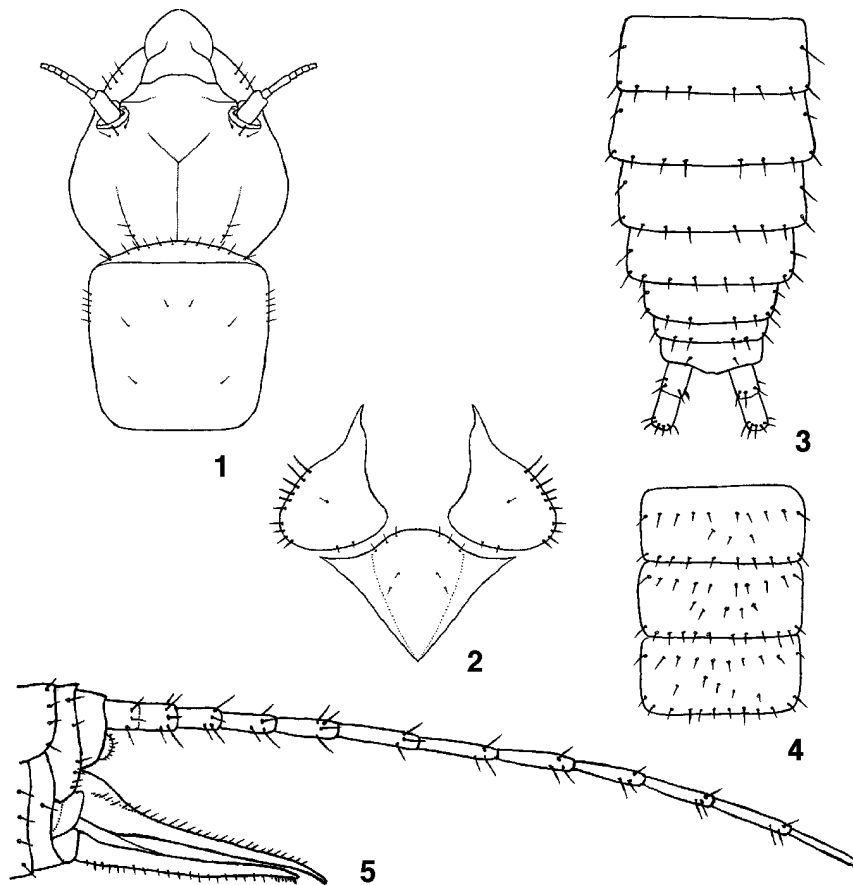
4(1) Posterior margin of pronotum straight, incurved or broadly rounded, without rest of paranotum. – Male supra-anal plate symmetrical.

5(6) Cervical sclerite with 2-3 macrotrichiae on internal margin. Pulvilli on the tarsal segments very short. Median projection on posterior margin of male supra-anal plate very short. *Grylloblattella* Storozhenko, 1988

6(5) Cervical sclerite without macrotrichiae on internal margin. Pulvilli on the tarsal segments long or short. Male supra-anal plate with long median projection.

6(7) Cervical sclerite with 4-8 macrotrichiae on external margin. Male supra-anal plate with acutely pointed or weakly asymmetrical median projection. Cerci 7-10-segmented. *Galloisiana* Caudell, 1924

7(6) Cervical sclerite with 9-10 macrotrichiae on external margin. Male supra-anal plate with truncate median projection. Cerci 12-segmented. *Namkungia* gen. n.



Figs 1-5. *Namkungia biryongensis*, female. 1) head and pronotum, dorsal view; 2) cervical sclerites and basisternum, ventral view; 3) IV-X tergites, dorsal view; 4) IV-VI sternites, ventral view; 5) apex of abdomen, lateral view.

***Namkungia biryongensis* (Namkung, 1974), comb. n.**

Figs 1-5

Galloisiana biryongensis Namkung, 1974: 1-7, figs 1-16 (holotype - ♂, Korea: Gangwon-do, Jeongseon-gun, Jeongseon-myeon, Yongtanri, Biryong dong, limestone cave "Biryong dong-gul"; in J. Namkung collection, Seoul); Namkung, 1982: 34-38, figs. 2, 3; Storozhenko, 1995: 19; 1998: 186.

Grylloblattella biryongensis: Storozhenko, 1988: 173.

MATERIAL. Korea: Gangwon-do, Pyeongchang-gun, Baekryeong-dong-gul Cave, 1997, 1 ♀ (M. K. Chung).

DESCRIPTION. Female (hitherto unknown). Slightly larger than male. Body above covered with numerous short hairs. Head distinctly broader than pronotum. Eyes reduced. Parietal and clypeal sutures well distinguished. Epistomal suture disappeared near the middle. Antennae with 37-38 segments; 3rd segment 2.85 times longer than 2nd. Pronotum slightly longer than its width at anterior margin, with broadly rounded posterior margin. Mesonotum and metanotum as in male. Basisternum triangular, with less sclerotized lateral parts. Legs long; femur ratios (length divided by width) as follows: fore femur 2.9 times, hind femur 5.6 times; tarsal pulvilli relatively long. Hind margin of I tergite with 4 (2+2), II-IX tergites with 6 (3+3) setae; anterolateral part of II-VIII tergites with 1+1 setae. Sternites with 2 regular rows of setae and 3-5 irregularly placed between them setae. Ovipositor reaching 6th segment of cerci. Body brown, head and pronotum dark brown, legs, ventral surface of abdomen and cerci light brown, ovipositor brown.

MEASUREMENTS. Length: body 34.9 mm; pronotum 6.6 mm; fore femur 6.4 mm; hind femur 7.8 mm; cerci 18.43 mm; ovipositor 5.9 mm. Width: head 7.2 mm; pronotum (near anterior margin) 6.2 mm.

DISTRIBUTION. Korea: Gangwon Province.

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