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Revision of *Agraptocoris* Reuter (Heteroptera: Miridae: Phylinae), with description of five new species and a review of aedeagal terminology

Fedor V. Konstantinov

Department of Entomology, Faculty of Biology, St. Petersburg State University, Universitetskaya nab 7/9, St. Petersburg 199034, Russia [f.konstantinov@spbu.ru] — Zoological Institute, Russian Academy of Sciences, Universitetskaya nab. 1, St. Petersburg 199034, Russia

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Abstract. The predominantly Central Asian genus *Agraptocoris* Reuter is revised. Eight valid species are recognized, five of those being described as new to science, namely *A. eugeniae*, *A. nigrisetosus*, *A. pallescens*, *A. subconcolor* (all Mongolia), and *A. pamiricus* (Tajikistan and Kyrgyzstan). A phylogenetic analysis based on 37 morphological characters is presented for all *Agraptocoris* species and 13 outgroup taxa. This analysis establishes *Agraptocoris* as monophyletic and rendered the subtribes Phylina and Oncotylina as non-monophyletic. The differential diagnosis for the genus and a key to all species are given. Habitus photographs, illustrations of male genitalic structures, scanning micrographs of morphological structures, host and distributional information are provided for all species. Homologies and terminology of the aedeagal structures in the subfamily Phylinae are discussed.

Key words. Taxonomy, phylogeny, hosts, male genitalia, distribution, key.

1. Introduction

The genus *Agraptocoris* Reuter, 1903 belongs to the subfamily Phylinae of the family Miridae. With more than 11000 described species, this family belongs to the top 20 most diverse families of insects (Cassis & Schuh 2012). The majority of plant bugs are herbivorous and often closely associated with particular host plants (Wheeler 2001). Phylinae, being the second largest subfamily of plant bugs, remains a taxonomically challenging group with many genera lacking adequate diagnoses. The subfamily is especially species-rich in the Mediterranean ecosystems, steppes, shrublands, and deserts. In the Palearctic Region phylines are represented by more than 1300 described species (Kerzhner & Josifov 1999) and many more remain undescribed.

Menard et al. (2014) provided a total-evidence phylogenetic analysis of the Phylinae based on 164 terminal taxa representing all tentative lineages of the world fauna. The resulting phylogeny allowed the authors to propose a revised suprageneric classification of the subfamily (Schuh & Menard 2013). Although the novel classification has significantly expanded our understanding of phylines and undoubtedly will have a huge impact on future studies, available data are insufficient to reveal the placement of many genera not included in the initial analysis. This is the case of *Agraptocoris*, which remained within the nominative subtribe Phylina "for lack of information that would allow us to comment further on its subtribal placement" (Schuh & Menard 2013).

Agraptocoris was originally erected by Reuter (1903) to accommodate the single species *Agraptocoris concolor* described in the same paper from Mongolia. The genus remained monotypic for almost a century until Vinokurov (in Vinokurov & Kanyukova 1995a) described *A. oncotyloides* from Russian Altai and Mongolia.

Kerzhner (1997) compared the original description and figures of the monotypic genus *Tibetocoris* Hutchinson, 1934 described from Tibet with specimens of *Agraptocoris* and synonymized the former genus with the latter. Thus, *Agraptocoris* currently comprises three species known from Mongolia, Tibet, and single locality in Altai (Russia).

The examination of extensive and previously unsorted plant bug specimens from numerous surveys in Mongolia between the 1960s and 1970s held in the Zoological Institute, Russian Academy of Sciences, yielded five new species. This paper provides a revision of *Agraptocoris* and summarizes new data on morphology, distribution and host associations for all species. The key is designed to be used for male specimens, although it will work for females of most species. Species treatments are presented in alphabetical order.

In order to test the monophyly of the genus and to evaluate host and biogeographical patterns, a phylogenetic analysis for *Agraptocoris* is performed. Thirty-seven morphological characters were coded for eight *Agraptocoris* species and 13 outgroup taxa.

2. Material and methods

2.1. Specimens and collections

Slightly more than 2000 specimens were examined for this study. This material is mainly retained at **ZISP** – Zoological Institute, Russian Academy of Sciences, St. Petersburg, with some specimens borrowed from the following collections: **AMNH** – American Museum of Natural History, New York (R.T. Schuh and R. Salas); **BMNH** – Natural History Museum, London (M. Webb); **NMPC** – National Museum of Natural History, Prague (P. Kment); **YPM** – Yale Peabody Museum of Natural History, New Haven (R.J. Pupedis); **ZMUH** – Zoological Museum, University of Hamburg (F. Wieland, M. Husemann). Holotypes of all species described in this paper are kept at the Zoological Institute RAS in St. Petersburg (**ZISP**).

Bar code labels, which uniquely identify each specimen, were attached to all examined specimens, listed in the "Material examined" sections, and are referred to as unique specimen identifiers (USIs). Generally each USI label corresponds to a single specimen; however, some USI labels correspond to two or three specimens in cases when several specimens are mounted on one pin. Further information such as additional photographs of habitus and genitalic structures, georeferenced coordinates of each locality, specimens dissected, notes, and collecting method can be obtained from the Heteroptera Species Pages (http://research.amnh.org/pbi/heteropteraspeciespage), which assembles available data from the Arthropod Easy Capture Specimen Database (formerly the Plant bug Planetary Biodiversity Inventory (http://research.amnh.org/pbi/databases/locality_database.html). Refer to Supplement File 2 for USI numbers of illustrated specimens. The original locality data is given in square brackets if it differs from currently existing toponyms (see specimens examined).

2.2. Microscopy and illustrations

Observations, measurements, and digital dorsal color images were made with a Nikon SMZ 1500 stereomicroscope equipped with Nikon D700 digital SLR camera. Partially focused images of each specimen or structure were stacked using the Helicon Focus 5.3.14 software. Images of the male genitalic structures were taken with a Keyence VHX – 500F digital microscope (University of Hamburg). Illustrated structures were macerated in potassium hydroxide, cleared in distilled water and then transferred to glycerin jelly for proper orientation. Drawings were made with a Leica DM 2500 microscope equipped with a camera Lucida. Scanning electron micrographs of selected structures were taken using a Quanta 250 and Hitachi TM3000 scanning microscopes. The distributional maps were made using SimpleMappr online software (Shorthouse 2010).

Unless otherwise stated, all measurements are in millimeters. Measurements shown in Table 1 include body length, clypeus to apex of cuneus length, width of head, interocular distance, length of antennomeres I and II, and pronotum median length and posterior width.

2.3. Terminology

The terminology used in this paper for the thoracic pleura and pretarsal structures is illustrated in Namyatova et al. (2016: figs. 11 – 21). The terminology used for genitalia follows Schwartz (2011) for females and Konstantinov (2003) for males. Refer to the section 3.5. for additional discussion of the terminology of male aedeagus. The names of host plants are given according to the International Plant Names Index website (http://www.ipni.org) and Czerepanov (1995).

2.4. Phylogenetic methods

2.4.1. Taxa. The main objectives of the phylogenetic analysis were to test the monophyly of the revised genus and to assess its placement within the tribe Phylini. Schuh & Menard (2013) proposed a novel classification of the entire subfamily based on the comprehensive total-evidence analysis (Menard et al. 2014). Their analysis allowed for recognition of two sister subtribes Oncotylina and Phylina, although both clades were weakly supported on the resulting tree. The taxonomic placement of many genera not included in the initial analysis is further hampered by the lack of morphological support for both subtribes. As the genus *Agraptocoris* possesses many features shared by genera currently assigned to Oncotylina, a fairly large sample of both subtribes was included into analysis. Overall, 13 non-*Agraptocoris* species were added for adequate representation of the morphological diversity and the tree was rooted with *Camptotylus reuteri* Jakovlev, 1881 (Exaeretini).

2.4.2. Software and searching strategies. A matrix containing 37 characters (section 2.5.) coded for 21 taxa was prepared using Mesquite, version 3.04 (Maddison & Maddison 2018). The data were analyzed in PAUP 4.0 (Swofford 2000) and TNT (Goloboff et al. 2000) with all characters treated as unordered and equally weighted. Due to the limited number of terminal taxa, implicit enumeration (equivalent of branch-and-bound of PAUP) search strategy was possible with this study. Successive approximation weighting (Farris 1969; Carpenter 1988) was completed in PAUP 4.0 using rescaled consistency index and implied weighting (Goloboff 1993) using a wide range of weighting strengths (concavity constants) from K = 3 to 100 was performed in TNT. All characters were treated as unordered. Character-state optimization and editing of the resulting trees was performed by Winclada version 1.00.08 (Nixon 2002). The reliability of each branch was assessed using the Bremer support or decay index (Bremer 1994). Bremer support values were obtained in TNT from suboptimal trees up to 10 extra steps and shown on the strict consensus tree (Fig. 1).

2.5. Characters

1 Antennomere I, length: **(0)** shorter than or subequal to width of vertex (Figs. 3, 4, 8); **(1)** at least twice as long as width of vertex (Konstantinov 2008c: figs. 1–4).

2 Post-ocular region of head: **(0)** not pronounced, eyes encompass lateral sides of head (Fig. 8); **(1)** prominent, eyes remote from anterior margin of pronotum (Konstantinov 2008c: figs. 1–4).

3 Woolly silvery setae on pronotum, scutellum and forewing: **(0)** absent (Konstantinov 2008c: figs. 1–4); **(1)** present (Fig. 8).

4 Dark simple setae on pronotum: **(0)** absent (Fig. 8A,G–I); **(1)** present (Fig. 8C–E).

5 Dark simple setae on hemelytron: **(0)** absent (Fig. 4D); **(1)** present everywhere (Figs. 3C–E,G,H, 4A–C); **(2)** present on apical 2/3 of hemelytron (Figs. 3A,F, 4F,H).

6 Spinelike setae on antennomere I: **(0)** one ventral and two mesial (Fig. 8A,D,G,I); **(1)** one ventral and three mesial (Fig. 8E,F); **(2)** one ventral and four mesial (Fig. 8B,H); **(3)** numerous (Konstantinov 2008c: figs. 1–4).

7 Subapical spines on hind femur: **(0)** absent; **(1)** present (Konstantinov 2008a: fig. 50).

8 Lamellae on unguitractor: **(0)** broadly rounded, arranged in three widely spaced columns (Figs. 5C,H,L, 6H); **(1)** with almost straight margins, arranged in three adjacent columns (Fig. 6B,C,J); **(2)** straight in lateral columns and reduced, broadly rounded in central column (Fig. 5A).

9 Lamellae of central column of ribs on unguitractor: **(0)** smooth (Figs. 5C,E,H, 6H,J); **(1)** finely dentate (Fig. 5A).

10 Membrane between base of claw and unguitractor: **(0)** smooth (Figs. 5C,D, 6E,F); **(1)** finely dentate (Figs. 5A,B,G,I, 6A,G,K,L).

11 Claw setae: **(0)** absent (Fig. 6A,D,F); **(1)** present (Fig. 5A,D,F).

12 Claw shape: **(0)** long, distinctly bent at midpoint (Figs. 5D, 6F,G,I); **(1)** long and slender, straight, gradually curving close to apex (Figs. 5F,G,I,K, 6A,B,D,K,L); **(2)** short, with broad base, strongly bent close to apex (Fig. 5B).

13 Pulvilli size: **(0)** thin, reaching or barely surpassing half-length of claw (Figs. 5D,G,I–L, 6A–F,I–L); **(1)** wide, flaplike, distinctly surpassing half-length of claw (Figs. 5A,B, 6G); **(2)** absent (Fig. 5E,F).

14 Pulvilli apex: **(0)** attached to claw along entire length (Figs. 5D,G,K, 6G); **(1)** apically free (Figs. 5A,B,I,J, 6A–F,K,L). — Character not applicable to *Camptotylus reuteri* Jakovlev, 1881 showing state (2) in character 13.

15 Microsculpture anterior of metathoracic spiracle: **(0)** absent (Fig. 7F); **(1)** well developed along entire length (Fig. 7D,E,H,J,K,L); **(2)** only dorsally present (Fig7G,I). — In many taxa of Miridae the spiracle is entirely or partly bordered by characteristic evaporative or mushroom bodies similar to those on the evaporative area of metathoracic scent-efferent system (see Konstantinov & Knyshov 2015; Namyatova et al. 2016).

16 Microsculpture posterior of metathoracic spiracle: **(0)** absent (Fig. 7F,H,L); **(1)** present (Fig. 7D,E,G,I–K).

17 Peritreme shape: **(0)** distinctly protruding above evaporative area and broadly rounded (Fig. 7D,E,H,K,L); **(1)** flat, not protruding above evaporative area, tongue-shaped (Fig. 7F,G,I,J).

18 Head, coloration: **(0)** uniformly whitish yellow (Fig. 8A,D,G–I); **(1)** pale yellow with dark markings on frons and vertex (Fig. 8C,E,F); **(2)** uniformly dark brown.

19 Pronotum, coloration: **(0)** uniformly pale yellow, without dark pattern (Fig. 8A–D,G–I); **(1)** pale yellow with pale brown spots (Figs. 3F, 8E; Konstantinov & Vinokurov 2011: figs. 1, 2).

20 Hemelytron, coloration, male: **(0)** pale yellow, without dark pattern or with a few pale brown spots (Figs. 3A, 4D,H); **(1)** pale yellow, with regularly distributed brown minute spots (Figs. 3C–F, 4A–C,F); **(2)** uniformly dark brown.

21 Claval commissure, coloration, male: **(0)** uniformly pale (Figs. 3C,D,F, 4D,F,H); **(1)** darkened (Figs. 3A, 4A,B; Konstantinov & Vinokurov 2011: figs. 1, 2).

22 Rows of minute spinules on hind tibia: **(0)** present along entire length (as in Namyatova et al. 2016: fig. 18B,D); **(1)** absent or barely expressed close to extreme apex.

23 Tibial spines, color: **(0)** pale whitish to pale brown (Konstantinov 2008d: figs. 5–8); **(1)** black (Figs. 3, 4).

24 Development of hemelytron, female: **(0)** macropterous (Konstantinov 2008a: fig. 43; Konstantinov 2008d: figs. 7, 8; Konstantinov & Vinokurov 2011:

fig. 2); **(1)** submacropterous (Konstantinov 2008c: fig. 6); **(2)** brachypterous (Figs. 3B,E,H, 4C,E,G,I; Konstantinov 2008c: figs. 2, 4). — Wing modifications are given according to Schuh & Slater (1995).

25 Length of hemelytron in brachypterous females: **(0)** apex of hemelytron barely reaching abdominal tergite III (Konstantinov 2008c: figs. 2, 4); **(1)** apex of hemelytron reaching abdominal tergite V or at most VI (Figs. 3B,H, 4E,I); **(2)** apex of hemelytron always reaching, usually surpassing abdominal tergite VII (Figs. 3E, 4C,G). — Character not applicable to species showing states (0) and (1) in character 24.

26 Hind femur length and thickness, female: **(0)** distinctly longer but only slightly thicker than middle femur (Konstantinov 2008c: figs. 2, 4, 6; Konstantinov 2008d: figs. 6, 8; Konstantinov & Vinokurov 2011: fig. 2); **(1)** swollen, slightly longer than and at least twice as thick as middle femur (Figs. 3, 4; Konstantinov 2008a: fig. 43).

27 Ventral keel of genital capsule: **(0)** absent; **(1)** present.

28 Vesica, shape: **(0)** S-shaped, more or less smoothly curved along entire length (Figs. 9A–C, 10A,C; Konstantinov 2008c: figs. 7–10; Konstantinov 2008d: fig. 27; Konstantinov & Vinokurov 2011: fig. 8); **(1)** strongly bent distal to secondary gonopore, so that apical blade located at almost right angle to body of vesica (Figs. 10F, 11A,B); **(2)** C-shaped (Konstantinov 2008c: fig. 18).

29 Sclerites around secondary gonopore: **(0)** absent, secondary gonopore surrounded by membrane (Figs. 10C–F; Konstantinov 2008d: figs. 27, 28; Konstantinov & Vinokurov 2011: fig. 8); **(1)** present, secondary gonopore partly or entirely bordered by sclerotized straps (Figs. 9, 10A,B, 11A–D; Konstantinov 2008a: fig. 2; Konstantinov 2008c: figs. 7–10, 18).

30 Number of apical blades of vesica: **(0)** 1 (Figs. 9–11; Konstantinov & Vinokurov 2011: fig. 8); **(1)** 2 (Konstantinov 2008a: fig. 2; Konstantinov 2008c: figs. 7–10; Konstantinov 2008d: figs. 27, 28); **(2)** absent (Konstantinov 2008c: fig. 18).

31 Secondary gonopore, location: **(0)** at extreme apex of vesica (Konstantinov 2008c: fig. 18); **(1)** located subapically (Figs. 10A–D); **(2)** remote from apex at a distance of at least 1/3 of total vesica length (Figs. 9, 10E,F, 11; Konstantinov 2008a: fig. 2; Konstantinov 2008c: figs. 7–10; Konstantinov 2008d: figs. 27, 28; Konstantinov & Vinokurov 2011: fig. 8).

32 Outgrowth of vesica distal to secondary gonopore: **(0)** absent (Figs. 9, 10; Konstantinov 2008a: fig. 2; Konstantinov 2008c: figs. 7–10, 18; Konstantinov 2008d: figs. 27, 28; Konstantinov & Vinokurov 2011: fig. 8); **(1)** present (Fig. 11).

33 Anterior margin of dorsal labiate plate: **(0)** straight, weakly sclerotized (Konstantinov 2008c: figs. 12, 13; Konstantinov 2008d: fig. 33); **(1)** slightly upturned, folded, sclerotized (Fig. 13J).

34 Sclerotized rings of dorsal labiate plate, shape: **(0)** broadly oval (Konstantinov 2008c: figs. 11–13; Konstantinov 2008d: fig. 33); **(1)** oval, distinctly elongate (Fig. 13K); **(2)** triangular.

35 Vestibulum: **(0)** short and straight, symmetrical, without sclerotized parts; **(1)** short, C-shaped, with sclerotized dorsal wall (Fig. 13J); **(2)** long, S-shaped, distinctly sclerotized (Konstantinov 2008c: fig. 15; Konstantinov 2008d: figs. 32, 37) — Vestibulum modifications are coded according to the character states given by Pluot-Sigwalt & Matocq (2006).

36 Lateral interramal sclerites: **(0)** absent; **(1)** present at sides of ventral wall, blade-shaped (Fig. 13L).

37 Gonapophysis 9, shape of apex: **(0)** sabre-shaped, gradually tapering; **(1)** arrow-shaped, strongly expanded ventrally near apex (Fig. 13M).

3. Results and discussion

3.1. Phylogenetic analyses

The analysis both in PAUP and TNT resulted in three most parsimonious trees of 112 steps with Ci = 0.47 and Ri = 0.60, the strict consensus of which is shown on Fig. 1A. The successive approximation weighting performed in PAUP gave the single tree identical to one of the trees recovered from the equal weight analysis. The same tree topology was obtained under implied weighting in TNT with the integers of concavity factor ranging from 6 to 100 and is used in the following discussion (Fig. 1B). The resulting topologies received under concavity constant K = 1–5 differ from each other and from trees obtained under equal weights in the position of the outgroup taxa due to extreme down-weighting of homoplastic characters (Goloboff et al. 2008, 2017; Penz et al. 2013) and not discussed further.

Character data are plotted on the tree (Fig. 1B) using fast optimization (ACCTRAN). Filled squares represent non-homoplastic characters appearing only once on the tree, homoplastic characters are shown as open squares. Nodes of the major clades are numbered from 1 to 9. The main character numbers and character states supporting these nodes are indicated below.

Node 1 is supported by two synapomorphies, the prominent post-ocular region of the head (2-1) and the finely dentate lamellae of central column of ribs on the unguitractor (9-1). It is also supported by three homoplasious characters: lamellae of unguitractor with straight margins, arranged in three columns (8-1), apically free pulvilli (14-1), and presence of microsculpture posterior to the opening of metathoracic spiracle (16-1). This clade comprises the genera *Acrotelus* Reuter, 1885, *Eurycolpus* Reuter, 1875, *Omocoris* Lindberg, 1930, and *Oncotylus* Fieber, 1858, which form the backbone of the *Oncotylus*-group of genera established by Wagner (1975).

Node 2 strongly supports the monophyly of the genus *Omocoris* by two uncontradicted synapomorphies: long antennomere I (1-1) and presence of numerous spinelike setae on this segment (6-3). Homoplastic characters sup-

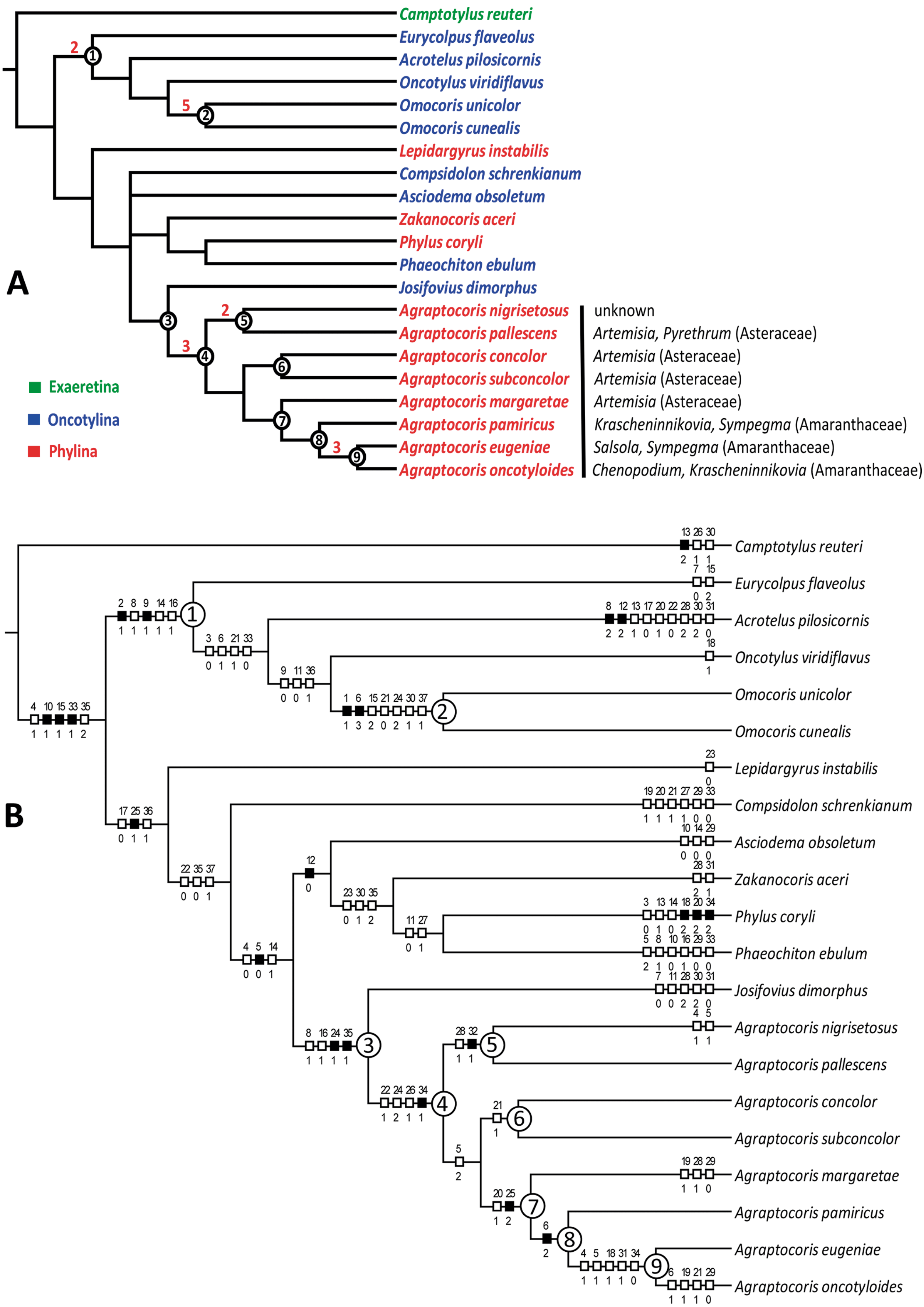

Fig. 1. Maximum parsimony trees of *Agraptocoris* and outgroup taxa. **A**: Strict consensus tree showing subtribes of Phylinae sensu Schuh & Menard (2013). Numbers above nodes indicate Bremer values. Host plants indicated on right side. **B**: One out of three most parsimonious trees identical to the tree obtained under successive approximation and implied weighting (K = 6 through 100). Characters are plotted showing fast optimization. Nodes 1–9 are discussed in the text.

porting this clade include dorsally located microsculpture of metathoracic spiracle (15-2), pale claval commissure in males (21-0), brachyptery in females (24-2), presence of two apical blades of vesica (30-1), and arrow-shaped gonapophysis 9 of ovipositor (37-1). Strong brachyptery in females is a rare feature across phyline genera. Species of *Omocoris* were added into analysis for careful assessment of the monophyly of *Agraptocoris* also possessing brachypterous females in all species.

Node 3 represents the clade of *Josifovius* Konstantinov, 2008 + *Agraptocoris* and is corroborated by four character changes including submacropterous females (24-1, changed to brachypterous in *Agraptocoris*) and characteristically straight and almost symmetrical, slightly bent rightwards vestibulum of female genitalia (35-1).

Node 4 supports the monophyly of *Agraptocoris* which is defined by a single synapomorphy: oval shape of sclerotized rings (34-1, reversed in *A. eugeniae* + *A. oncotyloides*). The clade is further supported by three homoplasies, including the absence of rows of minute spinules on hind tibia (22-1), brachypterous females (24-2), and distinctly swollen hind femur in females (26-1).

Node 5 comprises *Agraptocoris nigrisetosus* + *A. pallescens* and is united by one uncontradicted synapomorphy, namely the presence of flattened outgrowth of vesica distal to secondary gonopore (32-1). It is further supported by one homoplasious character, viz. vesica strongly bent distal to secondary gonopore (28-1).

Node 6, the sister-species relationship of *Agraptocoris concolor* + *A. subconcolor* is defined by one homoplasious character, darkened claval commissure (21-1).

Node 7 is supported by the presence of regularly distributed brown spots on hemelytron in males (20-1) and hemelytron of females always reaching abdominal tergite VII (25-2); the latter character appears to be unreversed synapomorphy (unknown in *A. margaretae*).

Node 8 is defined by one synapomorphy: presence of one ventral and four dorsomesial spinelike setae on antennomere I (6-2, reversed in *Agraptocoris oncotyloides*).

Node 9 comprises *Agraptocoris eugeniae* + *A. oncotyloides* and is defined by five homoplasious characters: presence of dark simple setae on pronotum (4-1) and on hemelytron (5-1), presence of dark color pattern on frons and vertex (18-1), subapically located secondary gonopore (31-1), and broadly oval sclerotized rings (34-0).

3.2. Phylogeny of *Agraptocoris*

Monophyly of *Agraptocoris* appears to be well supported in the present analysis and can be further corroborated by the additional characters discussed in the generic diagnosis. However, the phylogenetic position of *Agraptocoris* within the tribe Phylini remains uncertain. The resulting tree rendered subtribes Phylina and Oncotylina sensu Schuh & Menard (2013) as non-monophyletic (Fig. 1A). The *Oncotylus*-group of Wagner (1975) represented in this analysis by the genera *Acrotelus*, *Eurycolpus*, *Omocoris*, and *Oncotylus*, appeared as a sister group to all other taxa included in the analysis. These subtribes were weakly supported in the phylogenetic analysis of Menard et al. (2014) which formed a basis for the simultaneously prepared novel classification of the Phylinae (Schuh & Menard 2013). The subtribe Oncotylina lacked morphological synapomorphies and the monophyly of Phylina was supported by highly homoplastic characters, the labium reaching past the hind coxae and the calli not visible on the pronotum (Menard et al. 2014). Neither group was recovered as monophyletic in the subsequent molecular and total-evidence analyses with larger taxon sampling (Konstantinov et al. in prep.). Therefore a much broader phylogenetic analysis of the entire tribe Phylini is needed for the correct assignment of *Agraptocoris* and allied genera. This goes beyond the subject of this paper and will be dealt with elsewhere.

3.3. Distributional patterns

Distributions of all *Agraptocoris* spp. are summarized in Fig. 15. As currently known, six out of eight species are widely distributed across the desert steppe zone of Mongolia, spanning from Uvs and Hovd Aimaks in the West to East Govi and Suhbaatar Aimaks in the East. Two of those species, viz. *A. concolor* and *A. oncotyloides* extend slightly more westward into the Kosh-Agach area (Altai Rep., Russia) which is floristically similar to adjacent areas of NW Mongolia. Noteworthy, all three pairs of Mongolian sister species (*A. nigrisetosus* + *A. pallescens*, *A. concolor* + *A. subconcolor*, and *A. eugeniae* + *A. oncotyloides*) exhibit extensive range overlap and show no apparent differences in host preference (Fig. 1A) and phenology. *Agraptocoris margaretae* and *A. pamiricus* are the only two geographically isolated species of the genus known from high altitudes of the western Himalayas and Pamir Mountains, respectively (Fig. 15). However the vast intermediate regions of the Xinjiang Uyghur and Inner Mongolia provinces of China remain almost entirely unstudied and species of *Agraptocoris* might be detected there with more sampling effort.

3.4. Host plant associations

Mapping of hosts onto the tree (Fig. 1A) points to an ancestral association of *Agraptocoris* with *Artemisia* (Asteraceae). Most species of the genus with available host data are restricted to Asteraceae genera *Artemisia* and *Pyrethrum*, aside from *Agraptocoris pamiricus-eugeniae-oncotyloides* clade which is found on Chenopodioideae subfamily of Amaranthaceae. This evidently represents a host shift event between distantly related orders Asterales and Caryophyllales. All species of *Agraptocoris* are associated with multiple host species belonging to one or two plant genera. Monophagous *A. margaretae* is an exception, likely due to limited sampling in the field. The relatively low degree of host restrictedness is typical for most widespread phyline species with accurately documented host information (e.g., Schuh 2004; Schuh & Schwartz 2005; Schuh & Pedraza 2010; Schuh & Weirauch 2010).

Host patterns of the subfamily Phylinae in Mongolia show modest correlation with the diversity of vascular plants at the family level. The three largest families of the Mongolian flora, viz., Asteraceae (478 species), Fabaceae (356 species), and Poaceae (259 species) comprise 35% of plant species of the area (Urgamal et al. 2014). However these families harbor relatively few phyline species. Asteraceae serve as hosts to 9 species, namely *Camptotylidea flavida* (Nonnaizab & Yang, 1994) (Konstantinov 1999: *Artemisia* sp.), *Camptozorus lactucae* Kerzhner, 1996 (Kerzhner 1996: *Lactuca tatarica* L.), *Compsidolon pumilum* (Jakovlev, 1876) and *C. kerzhneri* (Konstantinov 2006: *Artemisia* spp.), and 5 species of *Agraptocoris* (*Artemisia* spp., *Pyrethrum*). Fabaceae are utilized by 7 species, viz. *Camptotylidea suturalis* (Reuter, 1903) (Konstantinov 1999: *Halimodendron*), *Dacota nigritarsis* (Jakovlev, 1882) (Kerzhner 1964: *Caragana*), all 3 species of *Phaeochiton* Kerzhner, 1964 (Konstantinov 2008d: *Caragana* spp.), *Salicarus fulvicornis* (Jakovlev, 1889) (Schwartz & Stonedahl 2004: *Caragana* sp.), and *Salicarus halimodendri* Putshkov, 1977 (Putshkov 1977: *Halimodendron*). No phyline species is known to be associated with Poaceae in Mongolia.

On the contrary, the largest number of phyline species is associated with Chenopodioideae, although only 3.3% of Mongolian plant species belong to this family. Eighty-five species of Phylinae are currently known from the region (Kerzhner & Josifov 1999; Konstantinov & Namyatova 2008). One fourth of these, or 21 species from the genera *Agraptocoris*, *Boopidocoris* Reuter, 1879 (Konstantinov & Namyatova 2008), *Camptotylidea* Wagner, 1957 (Konstantinov 1999), *Camptotylus* Fieber, 1860 (Konstantinov 2008a), *Monocris* Putshkov, 1974 (Konstantinov & Namyatova 2008), *Paralaemocoris* Linnavuori, 1964 (Kerzhner 1984), *Psallopsis* Reuter, 1901 (Konstantinov 1997), and *Solenoxyphus* Reuter, 1875 (Konstantinov 2008b) are strictly associated with Chenopodioideae.

These patterns generally correspond to the trends outlined by Cassis & Schuh (2012), who analyzed available host data for the entire family Miridae and its separate clades including phylines. In both cases Cassis & Schuh (2012) documented the greatest frequency of association with the rosid orders Fabales, Fagales, and Rosales, and the asteroid orders Asterales, Caryophyllales, and Lamiales.

3.5. Terminology of the aedeagus in Phylinae

Phylinae is a well-defined group primarily diagnosed by a set of synapomorphies related to male genitalia structure (Schuh 1974; Cassis & Schuh 2012; Menard et al. 2014). Particularly, the phyline aedeagus is modified in several unique ways as compared to other plant bug lineages.

In all Heteroptera, including Miridae, the aedeagus is located in the *genital chamber*, a membranous sac greatly expanded inside the strongly sclerotized abdominal segment IX usually referred to as the *genital capsule* or *pygophore*. Only the apex of the aedeagus can be observed externally when in repose (Fig. 2A). According to the general convention, the genital chamber is morphologically described as an expansion of the intersegmental membrane between 9th and 10th abdominal segments (Kullenberg 1947; Dupuis & Carvalho 1956; Dupuis 1970; Konstantinov 2003). However, Klass & Matushkina (2018) argued for the use of primary, embryonic segmental borders in establishing homologies of the male genitalia in adult insects and provided tentative evidence for assignment of the phallic organs to the 10th abdominal segment.

The base of the aedeagus is formed by the *phallobase*, a heavily sclerotized horseshoe-shaped sclerite anteriorly fixed in the genital capsule like a swing through *suspensory apodemes*. The distal part of the aedeagus beyond the phallobase is divided into a proximal part, the tube-shaped and sclerotized *phallotheca* and a distal part, the *endosoma* (Dupuis & Carvalho 1956; Dupuis 1970; Cobben 1978; Deckert 1990; Kerzhner & Konstantinov 1999). The efferent tube of the aedeagus is the ectodermal *ductus seminis* which opens to the exterior via the *secondary gonopore*. The aedeagus is moved backwards and forwards by a pair protractor and a pair of retractor muscles respectively, all attached to the phallobase.

In basal clades of plant bugs, e.g., Isometopinae (Namyatova & Cassis 2016b), most Cylapinae (Namyatova & Cassis 2016c; Namyatova et al. 2018), and many Bryocorinae (Konstantinov & Knyshov 2015; Namyatova et al. 2016; Namyatova & Cassis 2016a), the endosoma forms a membranous, sac-like inner tubule of the aedeagus invaginated into phallotheca in repose. In the erect position, this internal sac is everted from the phallotheca like a glove finger (Konstantinov 2003: fig. 11).

In Phylinae, the endosoma is strongly modified and further subdivided into a membranous eversible basal part and a strongly sclerotized, non-eversible and typically S-shaped distal part bearing the secondary gonopore. This distal component of the aedeagus is well familiar to plant bug taxonomists and serves as an important criterion for recognition of genera and species in the Phylinae. Singh-Pruthi (1925) coined the term *vesica* for the distal part of the endosoma in Heteroptera and for the next eighty years it was universally applied in the taxonomic literature on phylines (e.g., Wagner 1955, 1974, 1975; Kelton 1959; Linnavuori 1971; Schuh 1974; Schuh & Slater 1995; Schwartz & Stonedahl 2004).

The vesica frequently takes the form of a sclerotized gutter due to uneven sclerotization of its walls and may be additionally armed with a complex set of longitudinal sclerotized straps and apical blades. Cross sections of the vesica clearly reveal its tube-like structure and the

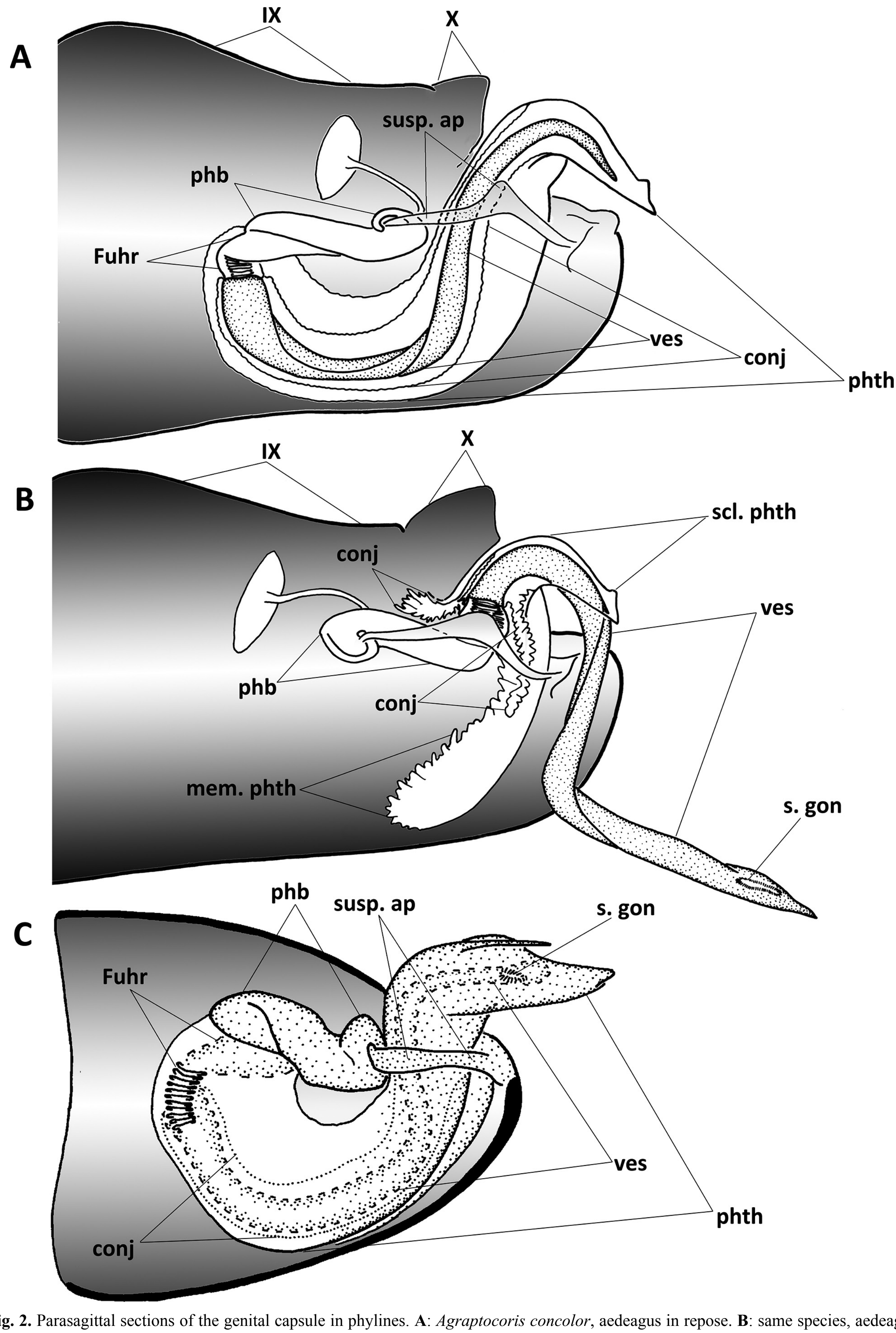

Fig. 2. Parasagittal sections of the genital capsule in phylines. **A**: *Agraptocoris concolor*, aedeagus in repose. **B**: same species, aedeagus erected. **C**: *Aspidacanthus myrmecoides* Reuter, 1901 (Hallodapini), aedeagus in repose; the genital chamber is partly not shown. — ***Abbreviations***: conj – conjunctiva; Fuhr – Führungsstück; mem. phth – membranous region of phallotheca; phb – phallobase; phth – phallotheca; scl. phth – sclerotized region of phallotheca; s. gon – secondary gonopore; susp. ap – suspensory apodeme; ves – vesica; IX – abdominal segment IX = genital capsule; X – abdominal segment X.

presence of an entirely membranous, thin-walled ductus seminis running inside. The basal part of ductus seminis, running from the base of the vesica to the phallobase is reduced to a short and strongly sclerotized tube equipped with sclerotized ribs (Fig. 2). Kullenberg (1947) denoted this structure as *Führungsstück* (guiding piece).

While the distal part of the endosoma is modified into a tube-shaped sclerotized structure around the ductus seminis, the proximal part is formed by a thin membrane connecting the aperture of the phallotheca to the base of vesica. Singh-Pruthi (1925) referred to this section as *conjunctiva* and was followed by many subsequent authors (e.g., Kullenberg 1947; Wagner 1955, 1974; Wagner & Weber 1964; Dupuis 1963, 1970; Dupuis & Carvalho 1956; Matsuda 1976; Cobben 1978; Kerzhner & Konstantinov 1999; Konstantinov 2003). The conjunctiva envelopes the vesica in repose (Fig. 2A) and crumples at its base during eversion (Fig. 2B). For practicing taxonomists the conjunctiva is recognized as a tiny membrane which may partially remain wrapped around the vesica after its dissection from the genital capsule.

The phallotheca in phylines is also modified and has membranous, very thin-walled proximal part, while the distal part is strongly sclerotized and fixed to the genital capsule (Kullenberg 1947; Kerzhner & Konstantinov 1999). The sclerotized apex of phallotheca is frequently illustrated in the phyline taxonomic literature together with the vesica and parameres. During copulation (Fig. 2B; Konstantinov 2003: fig. 11), the phallobase is shifted backwards, resulting in crumpling of the conjunctiva and membranous posterior part of the phallotheca, and in protrusion of the vesica through the apical aperture of the sclerotized anterior part of the phallotheca (Kullenberg 1947).

Despite all the modifications outlined above, the aedeagus obviously remains a morphologically and functionally integral organ. There are two following misconceptions regarding the aedeagal structure of phylines. The first is that the phallotheca is not connected to the phallobase and reduced to a sclerotized apical part attached to the genital capsule (e.g., Schuh & Slater 1995). However, this idea is compromising the integrity of the body wall and clearly not confirmed by the available data (refer to Kullenberg 1947 for details). The second is that the vesica is merely a strongly sclerotized ductus seminis (e.g., Kelton 1959). Again, this seems to be a clear misconception as the ductus seminis, whether with partly sclerotized or entirely membranous walls, is only a duct running *inside* the aedeagus and thus cannot be a separate component of the aedeagus by itself.

Subdivision of the inner endosomal sac of the aedeagus into the distal non-eversible but retractable vesica and proximal membranous conjunctiva is known for other clades of Miridae, viz. Mirinae, Deraeocorinae, (except Termatophylini), Dicyphini, and some Cylapinae (Kerzhner & Konstantinov 1999; Konstantinov 2003; Namyatova et al. 2016). Similar to phylines, the base of vesica in these groups is narrow and sclerotized, with its walls tightly attached to the corresponding part of ductus seminis. However the vesica is composed of several membranous swollen lobes and typically equipped with variously shaped sclerotized appendages. The shape, size and sculpture of the ductus seminis, secondary gonopore and phallotheca vary considerably among groups but the phallotheca is never fixed to the genital capsule. In contrast to phylines, the protrusion of the vesica from the phallotheca and inflation of the membranous lobes during copulation is due to hemolymph pressure within the aedeagus (Konstantinov 2003: fig. 14).

The terminology used for aedeagal structures in phylines remained surprisingly uniform for almost a century in both taxonomic and morphological works until the publication of Cassis (2008) on the orthotyline genus *Lattinova*. He rejected the idea of the division of endosoma into conjunctiva and vesica on the grounds of predominantly functional justification of this subdivision and independent derivation of the vesica in several clades of Miridae. An updated terminology of Cassis (2008) received wide acceptance for phylines over the last decade (e.g., Schuh & Pedraza 2010; Schuh & Schwartz 2015; Leon & Weirauch 2016; Yasunaga & Duwal 2015; Duwal et al. 2017) and the term vesica was replaced with the more inclusive term endosoma.

No testing of homology statements for aedeagal components across the Miridae has ever been attempted. Therefore, a survey of terminology used for the male genitalic structures of the entire family Miridae is beyond the scope of this paper. However, an application of the term endosoma (= conjunctiva + vesica) only to the distal component of endosoma (= vesica) is ill-defined in the case of Phylinae. This approach further undermines the homology statements in comparison to other subfamilies of plant bugs.

No doubt, usage of the same term "vesica" for structures that apparently evolved independently, e.g. in the case of Mirinae and Phylinae might be viewed as unsatisfactory. However the same is true for many terms frequently used in plant bug taxonomy, e.g., pronotal collar or scales on dorsum.

A correct description of the inner aedeagal components, if more complex than an undivided sac, would inevitably require additional terminology. The idea of changing the terminology whenever a new morphological interpretation sees the light of day seems unproductive. Numerous theories on the origin of the external genitalia published during the last century and assumptions concerning their homology across the main insect orders clearly illustrate this point (Tuxen 1969; Konstantinov 2007; Klass & Matushkina 2018). Most authors in this field proposed new terms and rejected previously used ones in accordance with their theoretical views or just because a term was considered as descriptive and/or incorrect. Surely, each author considers his idea as the right one, but another theory will follow shortly. In contrast to morphologists, taxonomists generally adhere to the traditionally used terms and disregard new names irrespective of agreement with the morphological hypothesis. Although it is always good to know the true morphological value of the structure, a continuous change of names will merely make this task more difficult.

In summary, I believe that the term endosoma in case of phylines is morphologically and historically unjustified while the term vesica (of Phylinae type) would work best at the moment.

4. Taxonomy

4.1. *Agraptocoris* Reuter, 1903

Agraptocoris Reuter, 1903: 6. Type species by monotypy: *Agraptocoris concolor* Reuter, 1903.

Tibetocoris Hutchinson, 1934: 141. Synonymized by Kerzhner 1997: 246. Type species by original designation: *Tibetocoris margaretae* Hutchinson, 1934. Non *Tibetocoris* (Pentatomidae, Pentatominae) Zheng & Liu 1987: 288, 294. Junior homonym of *Tibetocoris* Hutchinson, 1934 (Miridae). The replacement name *Zhengius* proposed by Rider 1998: 508.

Differential diagnosis. Recognized by the following combination of characters: body elongate, parallel-sided in males, short and ovate in brachypterous females (Figs. 3, 4); hind femur in females distinctly swollen; dorsum uniformly pale greenish to whitish, rarely with partly or entirely darkened head (Fig. 8), typically with minute pale brown spots on hemelytron; vestiture composed of adpressed to semierect woolly silvery setae intermixed with black simple setae (Fig. 7C); claws long and slender, straight, gradually curving subapically; pulvilli narrow, reaching one-half length of claw, apically free (Fig. 6J–L); vesica relatively simple, thin, S-shaped, apically terminating with single gradually tapering blade (Figs. 9–11, 14A–P); secondary gonopore located at base of apical blade. Species primarily feeding on *Artemisia* spp. (Asteraceae) and sometimes on halophytes from Amaranthaceae.

According to the original description (Reuter 1903), *Agraptocoris* is most closely related to the genus *Pastocoris* Reuter, 1879. Both genera are similar in overall size and body proportions, color pattern of dorsum, long and thin tarsi, and slender claws. However *Pastocoris* differs from *Agraptocoris* in many features including macropterous females and very small pulvilli, whereas the structure of vesica in *Pastocoris* unequivocally suggests its close affinity to the *Solenoxyphus*-*Boopidocoris* group of genera due to the presence of characteristic step-shaped projection distal to secondary gonopore (Konstantinov 2008b; Konstantinov & Korzeev 2014). The phylogenetic analysis rendered the monotypic genus *Josifovius* as a sister clade to *Agraptocoris* (Fig. 1). *Josifovius dimorphus* Wagner, 1961, although similar in the general appearance, pretarsal structure, and the form of female genitalia, differs from *Agraptocoris* spp. in having an entirely different vesica structure (Konstantinov 2008c: figs. 18, 20). Females of *Josifovius* further differ in having long and thin, distinctly not saltatorial hind femur and only slightly shortened, submacropterous hind wing reaching abdominal tergite XI (Konstantinov 2008c: fig. 6).

Among Palearctic phylines, species of *Agraptocoris* appear to be most similar to those of *Compsidolon* Reuter, 1899 in the male body proportions, color pattern of dorsum frequently composed of dense minute brown spots, vestiture composed of silvery sericeous and dark simple setae, claw structure, and the relatively simple vesica with subapical secondary gonopore and single, gradually tapering apical blade. In addition, many *Compsidolon* species from the subgenus *Apsinthophylus* Wagner, 1965 utilize *Artemisia* spp. as hosts and females of one species from this subgenus, *C. hiemale* Konstantinov, 2006, are brachypterous (Konstantinov 2006: fig. 38). Species of the genus *Compsidolon* can be distinguished from *Agraptocoris* by the presence of several rows of minute dark spinules along entire length of tibia, pulvillus adnate to claw along entire length, and characteristic curvature of the apical blade of vesica typical for *Apsinthophylus* spp. (Linnavuori 1971: figs. 2, 3; Konstantinov 2006: figs. 8–14).

The male genitalia structure, particularly the vesica of *Agraptocoris*, is most similar to those of *Psallomorpha* Duwal, Yasunaga & Lee, 2010 known only from Nepal. However, the latter genus differs from *Agraptocoris* in many other respects including the intense dark color pattern of dorsum, presence of a series of black round spots along the fore margin of hind femur, the darkened bases of tibial spines, and macropterous females. In addition, all 6 species of *Psallomorpha* are associated with broadleaved trees in the Fagaceae, Rosaceae, and Theaceae (Duwal et al. 2010).

Redescription. ***Male***: Small to medium-sized, total length 3.3–6.2, macropterous, body elongate and nearly parallel-sided. ***Coloration*** (Figs. 3, 4): Dorsum and venter generally unicolorous, ground-color varying from whitish to dirty-yellow; head usually uniformly pale, sometimes partly darkened or with two brown spots on vertex (Fig. 8), labial segment IV apically or entirely darkened; pronotum and scutellum without dark color pattern; hemelytron frequently with faint, minute, rounded brown spots, sometimes uniformly pale yellow; femora usually with pale brown markings apically; tibiae without dark spots at bases of tibial spines. ***Surface and vestiture*** (Figs. 7A–C, 8): Dorsum smooth, moderately shining, clothed with dense, recumbent, weakly woolly, adpressed silvery setae intermixed with comparatively long, semierect to adpressed, dark brown simple setae; dark simple setae often present only on apical half of hemelytron, sometimes covering entire dorsum; antenna and legs clothed with comparatively short, dense, adpressed, silvery simple setae; antennomere I with one dark spinelike seta ventrally and 2–7 dark spinelike setae dorsomesially; femora with several pairs of dark brown, rarely pale brown spinelike setae apically; hind tibial spines always dark brown, minute black spinules on tibiae scarce, located close to extreme apex and not arranged in regular rows. ***Structure***: Head anterior to eyes roughly triangular in dorsal view (Fig. 8); eyes relatively large, occupying almost entire height of head in lateral view (Fig. 7B), posterolateral margins of eyes almost contiguous with anterolateral margins of pronotum; vertex weakly convex, clypeus distinctly produced anteriorly and always visible in dorsal view (Fig. 7A); antennal fossae located well above ventral margin of eye; antennomere I somewhat swollen along entire length, as long as or somewhat longer than width of vertex; segment II linear, 0.9 – 1.5 × as long as basal width of pronotum; labium reaching or slightly surpassing metacoxae. Pronotum trapezoidal, with indistinct calli and weakly convex disk, posterior margin nearly straight or weakly concave medially, lateral margins straight, posterolateral angles broadly rounded; mesonotum moderately exposed; metathoracic scent-gland evaporatory area roughly triangular, peritreme apically rounded, raised above pleural surface (Fig. 7D,E). Hind femur elongate, not swollen, tibia cylindrical, second tarsal segment somewhat longer than third, claw (Fig. 6J – L) long and thin, gradually bent in apical part, pulvillus small, not reaching midpoint of claw, apically free; unguitractor with broadly rounded lamellae arranged in three widely spaced columns (Fig. 6J). ***Genitalia***: Genital segment conical, of typical phyline shape and devoid of distinctive ornamentation, more or less elongated, 1.1 – 1.4 × as long as width at base; apex of phallotheca narrow, typically L-shaped (Figs. 12G,J,N, 13C,I, 14Q – T); right paramere lanceolate (Figs. 12A,E,I,L, 13A,D,G); left paramere boat-shaped, with apically rounded or pointed hypophysis Figs. 12B,D,F,H,K,M,O, 13B,E,H); vesica S-shaped, typical of Phylini, terminating with single apical blade, usually long and bent at midpoint, sometimes short and pointed; secondary gonopore located subapically and surrounded with more or less developed membrane (Figs. 9 – 11, 14). — ***Female***: Body (Figs. 3B,E,H, 4C,E,I) short, stout, strongly brachypterous, total length 2.5 – 4.1 mm. ***Coloration***: Similar to male but usually with poorly expressed color pattern of dorsum; hemelytron frequently uniformly pale yellow, without minute pale brown spots. ***Surface and vestiture***: Similar to male. ***Structure***: Head similar to that of male but with distinctly smaller eyes. Thorax not elevated posteriorly, pronotum and scutellum almost flat in lateral view; suture between mesonotum and scutellum shallow, mesonotum usually entirely covered by pronotum. Hemelytron strongly brachypterous, corium and clavus fused, cuneus and membrane absent; lateral margins broadly convex, apex of hemelytron broadly rounded or obliquely truncated, reaching abdominal tergite V – VII. Legs not as elongate as in male, with thicker fore and middle femora, hind femur swollen, saltatorial, almost reaching apex of abdomen. Abdomen broad, elongate-oval, 1.1 – 1.3 × as long as broad, 1.5 – 1.7 × as broad as basal width of pronotum. ***Genitalia***: Dorsal labiate plate of bursa copulatrix with relatively large, oval to roughly triangular sclerotized rings (Fig. 13K); sclerites encircling vulva symmetric, of typical phyline shape; vestibulum weakly sclerotized, slightly bent leftwards (Fig. 13J); posterior wall with two distinct and symmetrical blade-shaped sclerites at sides (Fig. 13L); gonapophysis 8 gradually tapering, gonapophysis 9 sagittate (Fig. 13M,N).

Note. Female genitalia of *Agraptocoris* showed comparatively low interspecific variability and did not allow for separation of many species. Some distinctions were observed in the shape of sclerotized rings of the dorsal labiate plate, roughly triangular in *A. concolor* and *A. subconcolor*, more ovoid in other species.

4.2. Identification key to species

1 Head in male partly darkened or with two brown macula on vertex (Fig. 8C,E,F), rarely uniformly pale yellow; secondary gonopore located close to apex of vesica, apical blade short and straight (Fig. 10A – D). **2**

1' Head in male without dark brown pattern, rarely frons with indistinct pale brown stripes radiating from midline (Fig. 8A,D,G – I); secondary gonopore removed from apex of vesica, apical blade smoothly curved, at least 3 × as long as gonopore (Figs. 9, 10E,F, 11). … **3**

2 Antennomere I in both sexes with three brown spinelike setae on dorsomesial surface (Fig. 8E,F); hemelytron in male with dense minute pale brown spots and two or three pale brown longitudinal lines composed of confluent spots, sometimes interrupted and indistinct (Fig. 4A,B); hemelytron in female large, always covering abdominal tergite VII, with minute pale brown spots (Fig. 4C); phallotheca with subapical tooth (Figs. 13C, 14Q); vesica as in Figs. 10C,D, 14I,L. .... ***A. oncotyloides***

2' Antennomere I in both sexes with 5 – 7 brown spinelike setae on dorsomesial surface (Fig. 8B,C); hemelytron in male with regular, minute, pale brown spots not forming longitudinal lines (Fig. 3C,D); hemelytron in female at most partly covering abdominal tergite VI, without dark color pattern (Fig. 3E); phallotheca without subapical tooth (Figs. 12G, 14R); vesica as in Figs. 10A,B, 14H,K. .... ***A. eugeniae***

3 Vesica strongly bent just distal to secondary gonopore, apical blade located almost at right angle to basal 2/3 of vesica in lateral view (Figs. 10F, 11A,B, 14M,N); hemelytron in female short, reaching or almost covering abdominal tergite V (Figs. 3H, 4E, unknown in *A. margaretae*). **4**

3' Vesica smoothly and gradually curved, without bend distal to secondary gonopore (Figs. 9A – C, 14A – D, G); hemelytron in female at least partly covering abdominal tergite VI (Figs. 3B, 4G,I). **6**

4 Pronotum, scutellum and hemelytron with small diffuse pale brown spots (Fig. 3F); apical blade of vesica without additional processes (Fig. 10E,F) [Kashmir region]. .... ***A. margaretae***

4' Dorsum immaculate, rarely with diffuse minute spots on clavus and endocorium (Figs. 3C,D, 4D); apical blade of vesica with small flattened outgrowth distal to secondary gonopore (Figs. 11A – D, 14M – P) [Mongolia]. **5**

5 Entire dorsum including head and pronotum with conspicuous black simple setae in both sexes (Fig. 8D);

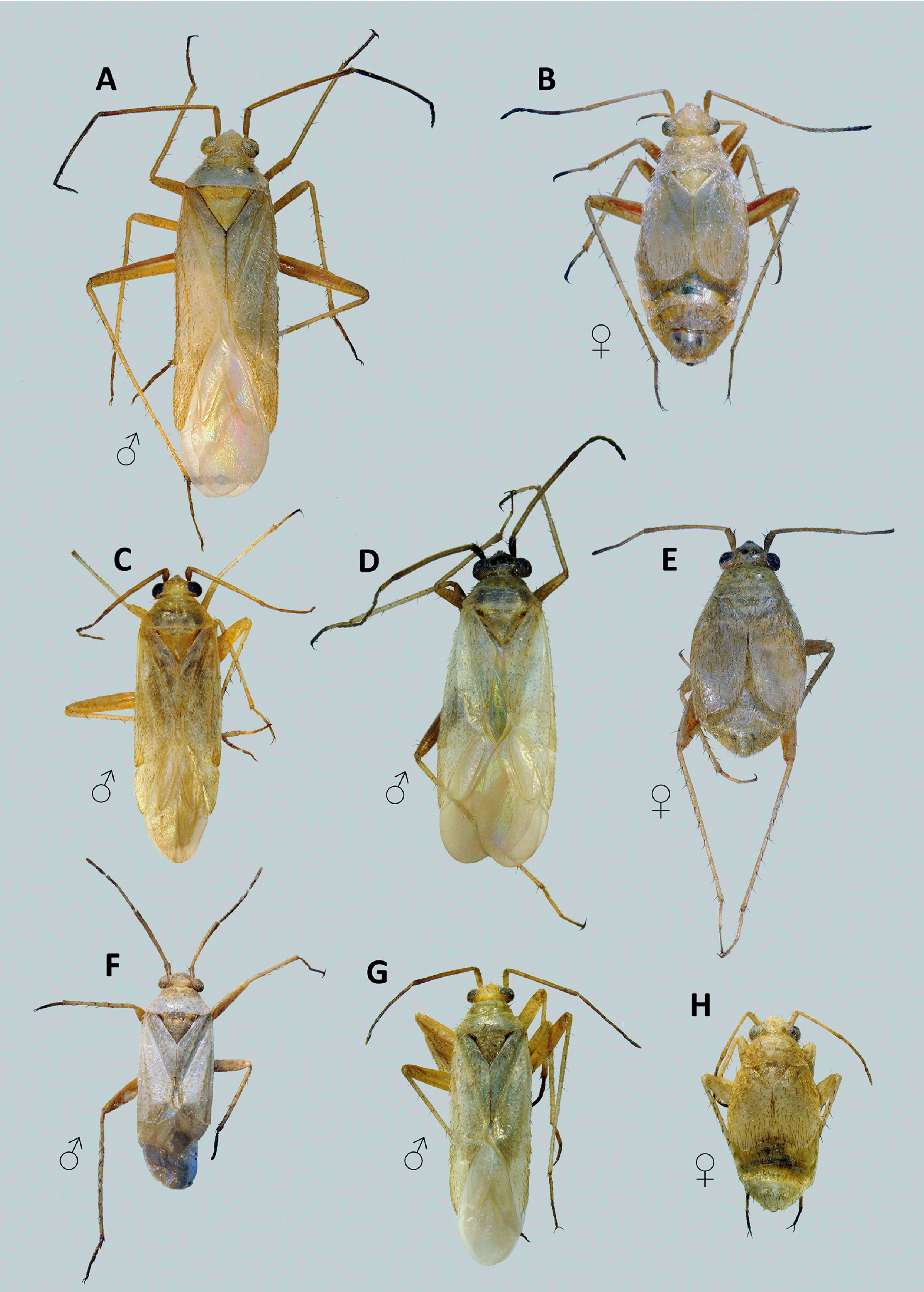

Fig. 3. Dorsal habitus of *Agraptocoris* spp. **A**,**B**: *A. concolor*. **C**–**E**: *A. eugeniae*. **F**: *A. margaretae*. **G**,**H**: *A. nigrisetosus*.

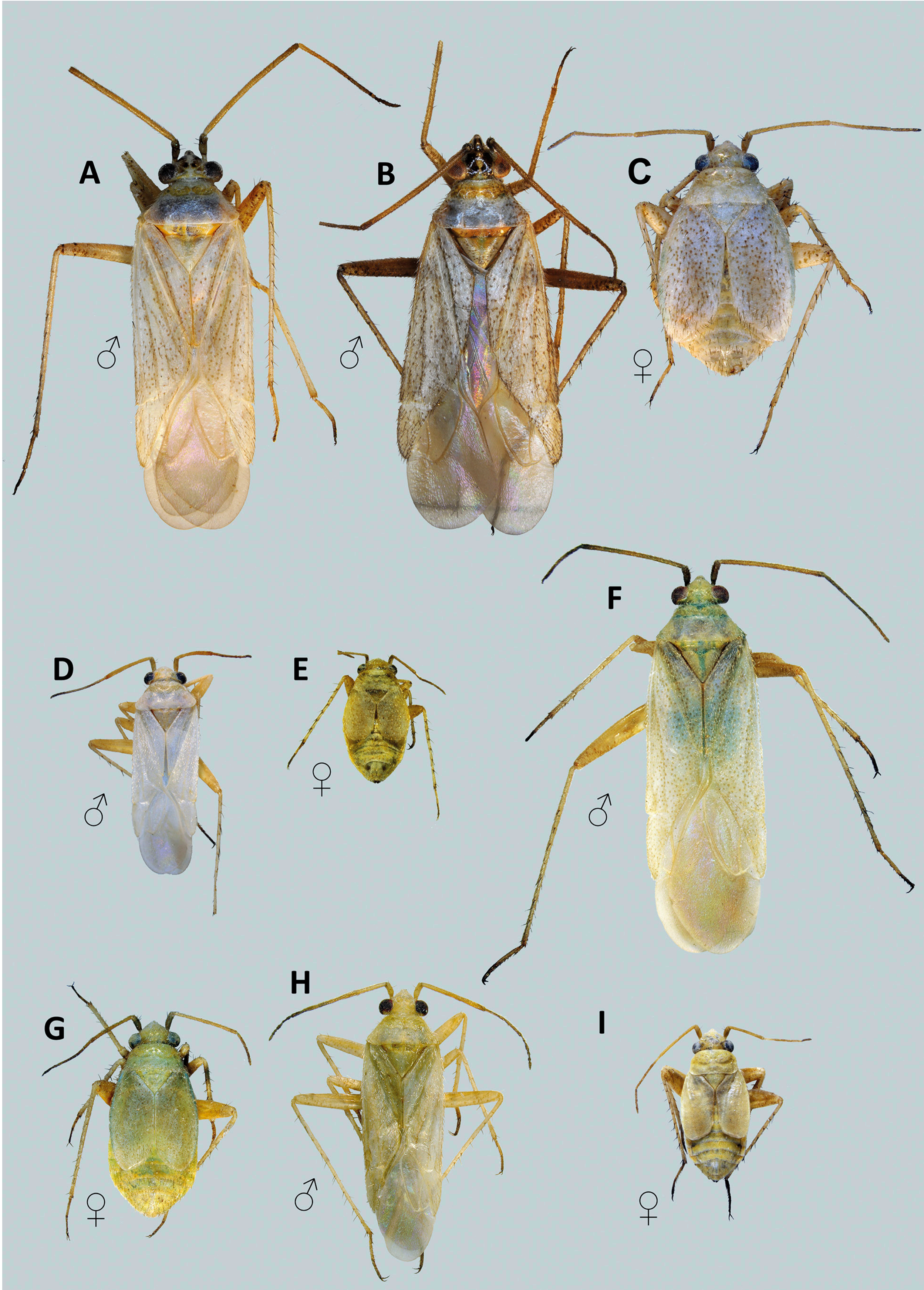

Fig. 4. Dorsal habitus of *Agraptocoris* spp. **A–C**: *A. oncotyloides*. **D**,**E**: *A. pallescens*. **F**,**G**: *A. pamiricus*. **H**,**I**: *A. subconcolor*.

antennomere II distinctly longer than posterior width of pronotum in male and head width in female; sclerotized outgrowth of vesica thorn-shaped, posteriorly attenuated (Figs. 11C,E, 14O). .... ***A. nigrisetosus***

5' Dorsum in both sexes without dark setae or with a few brown setae in apical part of corium (Fig. 4D,E); antennomere II shorter than or equals to posterior width of pronotum in male and to head width in female; outgrowth of vesica semicircular, weakly sclerotized (Fig. 11B,F, 14P). .... ***A. pallescens***

6 Antennomere I with four mesial spinelike setae in both sexes (Fig. 8H); hemelytron with regularly distributed, dense, minute pale brown spots (Fig. 4F); apical blade of vesica straight, slightly bent only at extreme apex, abruptly narrowing distal to secondary gonopore (Figs. 9A,F, 14J). .... ***A. pamiricus***

6' Antennomere I with two mesial spinelike setae in both sexes (Fig. 8A,I); hemelytron immaculate or with irregular brown spots more dense along claval vein and medial fracture of corium (Figs. 3A, 4H); apical blade of vesica bent at midpoint and gradually narrowing towards apex (Figs. 9B–E, 14A–F). **7**

7 Larger, body length male 4.8–5.6 mm, female 2.8–3.6 mm; hemelytron in male usually with diffuse pale brown minute spots along claval vein and medial fracture (Fig. 3A); apical blade of vesica lancet-shaped in lateral view (Figs. 9C, 14A,B), strongly curved at midpoint (Figs. 9D, 14E). ...... ***A. concolor***

7' Smaller, body length male 3.8–4.7 mm, female 2.5–3.0 mm; hemelytron in male without pale brown spots or with few minute pale brown spots (Fig. 4H); apical blade of vesica thin and gradually tapering towards apex in lateral view (Figs. 9B, 14C,D), smoothly curved at midpoint (Figs. 9E, 14F). ...... ***A. subconcolor***

4.3. *Agraptocoris concolor* Reuter, 1903

Figs. 3A,B, 7D, 8A, 9C,D, 12A–D, 13J–L, 14A,B,E, 15

Agraptocoris concolor Reuter, 1903: 7 (new species); KERZHNER et al. 1997: 127 (lectotype designation); VINOKUROV & KANYUKOVA 1995b: 121 (key).

Diagnosis. Recognized by the following combination of characters: body relatively large, male 4.8–5.6 mm, female 2.8–3.6 mm; antennomere I with two spinelike dark setae on dorsomesial surface (Fig. 8A); hemelytron in male usually with indistinct pale brown minute spots more dense along medial fracture of corium (Fig. 3A), rarely dorsum uniformly pale; dark setae absent on head and pronotum, located only on distal 2/3 of hemelytron; vesica S-shaped, gradually curved, without additional outgrowth, secondary gonopore removed from apex; apical blade of vesica straight, of almost same width throughout its length, abruptly tapering at extreme apex (Figs. 9C,D, 14A,B,E).

Most similar to *A. subconcolor* sp.n. and apparently not always separable from it without careful investigation of the vesica. Males of *A. subconcolor* differ in appearance from *A. concolor* in having smaller size (3.8–4.7 mm) and pale dorsum without pale brown mottling along medial fracture. The apical blade of *A. concolor* is lancet-shaped, comparatively wide, abruptly narrowing at extreme apex in lateral view (Figs. 9C, 14A,B) and strongly bent at midpoint between secondary gonopore and apex of vesica in ventral view (Figs. 9D, 14E). In contrast, the apical blade of *A. subconcolor* is distinctly thinner, gradually tapering (Figs. 9B, 14C,D) and smoothly curved at midpoint (Figs. 9D, 14F).

Redescription. ***MALE***: ***Coloration*** (Fig. 3A): Whitish yellow. ***Head***: Pale yellow, without dark markings; antenna uniformly pale to dirty yellow, sometimes with somewhat darkened segment IV; labrum dirty yellow; labium yellow, with darkened apex of segment III and entire segment IV. ***Thorax***: Pronotum, exposed part of mesonotum and scutellum pale yellow, immaculate, posterior part of pronotum and midline of scutellum sometimes with greenish tinge; hemelytron whitish yellow, with indistinct small pale brown spots along medial fracture on corium, usually with similar spots on exocorium and cuneus, rarely hemelytron without any spots; membrane pale brown, semitransparent; veins whitish. Femora pale yellow, hind femur with very minute and barely recognizable pale brown spots on apex of dorsal surface and ventrally along posterior margin; tarsi apically darkened. Thoracic venter and abdomen uniformly pale yellow. ***Vestiture***: Dorsum with dense woolly silvery setae, semierect on vertex and anterior part of pronotum, adpressed elsewhere; dark setae absent on head, pronotum and basal part of hemelytron; apical part of corium and cuneus with dark brown adpressed simple setae; venter, antenna, and legs with comparatively short silvery adpressed simple setae; antennomere I with two brown spinelike setae on medial surface and one subapical spinelike seta ventrally (Fig. 8A). ***Structure***: Body 4.1–4.3 × as long as width of pronotum; total length 4.8–5.6 mm; vertex 1.2–1.4 × as wide as eye, 0.8–0.9 × as wide as length of antennomere I; antennomere II 1.1–1.4 × as long as basal width of pronotum, 1.6–2.0 × as long as width of head; pronotum 2.1–2.2 × as wide as long. ***Genitalia***: Genital segment conical, distinctly elongated, 1.3–1.4 × as long as width at base; phallotheca with finely attenuated apex, without subapical tooth (Fig. 9A), parameres as in Fig. 9A,B,D; vesica S-shaped, gradually curved along entire length, secondary gonopore removed from apex, apical blade without additional processes, lancet-shaped, curved at midpoint (Figs. 9C,D, 14A,B,E). — ***FEMALE***: ***Coloration***: Similar to male, uniformly pale yellow, sometimes with greenish tinge, hemelytron immaculate, rarely with diffuse and hardly recognizable pale brown minute spots in middle (Fig. 3B). ***Vestiture***: As in male. ***Structure***: Body 2.8–3.3 × as long as width of pronotum; total length 2.8–3.6 mm; vertex 1.9–2.1 × as wide as eye, 1.2–1.3 × as wide as length of antennomere I; antennomere II 1.1–1.3 × as long as basal width of pronotum, 1.3–1.6 × as long as width of head; pronotum 2.1–2.4 ×

as wide as long; hemelytron almost entirely covering or at least reaching abdominal tergite VI, claval commissure 0.9 – 1.0 × as long as combined length of pronotum and scutellum.

Distribution. Widely distributed in desert steppes of Mongolia, spanning from Kosh-Agach (Altai Rep., Russia) and Uvs Aimak in the west to East Govi Aimak in the east and also inhibiting Mongolian-Manchurian grasslands in Central Aimak (Fig. 15).

Hosts. Recorded from *Artemisia* spp., including *Artemisia arenaria* DC., *A. juncea* Kar. & Kir., *A. obtusiloba* Lebed., and *A. frigida* Waldst. & Kit. (Asteraceae: tribe Anthemideae). A single female from Shargun-Gobi, Govialtay Aimak, sampled from *Krascheninnikovia ceratoides* (L.) Gueldenst. (Amaranthaceae: Axyrideae) is certainly an incidental record.

Material examined. ***Lectotype***: ♂, MONGOLIA, Central Aimak, Chelotay-buluk (Nedun), E of Ulaanbaatar [Urga], 47.9°N 106.9°E, 08 Aug 1897, Klements (AMNH_PBI 00152971) (ZISP). — ***Other material***: MONGOLIA: BAYANHONGOR AIMAK: 30 km ENE of Bu-Tsagan, 46.3°N 99.04°E, 20 Aug 1967, I.M. Kerzhner, *Artemisia arenaria* (Asteraceae), 1♂ (AMNH_PBI 00152880), 3♀ (AMNH_PBI 00153970 – AMNH_PBI 00153972) (ZISP). 30 km WSW Bulgan [Bayan-Under], 44.65°N 98.32°E, 27 Aug 1970, Namkhandorzh, 1♂ (AMNH_PBI 00153699), 1♀ (AMNH_PBI 00153612) (ZISP). Bon-Tsagan-Nur [Bun Tsagan-nur], Halha, 45.55°N 99.1°E, 27 Aug 1926, A.N. Kiritshenko, 1♀ (AMNH_PBI 00153445) (ZISP). Horiult [Bogd], 45.2°N 100.7667°E, 23 Aug 1966, Dlabola, 2♂ (AMNH_PBI 00343347, AMNH_PBI 00343348), 2♀ (AMNH_PBI 00343349, AMNH_PBI 00343350) (NMPC). Ikhe Bogdo, 15 km SW Orog-Nur Lake, 44.91667°N 100.33333°E, 17 Aug 1967, A.F. Emeljanov, 2♂ (AMNH_PBI 00153679, AMNH_PBI 00153680) (ZISP). Upper reach of the Baydrag-Gol [Baydarik] River, Khalkha, 45.625°N 99.259°E, 31 Aug 1926, A.N. Kiritshenko, 2♀ (AMNH_PBI 00153444, AMNH_PBI 00153442), 2♂ (AMNH_PBI 00152937, AMNH_PBI 00152938) (ZISP). BULGAN AIMAK: 20 km WSW of Avdzaga, 47.5°N 103.3°E, 01 Sep 1967 – 02 Sep 1967, A.F. Emeljanov, 2♂ (AMNH_PBI 00153446, AMNH_PBI 00153447), 3♀ (AMNH_PBI 00153448 – AMNH_PBI 00153450) (ZISP). CENTRAL AIMAK: 5 km S Erdene-Huduk, 47.665°N 106.948°E, 21 Jul 1967, A.F. Emeljanov, 1♂ (AMNH_PBI 00153080), 3♀ (AMNH_PBI 00153541, AMNH_PBI 00153542) (ZISP). 150 km SSW Ulanbaatar, 46.73°N 105.98°E, 02 Sep 1969, V. Ph. Zaitsev, 4♂ (AMNH_PBI 00152377) (ZISP). Dzunmod, 47.7069°N 106.9528°E, 31 Aug 1966, Dlabola, 2♂ (AMNH_PBI 00343374, AMNH_PBI 00343375) (NMPC). Lun, Tuul [Tola] River, 47.8667°N 105.25°E, 25 Aug 1965, Dlabola, 18♂ (AMNH_PBI 00343353 – AMNH_PBI 00343363, AMNH_PBI 00343340 – AMNH_PBI 00343346), 6♀ (AMNH_PBI 00343366 – AMNH_PBI00343371) (NMPC). DZAVHAN AIMAK: 10 km WNW of Erdene-Khairkhan, 48.16°N 95.59°E, 11 Aug 1970, I.M. Kerzhner, 11♂ (AMNH_PBI 00153228, AMNH_PBI 00153230, AMNH_PBI 00153231, AMNH_PBI 00153222, AMNH_PBI 00153224 – AMNH_PBI 00153226, AMNH_PBI 00153464), 10♀ (AMNH_PBI 00153232, AMNH_PBI 00153233, AMNH_PBI 00153152, AMNH_PBI 00153466) (ZISP); 11 Aug 1970, A.F. Emeljanov, 3♂ (AMNH_PBI 00153027), 1♀ (AMNH_PBI 00153151) (ZISP). 15 km WNW Urgamal, 48.56°N 94.13°E, 11 Aug 1970, A.F. Emeljanov, 6♂ (AMNH_PBI 00153021 – AMNH_PBI 00153023, AMNH_PBI 00153025), 3♀ (AMNH_PBI 00153143, AMNH_PBI 00153144, AMNH_PBI 00153146) *Artemisia* sp. (Asteraceae), 2♂ (AMNH_PBI 00153024) (ZISP); 11 Aug 1970, Narchuk, 1♂ (AMNH_PBI 00153463) (ZISP); 11 Aug 1970, I.M. Kerzhner, *Artemisia* sp. (Asteraceae), 5♀ (AMNH_PBI 00153147, AMNH_PBI 00153145) (ZISP). EAST GOVI AIMAK: 10 km S of Delgerhet, 45.6975°N 110.42722°E, 31 Jul 1971, I.M. Kerzhner, 6♀ (AMNH_PBI 00153956, AMNH_PBI 00153957, AMNH_PBI 00153960), 2♂ (AMNH_PBI 00153955) (ZISP); 31 Jul 1971, A.F. Emeljanov, 4♀ (AMNH_PBI 00153958, AMNH_PBI 00153959) (ZISP). GOVI-ALTAY AIMAK: 10 km SSE of Dund-Us [Dzhargalan], 47.91666°N 91.68333°E, 13 Aug 1970, A.F. Emeljanov, 2♂ (AMNH_PBI 00153084, AMNH_PBI 00153085) (ZISP). 10 km SW of Sayn-Ust [Khukh-Mor't], 47.4°N 94.43°E, 21 Aug 1968, Kozlov, *Artemisia* sp. (Asteraceae), 5♂ (AMNH_PBI 00153082, AMNH_PBI 00153083) (ZISP); 21 Aug 1968, A.F. Emeljanov, 8♂ (AMNH_PBI 00153056, AMNH_PBI 00153060, AMNH_PBI 00153057 – AMNH_PBI 00153059), 8♀ (AMNH_PBI 00153180 – AMNH_PBI 00153186) (ZISP). 15 km E of Haliun [Khalun], 45.915°N 96.362°E, 24 Aug 1967, I.M. Kerzhner, 3♂ (AMNH_PBI 00153223, AMNH_PBI 00153229) (ZISP); 24 Aug 1967, I.M. Kerzhner, 1♀ (AMNH_PBI 00153614) (ZISP). 20 km S of Alag-Hayrhan Mt., 45.407°N 94.115°E, 13 Aug 1968, A.F. Emeljanov, 5♂ (AMNH_PBI 00153637, AMNH_PBI 00153635, AMNH_PBI 00153636), 4♀ (AMNH_PBI 00153547 – AMNH_PBI 00153550) (ZISP). 20 km W of Altay [Ushiyn-Bulak], 46.374°N 95.992°E, 22 Aug 1967, I.M. Kerzhner, 13♂ (AMNH_PBI 00153652, AMNH_PBI 00153646 – AMNH_PBI 00153651) (ZISP). 30 km N of Delger, 46.6°N 97.2°E, 25 Aug 1967, I.M. Kerzhner, *Artemisia juncea* (Asteraceae), 3♀ (AMNH_PBI 00153461) (ZISP); 25 Aug 1967, A.F. Emeljanov, 3♀ (AMNH_PBI 00153460) (ZISP); 25 Aug 1967, V.Ph. Zaitsev, 1♀ (AMNH_PBI 00153459) (ZISP). 50 km W of Sayn-Ust [Khukh-Mor't], 47.35°N 93.88°E, 22 Aug 1968, L.V. Arnoldi, 1♀ (AMNH_PBI 00153179) (ZISP); 22 Aug 1968, A.F. Emeljanov, 2♂ (AMNH_PBI 00153055), 4♀ (AMNH_PBI 00153177, AMNH_PBI 00153178) (ZISP). Shargyn-Gobi, 40 km SW of Altai [Bor-Udzuur], 45.552°N 91.928°E, 22 Aug 1967 – 23 Aug 1967, A.F. Emeljanov, 1♂ (AMNH_PBI 00153693) (ZISP); 22 Aug 1967 – 23 Aug 1967, I.M. Kerzhner, *Krascheninnikovia ceratoides* (Chenopodiaceae), 1♂ (AMNH_PBI 00152372) (ZISP). W foothills of Ikhe-Bogdo, 44.986°N 99.949°E, 15 Aug 1926, A.N. Kiritshenko, 3♂ (AMNH_PBI 00152917 – AMNH_PBI 00152919), 1♀ (AMNH_PBI 00153411) (ZISP); 16 Aug 1926, A.N. Kiritshenko, 2♀ (AMNH_PBI 00152876, AMNH_PBI 00152877), 3♂ (AMNH_PBI 00152920 – AMNH_PBI 00152922) (ZISP); 17 Aug 1926, A.N. Kiritshenko, 6♀ (AMNH_PBI 00153405 – AMNH_PBI 00153410) (ZISP); 18 Aug 1926, A.N. Kiritshenko, 1♀ (AMNH_PBI 00153425) (ZISP); 19 Aug 1926, A.N. Kiritshenko, 10♀ (AMNH_PBI 00153412 – AMNH_PBI 00153416, AMNH_PBI 00153418, AMNH_PBI 00153420, AMNH_PBI 00153421, AMNH_PBI 00153423, AMNH_PBI 00153424), 12♂ (AMNH_PBI 00152923 – AMNH_PBI 00152934) (ZISP), 1♀ (AMNH_PBI 00153417) (ZMUH); 20 Aug 1926, A.N. Kiritshenko, 2♂ (AMNH_PBI 00152935, AMNH_PBI 00152936), 4♀ (AMNH_PBI 00153401 – AMNH_PBI 00153404) (ZISP); 21 Aug 1926, A.N. Kiritshenko, 1♂ (AMNH_PBI 00153400), 3♀ (AMNH_PBI 00153397 – AMNH_PBI 00153399) (ZISP); 22 Aug 1926, A.N. Kiritshenko, 16♀ (AMNH_PBI 00153426 – AMNH_PBI 00153441), 15♂ (AMNH_PBI 00152939 – AMNH_PBI 00152953) (ZISP); 24 Aug 1926, A.N. Kiritshenko, 17♂ (AMNH_PBI 00153368, AMNH_PBI 00152954 – AMNH_PBI 00152968, AMNH_PBI 00152970), 28♀ (AMNH_PBI 00153394 – AMNH_PBI 00153396, AMNH_PBI 00153386 – AMNH_PBI 00153393, AMNH_PBI 00153378 – AMNH_PBI 00153385, AMNH_PBI 00153369 – AMNH_PBI 00153377) (ZISP), 1♂ (AMNH_PBI 00152969) (ZMUH). HOVD AIMAK:15 km NNE Bayanhushuu [Myangat], 48.35°N 92.01°E, 03 Aug 1970, A.F. Emeljanov, 3♂ (AMNH_PBI 00153454, AMNH_PBI 00153455), 2♀ (AMNH_PBI 00153457, AMNH_PBI 00153458) (ZISP); 03 Aug 1970, I.M. Kerzhner, *Artemisia* sp. (Asteraceae), 7♂ (AMNH_PBI 00153669 – AMNH_PBI 00153671) *Seriphidium* sp. (Asteraceae), 5♀ (AMNH_PBI 00153583, AMNH_PBI 00153584) (ZISP). 20 km W of southern coast of Duro-Nur [Durge-Nur] Lake, 47.56777°N 93.22666°E, 22

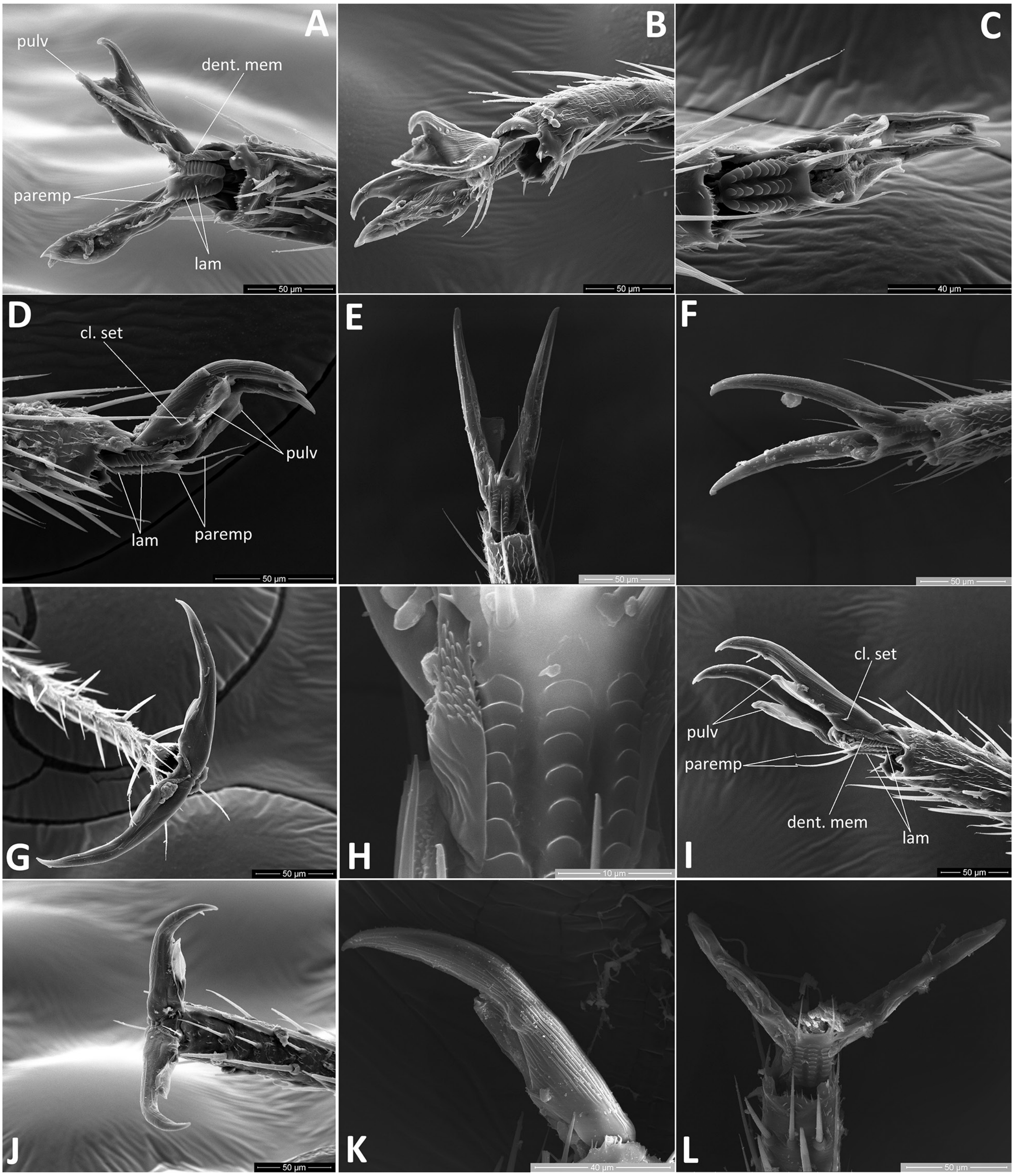

Fig. 5. SEM images of pretarsus, left hind leg. **A**,**B**: *Acrotelus pilosicornis*, ventral and lateral views. **C**,**D**: *Asciodema obsoletum*, ventral and lateral views. **E**,**F**: *Camptotylus reuteri*, ventral and lateral views. **G**,**H**: *Compsidolon schrenkianum*, apical view and detail of unguitractor in ventral view. **I**: *Eurycolpus flaveolus*, lateral view. **J**: *Josifovius dimorphus*, apical view. **K**,**L**: *Lepidargyrus instabilis*, lateral and ventral view. — ***Abbreviations***: cl. set – claw setae; dent. mem – finely dentate membrane; lam – columns of lamellae on unguitractor; paremp – parempodium; pulv – pulvillum.

Aug 1968, A.F. Emeljanov, 2♂ (AMNH_PBI 00153686, AMNH_PBI 00153687) (ZISP). Altan-Hohiy Mts. Range, 60 km N of Bayanhushuu [Myangat], 48.86666°N 91.66666°E, 04 Aug 1970, I.M. Kerzhner, 6♂ (AMNH_PBI 00152369, AMNH_PBI 00152370), 12♀ (AMNH_PBI 00153611, AMNH_PBI 00152432–AMNH_PBI 00152436) (ZISP); 04 Aug 1970, A.F. Emeljanov, 2♂ (AMNH_PBI 00153452, AMNH_PBI 00153453), 1♀ (AMNH_PBI 00153462) (ZISP); 04 Aug 1970, Narchuk, 2♂ (AMNH_PBI 00153698, AMNH_PBI 00152371) (ZISP). MIDDLE GOVI AIMAK: 20 km N Amardalay [Delger-Tsogt], 46.3°N 106.35°E, 22 Jul 1967, A.F. Emeljanov, 4♂ (AMNH_PBI 00153079, AMNH_PBI 00153077, AMNH_PBI 00153078), 2♀ (AMNH_PBI 00153539, AMNH_PBI 00153540) (ZISP). 20 km SW Mandalgovi, 45.67°N 106.04°E, 01 Sep 1969, I.M. Kerzhner, 1♂ (AMNH_PBI 00153695) (ZISP). 30 km N of Amardalay [Delger-Tsogt], 46.38°N 106.35°E, 22 Jul 1967, A.F. Emeljanov, 3♀

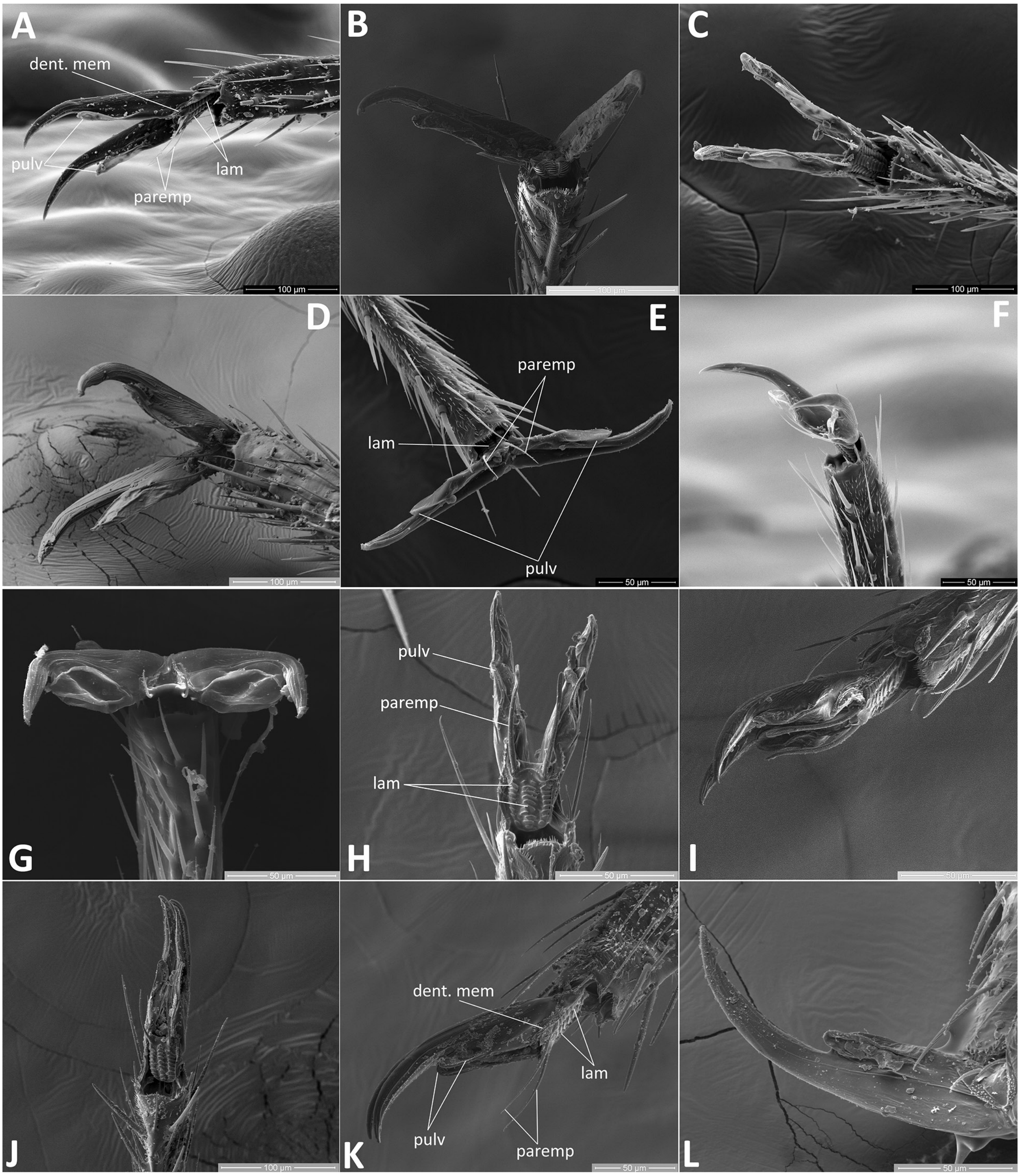

Fig. 6. SEM images of pretarsus, left hind leg. **A**,**B**: *Omocoris cunealis*, lateral and ventral views. **C**,**D**: *Oncotylus viridiflavus*, ventral and lateral views. **E**,**F**: *Phaeochiton ebulum*, ventral and lateral views. **G**: *Phylus coryli*, ventral view. **H**,**I**: *Zakanocoris aceri*, ventral and lateral views. **J** – **L**: *Agraptocoris oncotyloides*, ventral, lateral and apical views. — ***Abbreviations***: dent. mem – finely dentate membrane; lam – columns of lamellae on unguitractor; paremp – parempodium; pulv – pulvillum.

(AMNH_PBI 00153619) (ZISP). 80 km S of Mandalgovi, 45.03°N 106.27°E, 12 Aug 1971, A.F. Emeljanov, 2♂ (AMNH_PBI 00153987), 1♀ (AMNH_PBI 00153988) (ZISP). SOUTH GOVI AIMAK: 35 km NW of Bulgan, 44.25°N 103.175°E, 12 Aug 1967, I.M. Kerzhner, 6♂ (AMNH_PBI 00153036, AMNH_PBI 00153037) *Artemisia scoparia* (Asteraceae), 3♂ (AMNH_PBI 00153038), 1♀ (AMNH_PBI 00153162) (ZISP). Dalan-Dzadagad, 43.59167°N 104.43°E, 26 Aug 1966, Dlabola, 14♂ (AMNH_PBI 00343379 – AMNH_PBI 00343391, AMNH_PBI 00343372), 12♀ (AMNH_PBI 00343392 – AMNH_PBI 00343402, AMNH_PBI 00343373) (NMPC). Gurvan-Saykhan Range, 40 km W of Dalan-Dzadagad, 43.574°N 103.942°E, 28 Aug 1969, I.M. Kerzhner, 3♂ (AMNH_PBI 00153692) (ZISP). Khongoryn-els, 60 km WNW of Bayan – Dalay, 43.862°N 103.002°E, 30 Jul 1967 – 31 Jul 1967, I.M. Kerzhner, 1♂ (AMNH_PBI 00153070), 1♀ (AMNH_PBI 00153538), 2♂ (AMNH_PBI 00153071) (ZISP); 30 Jul 1967 – 31 Jul 1967, Emeljanov, 1♂ (AMNH_PBI 00153067), 1♀ (AMNH_PBI 00153535) *Artemisia arenaria* (Asteraceae), 2♀ (AMNH_PBI

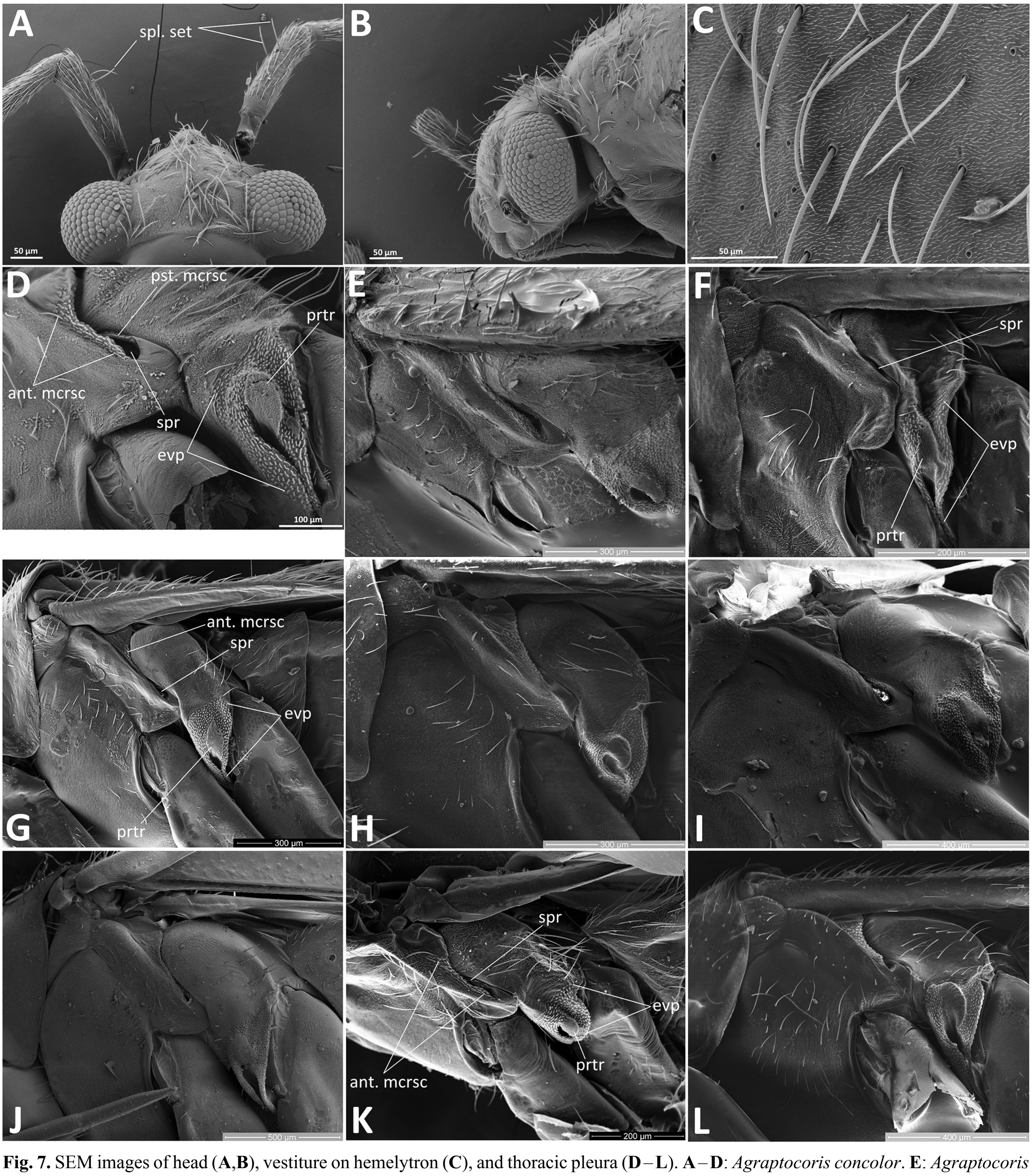

Fig. 7. SEM images of head (**A**,**B**), vestiture on hemelytron (**C**), and thoracic pleura (**D**–**L**). **A**–**D**: *Agraptocoris concolor*. **E**: *Agraptocoris oncotyloides*. **F**: *Camptotylus reuteri*. **G**: *Eurycolpus flaveolus*. **H**: *Lepidargyrus instabilis*. **I**: *Omocoris cunealis*. **J**: *Oncotylus viridiflavus*. **K**: *Phaeochiton ebulum*. **L**: *Phylus coryli*. — ***Abbreviations***: ant. mcrsc – microsculpture anterior of metathoracic spiracle; evp – metathoracic scent gland evaporative area; prtr – peritreme of metathoracic scent gland; pst. mcrsc – microsculpture posterior of metathoracic spiracle; spl. set – mesial setae on antennomere I; spr – metathoracic spiracle.

00153531, AMNH_PBI 00153532) (ZISP). Tost Uul, 40 km W of Gurvan-tes, 43.24583°N 100.61083°E, 19 Aug 1969 – 20 Aug 1969, Kozlov, 2♂ (AMNH_PBI 00152366) (ZISP); 19 Aug 1969 – 20 Aug 1969, I.M. Kerzhner, 13♂ (AMNH_PBI 00152363, AMNH_PBI 00152360, AMNH_PBI 00152361, AMNH_PBI 00152359, AMNH_PBI 00152357), 8♀ (AMNH_PBI 00152365, AMNH_PBI 00152427, AMNH_PBI 00152428, AMNH_PBI 00152431), 1 larva (AMNH_PBI 00152380) (ZISP). W of Dalandzadagad, 43.6167°N 104.4833°E, 10 Aug 1967, A.F. Emeljanov, 1♂ (AMNH_PBI 00153668), 2♀ (AMNH_PBI 00153574, AMNH_PBI 00153575) (ZISP). SOUTH HANGAY AIMAK: 30 km NE oh Dzun-Bogdo-ula Mt., 15 Aug 1967, A.F. Emeljanov, 1♂ (AMNH_PBI 00152373) *Krascheninnikovia ceratoides* (Amaranthaceae), 1♀ (AMNH_PBI 00152439) (ZISP). 70 km E of Bogd somon, 44.66°N 103.06°E, 12 Aug 1967, A.F. Emeljanov, 4♂ (AMNH_PBI 00153033, AMNH_PBI 00153034) (ZISP). Arts-Bogdo Range, 20 km S of Hovd, 44.485°N 102.379°E, 12 Aug 1967 – 13 Aug 1967, V.Ph. Zaitsev, 2♂ (AMNH_PBI 00153052, AMNH_PBI 00153053), 1♀ (AMNH_PBI 00153470) (ZISP); 12 Aug 1967 – 13 Aug 1967, A.F. Emeljanov, 5♀ (AMNH_PBI

00153164–AMNH_PBI 00153166, AMNH_PBI 00153163) (ZISP); 12 Aug 1967 – 13 Aug 1967, I.M. Kerzhner, 29♂ (AMNH_PBI 00153043–AMNH_PBI 00153046, AMNH_PBI 00153042, AMNH_PBI 00153041, AMNH_PBI 00153040, AMNH_PBI 00153051, AMNH_PBI 00153047–AMNH_PBI 00153050), 18♀ (AMNH_PBI 00153167–AMNH_PBI 00153173) (ZISP). Baga-Bogdo Range, 20 km ESE from the highest point, 44.859°N 101.784°E, 14 Aug 1967, I.M. Kerzhner, 11♂ (AMNH_PBI 00153638, AMNH_PBI 00153639, AMNH_PBI 00153641, AMNH_PBI 00153640), 6♀ (AMNH_PBI 00153553, AMNH_PBI 00153551) (ZISP); 14 Aug 1967, A.F. Emeljanov, 6♂ (AMNH_PBI 00153642, AMNH_PBI 00153643) (ZISP); 15 Aug 1967, A.F. Emeljanov, 6♂ (AMNH_PBI 00153086, AMNH_PBI 00153087), 2♀ (AMNH_PBI 00153088) (ZISP). Baga Bogdo Mts., 15 km ENE from the highest point, 44.83333°N 101.5°E, 15 Aug 1967, I.M. Kerzhner, *Artemisia* sp. (Asteraceae), 3♂ (AMNH_PBI 00153974), 3♀ (AMNH_PBI 00153975) (ZISP). Lamyn–gegen, SE Khangay, 17 Jul 1926, A.N. Kiritshenko, 1♂ (AMNH_PBI 00342635), 1♀ (AMNH_PBI 00342634) (BMNH). UVS AIMAK: 10 km W of Ureg-Nur Lake, 50.149°N 90.746°E, 17 Jul 1968, Emeljanov, 1♂ (AMNH_PBI 00152375) (ZISP). 15 km SSE of Tarialan, 49.65°N 92°E, 05 Aug 1970, I.M. Kerzhner, 1♂ (AMNH_PBI 00153677), 4♀ (AMNH_PBI 00153591, AMNH_PBI 00153592) (ZISP). 20 km N Olgiy [Ulgiy], 49.145°N 89.964°E, 05 Aug 1970, I.M. Kerzhner, 1♂ (AMNH_PBI 00153678) (ZISP). 30 km NW of Sharbulag [Dzabkhan], 49.025°N 92.828°E, 27 Aug 1968, A.F. Emeljanov, 2♂ (AMNH_PBI 00153061, AMNH_PBI 00153062), 4♀ (AMNH_PBI 00153187, AMNH_PBI 00153189, AMNH_PBI 00153192, AMNH_PBI 00153066) (ZISP). 40 km N of Urgamal, 48.84°N 94.3°E, 11 Aug 1970, A.F. Emeljanov, 3♂ (AMNH_PBI 00153026), 2♀ (AMNH_PBI 00153148, AMNH_PBI 00153150) (ZISP); 11 Aug 1970, Narchuk, 1♀ (AMNH_PBI 00153467) (ZISP). 50 km N Urgamal, 48.93°N 94.294°E, 11 Aug 1970, A.F. Emeljanov, 1♂ (AMNH_PBI 00153028) (ZISP). 70 km E of Ulaangom, 49.97°N 93.04°E, 01 Sep 1968, A.F. Emeljanov, 1♂ (AMNH_PBI 00153683), 3♀ (AMNH_PBI 00153602–AMNH_PBI 00153604) (ZISP). W of lower course of Nariyn Gol River, Khalkha, 50.36667°N 93.6°E, 28 Aug 1926, A.N. Kiritshenko, 5♀ (AMNH_PBI 00152979–AMNH_PBI 00152983) (ZISP). RUSSIAN FEDERATION: ALTAI REP.: Kosh-Agach, 49.98333°N 88.63333°E, 31 Jul 1964, A.F. Emeljanov, 2♂ (AMNH_PBI 00153327, AMNH_PBI 00153328), 14♀ (AMNH_PBI 00153329–AMNH_PBI 00153342) (ZISP); 02 Aug 1964, I.M. Kerzhner, 26♂ (AMNH_PBI 00153234–AMNH_PBI 00153259), 67♀ (AMNH_PBI 00153260–AMNH_PBI 00153326) (ZISP); 25 Aug 1964, I.M. Kerzhner, *Artemisia obtusiloba* (Asteraceae), 1♀ (AMNH_PBI 00152984) *Artemisia* sp. (Asteraceae), 25♀ (AMNH_PBI 00153343–AMNH_PBI 00153367) (ZISP).

4.4. *Agraptocoris eugeniae* sp.n.

Figs. 3C–E, 8B,C, 10A,B, 12E–H, 14H,K,R,U, 15

Diagnosis. Recognized by the following combination of characters: total length male 4.6–5.1 mm, female 3.1–3.4 mm; antennomere I with 5–7 spinelike dark setae on dorsomesial surface (Fig. 8B,C); hemelytron in male with faint, dense, regular, minute pale brown spots (3C,D); frons and vertex usually entirely dark brown, without pale midline (Fig. 8C), rarely uniformly pale yellow (Fig. 8B); dark setae usually absent on head, scarce on pronotum and dense on hemelytron; vesica almost J-shaped, very slightly curved apically, without additional outgrowth, with secondary gonopore located close to apex; apical blade of vesica straight and contrastingly short (Figs. 10A,B, 14H,K); apex of phallotheca without subapical tooth (Figs. 12G, 14R); sensory lobe of left paramere slightly divergent relative to apical process (Figs. 12H, 14U).

This new species is most similar in vesica structure, color pattern of dorsum, and size to *A. oncotyloides* Vinokurov, 1995. However, the latter species may be distinguished by the color pattern of hemelytron with more or less expressed pale brown lines along claval vein and medial fracture (Fig. 4A,B), and the subapically dentate phallotheca (Figs. 12C, 14Q). *Agraptocoris oncotyloides* further differs from *A. eugeniae* in the structure of left paramere with sensory lobe strongly divergent relative to apical process (Figs. 14W) and the larger vesica with straight and gradually narrowing apical blade (Figs. 14I,L).

Description. ***Male***: ***Coloration***: Dirty yellow (Fig. 3C,D). Head castaneous to dark brown, with pale base of vertex and area ventral to eye in specimens from Govialtay Aimak, uniformly pale yellow, rarely with pale brown apex of clypeus in specimens from South Govi Aimak; antennomere I dark brown in specimens from Govialtay Aimak, pale yellow, sometimes with darkened base in specimens from South Govi Aimak, segments II–IV pale to dirty yellow; labrum pale yellow, labium dirty yellow, with dark brown segment IV and usually darkened apex of segment III. Pronotum and scutellum pale yellow to pale olive, exposed part of mesonotum concolorous with scutellum, rarely with orange tinge; hemelytron whitish to dirty yellow, entirely or at least partly covered with faint but dense minute pale brown spots at bases of dark setae; membrane uniformly pale brown; veins whitish to pale brown. All coxae dark brown in specimens from Govialtay Aimak, uniformly pale in specimens from South Govi Aimak; femora dirty yellow to more or less darkened in specimens from Govialtay Aimak, usually in these specimens all femora or at least hind femur entirely or apically dark brown, femora always pale yellow in specimens from South Govi Aimak, with faint pale brown mottling composed of minute spots, more dense on hind femur; tibiae pale yellow, without spots at bases of tibial spines; tarsal segment III usually darkened. Thoracic pleura dirty yellow with dark brown mesepisternum in specimens from Govialtay Aimak, entirely pale yellow in specimens from South Govi Aimak; mesosternite always brown to dark brown; abdomen uniformly yellow, frequently with greenish tinge. ***Vestiture***: Dorsum with dense woolly silvery setae intermixed with long, black, semierect to adpressed simple setae; dark setae dense on hemelytron, usually scarce on pronotum and absent on head; antennomere I with numerous dark brown spinelike setae, five in pale specimens from South Govi Aimak, up to seven in specimens from Govialtay Aimak (Fig. 8B,C). ***Structure***: Body 3.6–3.9 × as long as width of pronotum; total length 4.6–5.1 mm; vertex 1.4–1.8 × as wide as eye, 1.1–1.2 × as wide as length of antennomere I; antennomere II 1.2–1.5 × as long as basal width of pronotum, 1.7–2.1 × as long as width of head; pronotum 2.1–2.3 × as wide as long. ***Genitalia***:

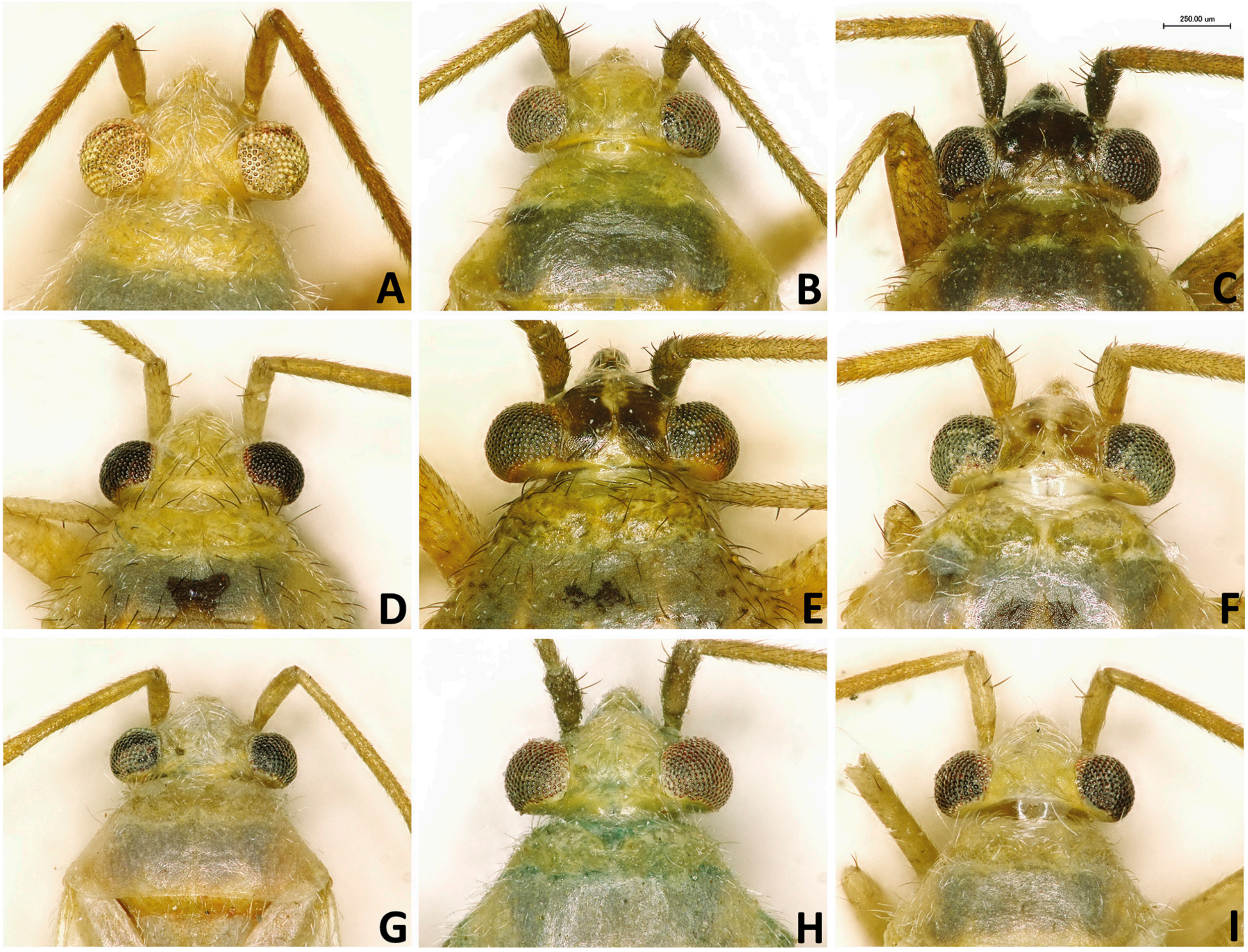

Fig. 8. Head of male *Agraptocoris* spp. **A**: *A. concolor*. **B**,**C**: *A. eugeniae*. **D**: *A. nigrosetosus*. **E**,**F**: *A. oncotyloides*. **G**: *A. pallescens*. **H**: *A. pamiricus*. **I**: *A. subconcolor*.

Genital segment conical, 1.1 – 1.2 × as long as width at base; phallotheca with slightly and gradually curving, finely attenuated apex (Figs. 12G, 14R), without subapical tooth; right paramere as in Fig. 12E, sensory lobe of left paramere elongated, with blunt apex, more or less parallel with apical process (Figs. 12F,H, 14U); vesica almost J-shaped in lateral view, slightly curving apically, secondary gonopore located close to apex, apical blade very short, thin and straight, without additional processes (Figs. 10A,B, 14H,K). — ***Female***: ***Coloration***: Similar to male, uniformly pale yellow, sometimes with greenish tinge (Fig. 3E); head always uniformly pale yellow in specimens from South Govi Aimak, pale to partly darkened, with brown clypeus, mandibular plate and sometimes frons in specimens from Govialtay Aimak; hemelytron without any dark pattern. ***Vestiture***: As in male. ***Structure***: Body 2.6 – 3.2 × as long as width of pronotum; total length 3.1 – 3.4 mm; vertex 2.0 – 2.3 × as wide as eye, 1.4 – 1.5 × as wide as length of antennomere I; antennomere II 1.0 – 1.2 × as long as basal width of pronotum, 1.2 – 1.4 × as long as width of head; pronotum 2.3 – 2.7 × as wide as long; hemelytron covering abdominal tergite VI, sometimes reaching apical margin of tergite VII, claval commissure 0.9 – 1.0 × as long as combined length of pronotum and scutellum.

Distribution. Desert steppe of South Mongolia, from Govialtay Aimak in the west to East Govi Aimak in the east (Fig. 15).

Hosts. Sampled from subshrubs of the tribe Salsolae (Amaranthaceae), viz. *Salsola abrotanoides* Bunge and *Sympegma regelii* Bunge in the Govialtay Aimak, and from *Sympegma* sp. and *Iljinia* sp. in the South Govi Aimak.

Etymology. Named for my daughter Eugenia Konstantinova.

Material examined. ***Holotype***: ♂, MONGOLIA, Govialtay Aimak, 15 km ENE Tsogt, 45.56666°N 95.86666°E, 15 Jul 1970, Narchuk, *Salsola abrotanoides* (Amaranthaceae), (AMNH_PBI 00152350) (ZISP). — ***Paratypes***: MONGOLIA: EAST GOVI AIMAK: 5 km W Tenger-Nur Lake, 42.614°N 108.705°E, 25 Jun 1971, I.M. Kerzhner, 2♂ (AMNH_PBI 00153938) (ZISP). GOVI-ALTAY AIMAK: 15 km ENE Tsogt, 45.56666°N 95.86666°E, 15 Jul 1970, Narchuk, *Salsola abrotanoides* (Amaranthaceae), 4♂ (AMNH_PBI 00152349, AMNH_PBI 00152348) (ZISP); 15 Jul 1970, I.M. Kerzhner, *Salsola abrotanoides* (Amaranthaceae), 4♂ (AMNH_PBI 00152346, AMNH_PBI 00152347), 10♀ (AMNH_PBI 00152416 – AMNH_PBI 00152421) (ZISP); 23 Aug 1970, I.M. Kerzhner, *Salsola abrotanoides* (Amaranthaceae), 3♀ (AMNH_PBI 00152406) (ZISP). 15 km WNW of

Delger, 46.42°N 97.19°E, 11 Jul 1970, I.M. Kerzhner, *Salsola abrotanoides* (Amaranthaceae), 2♀ (AMNH_PBI 00152422) (ZISP). 20 km SSW Tsogt, 45.17°N 96.54°E, 23 Aug 1970, I.M. Kerzhner, *Sympegma regelii* (Amaranthaceae), 8♂ (AMNH_PBI 00152339–AMNH_PBI 00152342), 15♀ (AMNH_PBI 00152400–AMNH_PBI 00152405) (ZISP). Ushiyn-Bulak spring, 30 km NW Jargalant [Beger], 45.895°N 96.899°E, 13 Jul 1970, Narchuk, 3♂ (AMNH_PBI 00152379) (ZISP). SOUTH GOVI AIMAK: 15 km S of Saynshand [Sevrey], 43.38°N 102.56°E, 22 Aug 1969, Kozlov, 2♂ (AMNH_PBI 00153494) (ZISP); 22 Aug 1969, I.M. Kerzhner, 4♂ (AMNH_PBI 00152345, AMNH_PBI 00152343, AMNH_PBI 00152344) *Iljinia* sp. (Amaranthaceae), 25♀ (AMNH_PBI 00152407–AMNH_PBI 00152415) (ZISP). 30 km NE Tsailan frontier post, 25 Aug 1969, Kozlov, 3♀ (AMNH_PBI 00152424) *Sympegma* sp. (Amaranthaceae), 9♂ (AMNH_PBI 00152351–AMNH_PBI 00152353) (ZISP); 25 Aug 1969, I.M. Kerzhner, 7♂ (AMNH_PBI 00152356, AMNH_PBI 00152355, AMNH_PBI 00152354), 6♀ (AMNH_PBI 00152425, AMNH_PBI 00152423), 1 larva (AMNH_PBI 00152381) (ZISP).

4.5. *Agraptocoris margaretae* (Hutchinson, 1934)

Figs. 3F, 10E,F, 12I–K, 15

Tibetocoris margaretae Hutchinson, 1934: 142.
Agraptocoris margaretae: Kerzhner 1997: 246.

Diagnosis. Recognized by the following combination of characters: body small, male 3.3–3.7 mm; antennomere I with two spinelike dark setae on dorsomesial surface; dorsum with indistinct pale brown minute spots on pronotum and hemelytron (Fig. 3F); dark simple setae missing on head and pronotum, located only on distal 2/3 of hemelytron; vesica S-shaped but strongly bent distal to secondary gonopore, without additional outgrowth; secondary gonopore removed from apex, with largely expanded surrounding membrane; apical blade of vesica straight, gradually tapering (Fig. 10E,F).

Similar to *A. subconcolor* in size, coloration and vestiture but differs from that species in the better expressed brown spots on dorsum and in the shape of the vesica, viz. the presence of strong bend distal to secondary gonopore surrounded by greatly expanded membrane (compare Figs. 9B,E and 10E,F).

Redescription. ***Male***: ***Coloration***: Dirty whitish to pale yellow (Fig. 3F). Head dirty pale whitish to pale yellow, frons sometimes with slightly darkened stripes radiating from midline; antennomeres I and II slightly darker than head, remaining segments pale brown, darker than segment II; labium pale brown, with darkened apex. Pronotum, scutellum and hemelytron uniformly pale whitish with diffuse, rounded, pale brown minute spots sometimes obsolete; membrane smoky hyaline, semitransparent, typically slightly darkened apically; veins yellow or whitish. Femora pale brown, apically with a few faint minute brown spots; tibiae pale brown to dirty yellow, without spots at bases of tibial spines. Thoracic venter and abdomen uniformly dirty whitish, mesosternite slightly darkened at center. ***Vestiture***: Dorsum with dense, somewhat curved, adpressed woolly silvery setae; in addition cuneus and apex of corium with dark straight simple setae; venter, antenna, and legs with comparatively short silvery adpressed simple setae; antennomere I with two dark spinelike setae on medial surface. ***Structure***: Body 3.2–3.3 × as long as width of pronotum; total length 3.3–3.7 mm (Hutchinson 1934); vertex 2.2 × as wide as eye, 1.6–1.7 × as wide as length of antennomere I; antennomere II 0.9 × as long as basal width of pronotum, 1.3 × as long as width of head; pronotum 2.2 × as wide as long. ***Genitalia***: Genital segment 1.1 × as long as width at base; phallotheca as in Fig. 12J, without subapical tooth; right paramere as in Fig. 12I, sensory lobe of left paramere elongated, with blunt apex, more or less parallel to apical process (Fig. 12K); vesica S-shaped in lateral view, strongly bent distal to secondary gonopore; apical blade long, smoothly curved at midpoint, gradually tapering, without additional processes; secondary gonopore removed from apex (Fig. 10E,F). — ***Female***: Unknown.

Distribution. Known from several close high altitude localities on the border of Jammu and Kashmir provinces of India and Aksai Chin Province of China (Fig. 15).

Hosts. *Artemisia minor* Jacquem. ex Besser (Hutchinson 1934).

Material examined. ***Paratypes***: CHINA: Aksai Chin, Pass Nyingri – Chungang La, 34.23333°N 79.08333°E, 5100 m, 27 Jul 1932, Yale North India Expedition, 2♂ (AMNH_PBI 00225991, AMNH_PBI 00225992) (YPM). INDIA: Jammu and Kashmir, Pass SW of Mitpal Tso, 33.4666°N 78.61666°E, 5156 m, 18 Aug 1932, Yale North India Expedition, 1♂ (AMNH_PBI 00237867) (YPM).

4.6. *Agraptocoris nigrisetosus* sp.n.

Figs. 3G,H, 8D, 11A,C,E, 12L–O, 13M,N, 14M,O,T,V, 15

Diagnosis. Recognized by the following combination of characters: total length male 3.6–4.7 mm, female 2.7–3.1 mm; antennomere I with two spinelike dark setae on dorsomesial surface (Fig. 8D); hemelytron without color pattern or with faint and minute pale brown spots at bases of dark setae (Fig. 3G); hemelytron in female short, barely covering abdominal tergite V (Fig. 3H); entire dorsum including head and pronotum with long semierect black setae (Fig. 8D); vesica distinctly bent distal to secondary gonopore; apical blade long, gradually tapering, with flattened, thorn-shaped and posteriorly attenuated sclerotized outgrowth located at midpoint between secondary gonopore and subapical curvature; secondary gonopore removed from apex (Figs. 11A,C,E, 14M,O).

Most similar to *A. pallescens* sp.n. in having characteristic thorn-shaped subapical outgrowth of vesica, but the latter species is clearly distinguished by the absence of black setae on head and pronotum (Fig. 8G), often also on hemelytron, small sizes, and short antennomere II (Fig. 4D). *Agraptocoris nigrisetosus* further differs from *A. pallescens* in the larger vesica, with thorn-shaped outgrowth entirely sclerotized, located at midpoint between secondary gonopore and subapical curvature, whereas

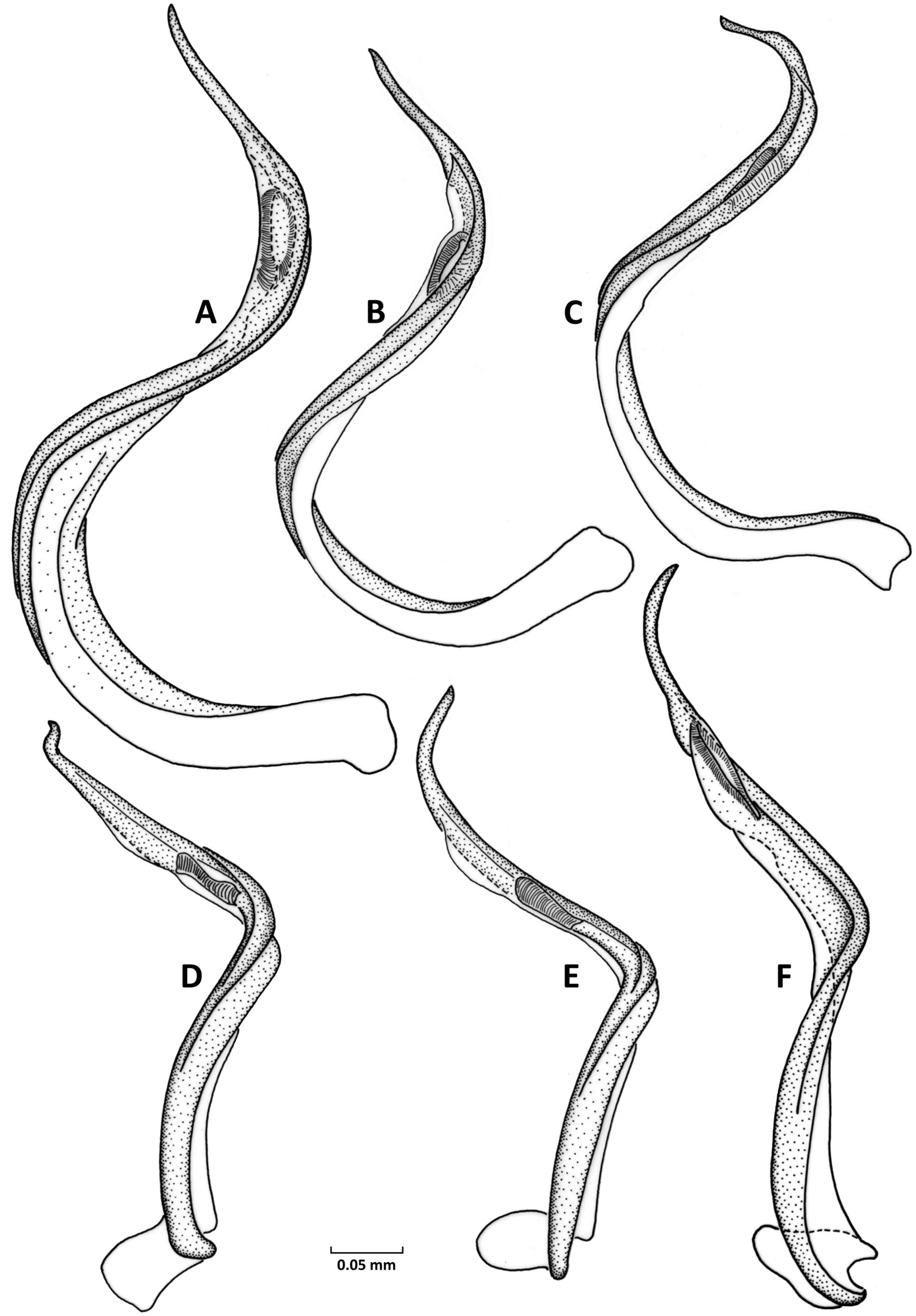

Fig. 9. Vesica of *Agraptocoris* spp. **A**,**F**: *A. pamiricus*. **B**,**E**: *A. subconcolor*. **C**,**D**: *A. concolor*. **A**–**C**: lateral view. **D**–**F**: ventral view.

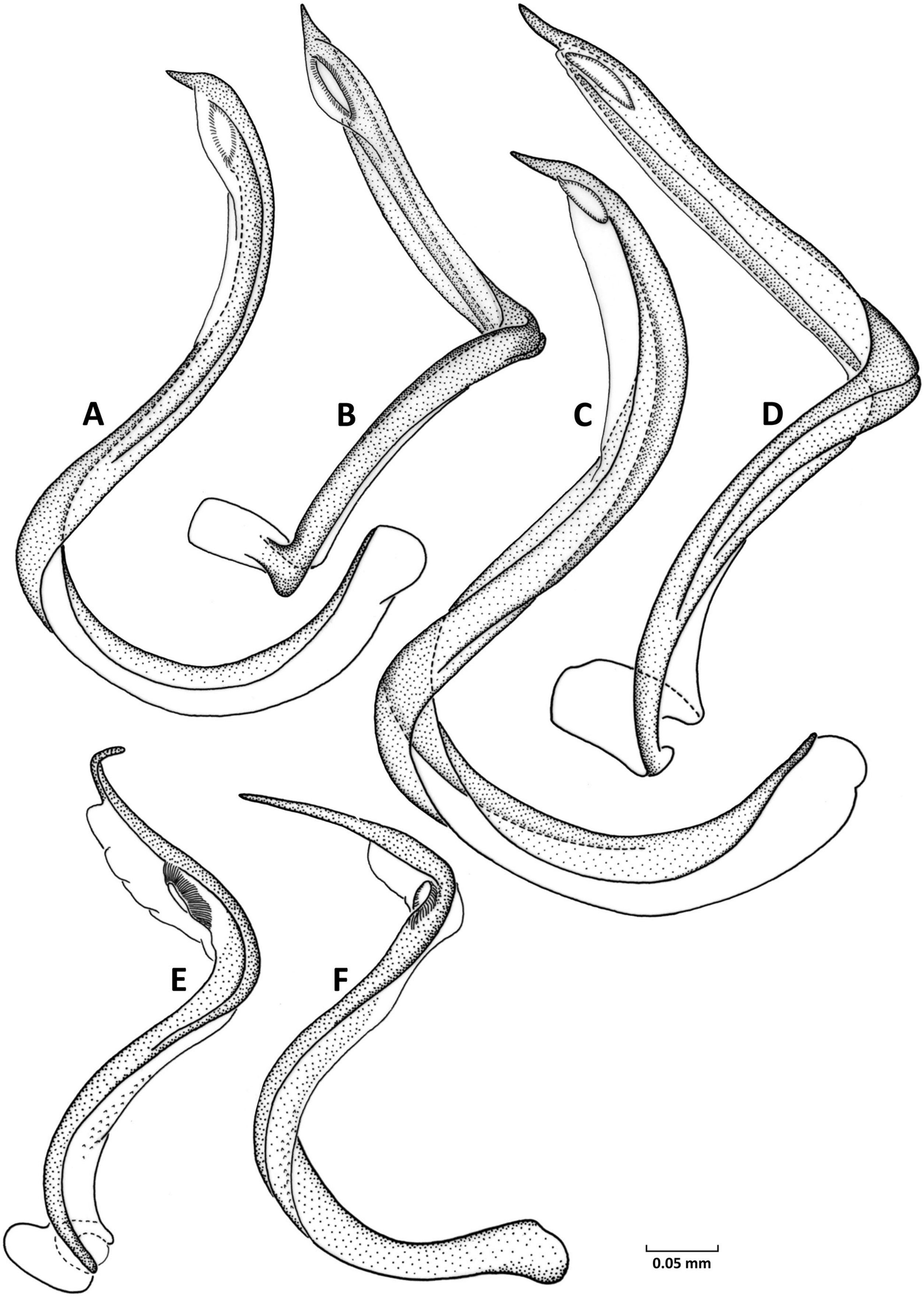

Fig. 10. Vesica of *Agraptocoris* spp. **A**,**B**: *A. eugeniae*. **C**,**D**: *A. oncotyloides*. **E**,**F**: *A. margaretae*. **A**,**C**,**F**: lateral view. **B**,**D**,**E**: ventral view.

the vesica in *A. pallescens* is smaller, with thorn-shaped outgrowth narrow, weakly sclerotized and located closer to apex of vesica (Figs. 11B,D,F, 14N,P).

Description. ***Male***: ***Coloration***: Pale yellow to dirty whitish (Fig. 3G,H). Head pale yellow, antennomeres III and IV usually darkened, dirty yellow to brown, labial segment IV dark brown. Pronotum, scutellum and hemelytron uniformly pale yellow, posterior part of pronotum and hemelytra sometimes somewhat paler, whitish, exposed part of mesonotum frequently with orange tinge; scutellum, clavus and corium immaculate or with hardly recognizable small pale brown spots; membrane uniformly pale brown; veins whitish. Femora pale yellow, immaculate, hind femur with a few, very minute pale brown markings on dorsal and ventral surfaces; tibiae pale yellow, without spots at bases of tibial spines; tarsi brown. Thoracic venter and abdomen uniformly pale yellow, usually with somewhat darker genital segment. ***Vestiture***: Entire dorsum with long black simple setae, semierect on vertex and anterior part of pronotum, adpressed elsewhere, intermixed with dense woolly silvery setae; venter, antenna, and legs with comparatively short silvery adpressed simple setae; antennomere I with two dark brown spinelike setae on medial surface (Fig. 8D). ***Structure***: Body 3.9–4.1 × as long as width of pronotum; total length 3.6–4.7 mm; vertex 1.4–1.8 × as wide as eye, 0.8–1.0 × as wide as length of antennomere I; antennomere II 0.9–1.2 × as long as basal width of pronotum, 1.4–1.8 × as long as width of head; pronotum 2.1–2.3 × as wide as long. ***Genitalia***: Genital segment about 1.2 × as long as width at base; phallotheca as in Figs. 12L, 14T, without subapical tooth; right paramere as in Fig. 12L, sensory lobe of left paramere elongated, with narrowly rounded apex, more or less parallel to apical process (Figs. 12M,O, 14V); vesica S-shaped in lateral view, distinctly bent distal to secondary gonopore; secondary gonopore removed from apex; apical blade long, distinctly bent close to apex, gradually tapering, with flattened, posteriorly attenuated sclerotized outgrowth distal to secondary gonopore (Figs. 11A,C,E, 14M,O). — ***Female***: ***Coloration***: Similar to male, uniformly pale yellow, intensity of dark pattern on dorsum variable, pronotum, scutellum, hemelytron, and abdominal tergites uniformly pale yellow or with faint minute pale brown spots (Fig. 3H). ***Vestiture***: As in male, but dark semierect simple setae on head and pronotum usually more dense than in male. ***Structure***: Body 2.9–3.2 × as long as width of pronotum; total length 4.8–5.6 mm; vertex 2.0–2.4 × as wide as eye, 1.3–1.4 × as wide as length of antennomere I; antennomere II 0.8–0.9 × as long as basal width of pronotum, 1.0–1.1 × as long as width of head; pronotum 2.0–2.3 × as wide as long; hemelytron comparatively short, reaching or slightly surpassing anterior margin of abdominal tergite V, claval commissure 0.6–0.8 × as long as combined length of pronotum and scutellum.

Distribution. Southwestern and Central Mongolia, spanning from Hovd Aimak in the West to South Hangay and Central Aimaks in the East. *Agraptocoris nigrisetosus* inhabits montane grasslands and shrublands of Altai and Khangai mountains in western Mongolia, and temperate grasslands and shrublands in the uplands of central Mongolia (Fig. 15).

Hosts. Unknown.

Etymology. The species name refers to the conspicuous dark setae on dorsum.

Material examined. ***Holotype***: ♂, MONGOLIA, South Hangay Aimak, Lamyn-gegen, SE Khangay, 17 Jul 1926, A.N. Kiritshenko (AMNH_PBI 00152783) (ZISP). — ***Paratypes***: MONGOLIA: BAYANHONGOR AIMAK: North mountainside of Ikh-Bogdo Range, 45.53333°N 97.1°E, 2500 m, 18 Aug 1967, I.M. Kerzhner, 18♀ (AMNH_PBI 00153961–AMNH_PBI 00153966) (ZISP); 18 Aug 1967, V.Ph. Zaitsev, 1♀ (AMNH_PBI 00153468) (ZISP); 18 Aug 1967, A.F. Emeljanov, 8♀ (AMNH_PBI 00153598–AMNH_PBI 00153601) (ZISP). South mountainside of Ikh-Bogdo-Ula, 40 km E of Bayan-Gobi, 44.784°N 100.773°E, 08 Aug 1969, I.M. Kerzhner, 1♂ (AMNH_PBI 00152367) (ZISP). CENTRAL AIMAK: 20 km S of Ulaanbaatar, 47.73333°N 106.9°E, 02 Jul 1967, I.M. Kerzhner, 6♀ (AMNH_PBI 00153585–AMNH_PBI 00153587), 1♂ (AMNH_PBI 00153672) (ZISP). Nalayh [Nalaykha], 47.767°N 107.263°E, 25 Jun 1967, I.M. Kerzhner, 39♀ (AMNH_PBI 00153099–AMNH_PBI 00153107, AMNH_PBI 00153109–AMNH_PBI 00153138), 23♂ (AMNH_PBI 00153108, AMNH_PBI 00152992–AMNH_PBI 00153013) (ZISP); 25 Jun 1967, A.F. Emeljanov, 5♀ (AMNH_PBI 00153089–AMNH_PBI 00153092, AMNH_PBI 00153097), 12♂ (AMNH_PBI 00153093–AMNH_PBI 00153096, AMNH_PBI 00153098, AMNH_PBI 00152985–AMNH_PBI 00152991) (ZISP). Nr Songiin [Songino], SW of Ulaanbaatar, steppe, 47.81666°N 106.66666°E, 01 Jul 1967, Emeljanov, 7♂ (AMNH_PBI 00153014–AMNH_PBI 00153020), 4♀ (AMNH_PBI 00153139–AMNH_PBI 00153142) (ZISP). GOVIALTAY AIMAK: Dutiyn-Daba Pass, 37 km ENE of Tsogt, 44.51666°N 105.75°E, 14 Jul 1970, I.M. Kerzhner, 8♀ (AMNH_PBI 00153566–AMNH_PBI 00153573), 22♂ (AMNH_PBI 00153654–AMNH_PBI 00153659, AMNH_PBI 00153661, AMNH_PBI 00153660, AMNH_PBI 00153662, AMNH_PBI 00153515–AMNH_PBI 00153517) (ZISP). Ikh-Ulan-Daba Pass, 60 km SW of Munkh-Khayrkhan-Ula Mt, 46.501°N 91.061°E, 02 Aug 1970, I.M. Kerzhner, 1♂ (AMNH_PBI 00153700) (ZISP). HOVD AIMAK: 15 km WNW of Dut, 47.555°N 91.445°E, 08 Jul 1980, I.M. Kerzhner, 3♀ (AMNH_PBI 00153565) (ZISP). NORTH HANGAI AIMAK: Tavanbulag [Tevshrulekh], site 2, 47.3833°N 101°E, 24 Jul 1970, Kandybina, 1♀ (AMNH_PBI 00153979) (ZISP). SOUTH HANGAY AIMAK: Lamyn-gegen, SE Khangay, 16 Jul 1926, A.N. Kiritshenko, 19♂ (AMNH_PBI 00152821–AMNH_PBI 00152838, AMNH_PBI 00152841), 11♀ (AMNH_PBI 00152839–AMNH_PBI 00152849) (ZISP); 17 Jul 1926, A.N. Kiritshenko, 14♂ (AMNH_PBI 00152778–AMNH_PBI 00152782, AMNH_PBI 00152784–AMNH_PBI 00152792), 28♀ (AMNH_PBI 00152793–AMNH_PBI 00152820) (ZISP); 18 Jul 1926, A.N. Kiritshenko, 2♂ (AMNH_PBI 00152850, AMNH_PBI 00152851), 24♀ (AMNH_PBI 00152852–AMNH_PBI 00152875) (ZISP); 19 Jul 1926, A.N. Kiritshenko, 2♀ (AMNH_PBI 00152977, AMNH_PBI 00152978) (ZISP); 20 Jul 1926, A.N. Kiritshenko, 12♀ (AMNH_PBI 00153210–AMNH_PBI 00153221) (ZISP); 21 Jul 1926, A.N. Kiritshenko, 1♂ (AMNH_PBI 00152873), 2♀ (AMNH_PBI 00152874, AMNH_PBI 00152875) (ZISP); 22 Jul 1926, A.N. Kiritshenko, 2♂ (AMNH_PBI 00153193, AMNH_PBI 00153194), 15♀ (AMNH_PBI 00153195–AMNH_PBI 00153209) (ZISP); 25 Jul 1926, A.N. Kiritshenko, 1♀ (AMNH_PBI 00152976) (ZISP). Ushugin-Obo Mt, 45.46667°N 101.81667°E, 02 Aug 1969, I.M. Kerzhner, 1♂ (AMNH_PBI 00153688) (ZISP).

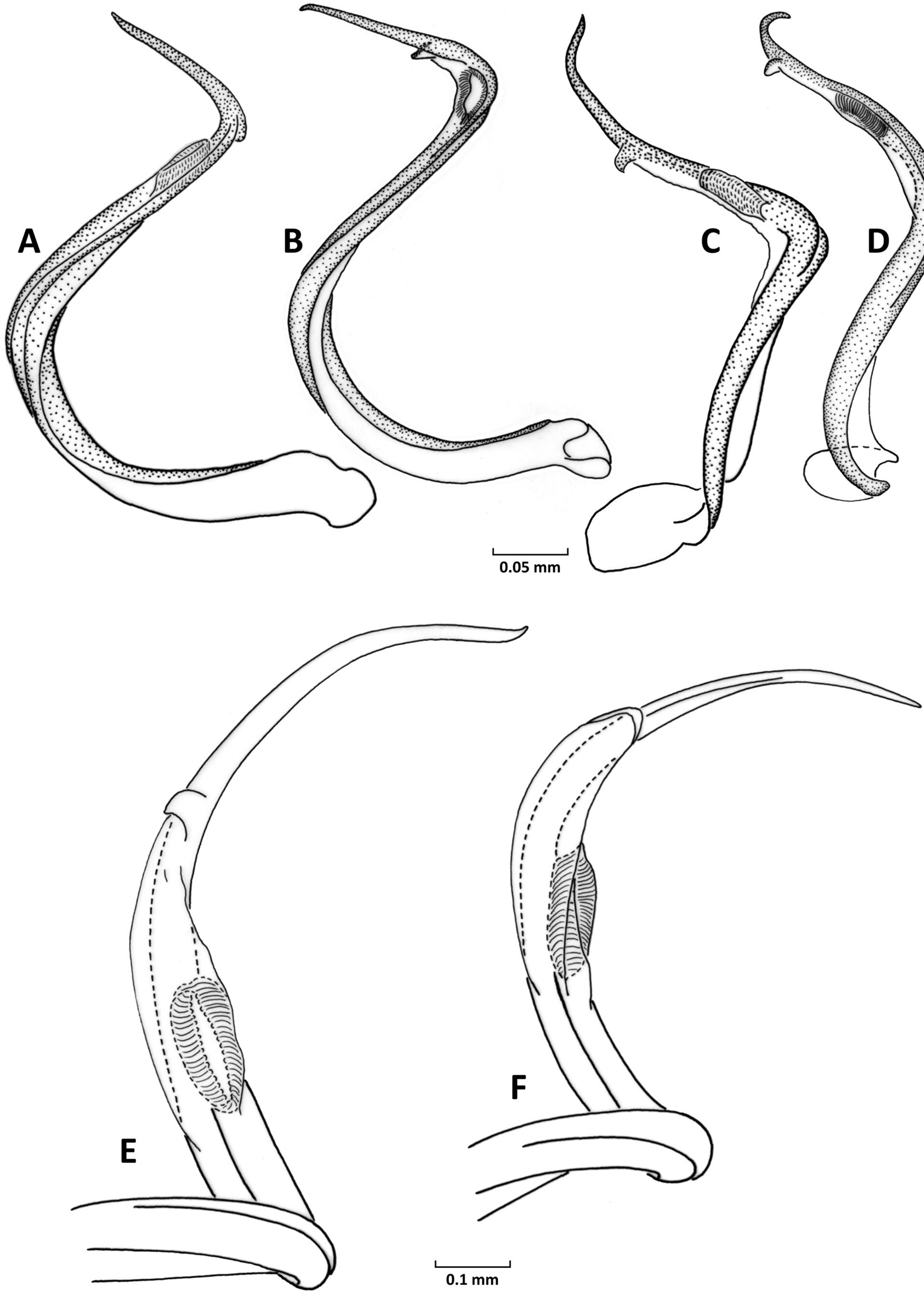

Fig. 11. Vesica of *Agraptocoris* spp. **A**,**C**,**E**: *A. nigrisetosus*. **B**,**D**,**F**: *A. pallescens*. **A**,**B**,**E**,**F**: lateral view. **C**,**D**: ventral view.

4.7. *Agraptocoris oncotyloides* Vinokurov, 1995

Figs. 4A–C, 6J–I, 7E, 8E,F, 10C,D, 13A–C, 14I,L,Q,W, 15

Agraptocoris oncotyloides Vinokurov in Vinokurov & Kanyukova 1995a: 53; Vinokurov & Kanyukova 1995b: 121 (key).

Diagnosis. Recognized by the following combination of characters: body large, male 4.9–6.2 mm, female 3.4–4.1 mm; antennomere I with three spinelike dark setae on dorsomesial surface (Fig. 8E,F); vertex in male partly darkened or at least with two round brown maculae; hemelytron in male with more or less dense, regular, minute pale brown spots, and with longitudinal interrupted pale brown lines: one on clavus and one or two on corium (Fig. 4A,B); hemelytron in female comparatively large, covering abdominal tergite VII and sometimes reaching apical margin of tergite VIII (Fig. 4C); dark setae dense on hemelytron, usually present on head and pronotum; vesica almost J-shaped, very slightly curved apically, without additional outgrowth, with secondary gonopore located close to apex; apical blade of vesica straight and contrastingly short (Figs. 10C,D, 14I,L); apex of phallotheca with distinct subapical tooth (Figs. 12C, 14Q); sensory lobe of left paramere strongly divergent relative to apical process (Fig. 14W).

Most similar to *A. eugeniae* sp.n. in the shape of vesica (Figs. 10A,B, 14H,K), color pattern composed of minute brown spots on hemelytron (Fig. 3C,D) and dark markings on vertex (Fig. 8B,C). Distinguished from that species by the large size, antennomere I with only three dorsomesial setae, and phallotheca with subapical tooth. Refer to diagnosis of *A. eugeniae* for additional discussion of distinctive features.

Redescription. ***Male***: ***Coloration***: Dirty yellow (Fig. 4A,B). Head yellow with variable dark color pattern ranging from almost entirely dark brown vertex, frons and clypeus in dark specimens to two round brown maculae on vertex and two more on frons close to clypeus in pale specimens; typically vertex with two dark brown round maculae, extending on frons as two elongate brown spots separated by pale midline, clypeus with central brown spot at base and dark stripes at sides; all antennomeres dirty yellow, segments III, IV of same color with segment II, rarely slightly darker, in dark specimens segment I entirely or basally dark brown; labrum brown, labium dirty yellow, with dark brown segment IV. Pronotum, scutellum and hemelytron pale yellow, base of pronotum usually somewhat paler, exposed part of mesonotum frequently with orange tinge, sometimes sides of pronotum and scutellum with faint, small, round pale brown spots; hemelytron with dense minute pale brown spots; in addition clavus with thin, pale brown, usually interrupted line composed of confluent spots along claval vein; corium with similar line along medial fracture and usually with one more indistinct line close to claval suture, rarely hemelytron without clear lines and with faint pale brown spots; membrane uniformly pale brown; veins whitish to pale brown. All coxae, especially fore and middle ones more or less darkened, rarely uniformly pale; femora dirty yellow, hind femur with brown mottling composed of variously shaped minute spots, more dense on ventral surface, posterior margin and apical part of dorsal surface; fore and middle femora with similar but widely spaced mottling; hind tibia in dark specimens with very small spots at bases of spines; tarsi apically darkened. Thoracic pleura dirty yellow to dark brown, scent gland evaporative area always yellow; mesosternite dark brown; abdomen uniformly yellow. ***Vestiture***: Dorsum with dense, rather long and somewhat curved, woolly silvery setae intermixed with long black simple setae, semierect on vertex and anterior part of pronotum, adpressed elsewhere, in pale specimens head, pronotum and base of hemelytron without dark setae; venter, antenna, and legs with comparatively short silvery adpressed simple setae; antennomere I with four dark brown spinelike setae: two medial, one dorsal and one ventral. ***Structure***: Body 3.5–4.3 × as long as width of pronotum; total length 4.9–6.2 mm; vertex 1.2–1.6 × as wide as eye, 1.0–1.3 × as wide as length of antennomere I; antennomere II 1.3–1.5 × as long as basal width of pronotum, 1.9–2.3 × as long as width of head; pronotum 1.9–2.2 × as wide as long. ***Genitalia***: Genital segment conical, 1.2–1.3 × as long as width at base; phallotheca as in Figs. 12C, 14Q, with subapical tooth; right paramere as in Fig. 13A, sensory lobe of left paramere with acute apex (Fig. 13B), directed laterally and not parallel to apical process (Fig. 14W); vesica almost J-shaped in lateral view, slightly curving apically, without additional processes, secondary gonopore located close to apex, apical blade very short, straight, gradually tapering (Figs. 10C,D, 14I,L). — ***Female***: ***Coloration***: Similar to male, uniformly pale to dirty yellow (Fig. 4C); head without dark markings, rarely with two round brown spots on vertex; pronotum and scutellum uniformly pale yellow, rarely with minute brown spots along basal margin; hemelytron with dense and regularly distributed minute pale brown spots; abdominal tergites pale yellow or with minute pale brown spots on exposed tergites VIII–IX. ***Vestiture***: As in male. ***Structure***: Body 2.7–3.1 × as long as width of pronotum; total length 3.4–4.1 mm; vertex 1.8–2.0 × as wide as eye, 1.4–1.7 × as wide as length of antennomere I; antennomere II 1.0–1.2 × as long as basal width of pronotum, 1.3–1.4 × as long as width of head; pronotum 2.0–2.3 × as wide as long; hemelytron large, partly or entirely covering abdominal tergite VII, sometimes reaching tergite VIII, claval commissure 0.9–1.1 × as long as combined length of pronotum and scutellum.

Distribution. Widely distributed in desert steppes of Mongolia, spanning from Kosh-Agach (Altai Rep., Russia), Uvs and Hovd Aimaks in the West to East Govi Aimak in the East (Fig. 15).

Hosts. Recorded from *Chenopodium frutescens* C.A. Mey. in Altay Rep. (Russia) and from *Krascheninnikovia ceratoides* (L.) Gueldenst. (Amaranthaceae: Chenopodioideae) in Mongolia.

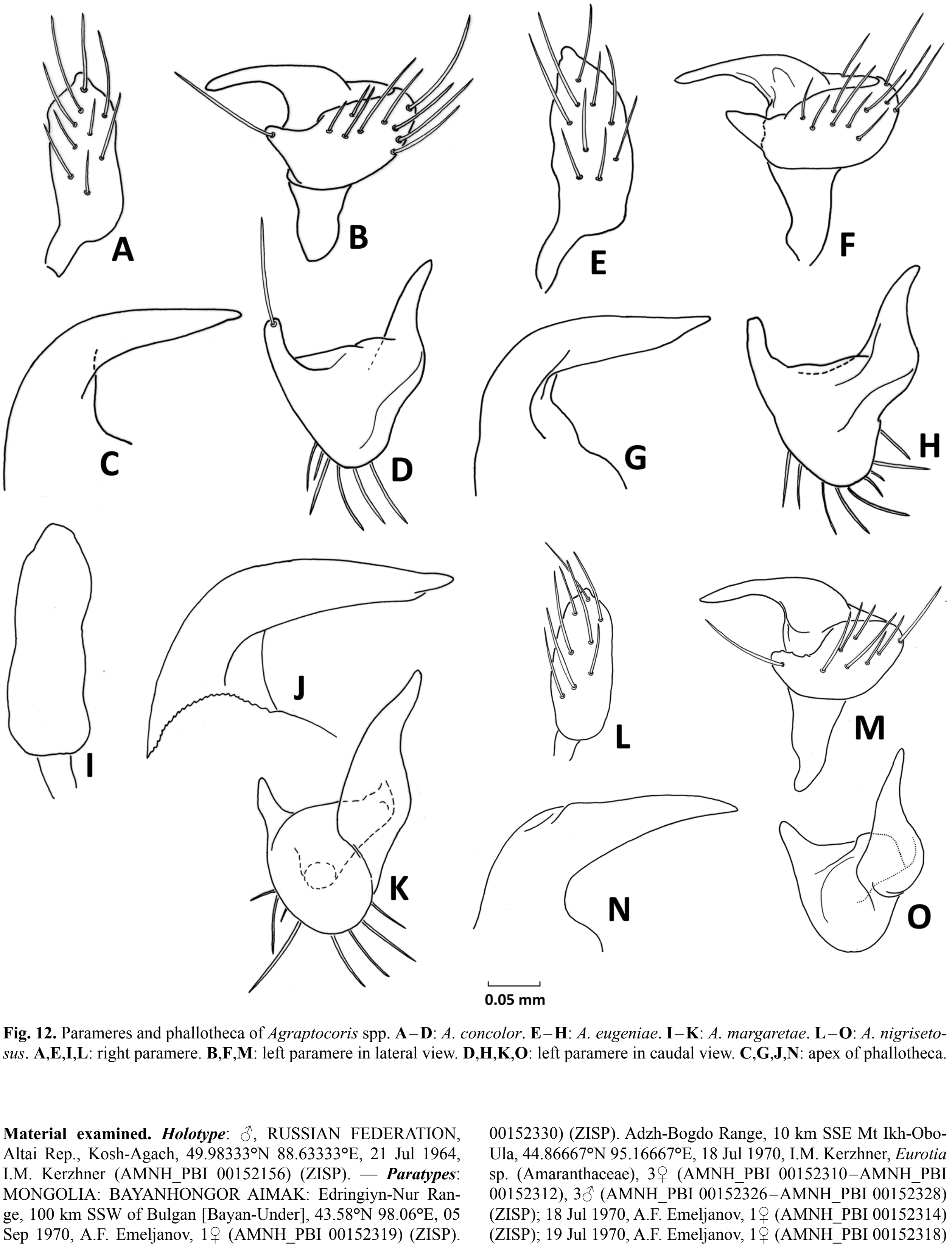

Fig. 12. Parameres and phallotheca of *Agraptocoris* spp. **A**–**D**: *A. concolor*. **E**–**H**: *A. eugeniae*. **I**–**K**: *A. margaretae*. **L**–**O**: *A. nigrisetosus*. **A**,**E**,**I**,**L**: right paramere. **B**,**F**,**M**: left paramere in lateral view. **D**,**H**,**K**,**O**: left paramere in caudal view. **C**,**G**,**J**,**N**: apex of phallotheca.

Material examined. ***Holotype***: ♂, RUSSIAN FEDERATION, Altai Rep., Kosh-Agach, 49.98333°N 88.63333°E, 21 Jul 1964, I.M. Kerzhner (AMNH_PBI 00152156) (ZISP). — ***Paratypes***: MONGOLIA: BAYANHONGOR AIMAK: Edringiyn-Nur Range, 100 km SSW of Bulgan [Bayan-Under], 43.58°N 98.06°E, 05 Sep 1970, A.F. Emeljanov, 1♀ (AMNH_PBI 00152319) (ZISP). EAST GOVI AIMAK: Mt Tushilge, 10 km SSW of Sain Shanda, 44.79861°N 110.09138°E, 01 Aug 1971, A.F. Emeljanov, 1♂ (AMNH_PBI 00152322) (ZISP). Nomt-Ula Mt., 30 km SSE Shokhoi-Nur Lake, 44.448°N 110.95°E, 04 Aug 1971, I.M. Kerzhner, *Krascheninnikovia ceratoides* (Amaranthaceae), 1♀ (AMNH_PBI 00152313) (ZISP). GOVIALTAY AIMAK: 10 km SSE of Dund-Us [Dzhargalan], 47.91666°N 91.68333°E, 13 Aug 1970, Narchuk, 1♀ (AMNH_PBI 00152316) (ZISP); 13 Aug 1970, A.F. Emeljanov, 1♀ (AMNH_PBI 00152315), 4♂ (AMNH_PBI 00152329, AMNH_PBI 00152330) (ZISP). Adzh-Bogdo Range, 10 km SSE Mt Ikh-Obo-Ula, 44.86667°N 95.16667°E, 18 Jul 1970, I.M. Kerzhner, *Eurotia* sp. (Amaranthaceae), 3♀ (AMNH_PBI 00152310–AMNH_PBI 00152312), 3♂ (AMNH_PBI 00152326–AMNH_PBI 00152328) (ZISP); 18 Jul 1970, A.F. Emeljanov, 1♀ (AMNH_PBI 00152314) (ZISP); 19 Jul 1970, A.F. Emeljanov, 1♀ (AMNH_PBI 00152318) (ZISP). Bichikte, 47.1°N 95.06666°E, 27 Aug 1926 – 28 Aug 1926, Kozlov, 1♀ (AMNH_PBI 00152109) (ZISP). Shargyn-Gobi, 40 km SW of Altai [Bor-Udzuur], 45.552°N 91.928°E, 22 Aug 1967 – 23 Aug 1967, I.M. Kerzhner, *Krascheninnikovia ceratoides* (Amaranthaceae), 31♀ (AMNH_PBI 00152282–AMNH_PBI 00152301), 18♂ (AMNH_PBI 00152198–AMNH_PBI 00152211) (ZISP); 22 Aug 1967 – 23 Aug 1967, A.F. Emeljanov, *Krascheninnikovia ceratoides* (Amaranthaceae), 4♂ (AMNH_PBI 00152212–AMNH_PBI 00152215) (ZISP). W foothills of Ikhe-

Bogdo, 44.986°N 99.949°E, 15 Aug 1926, A.N. Kiritshenko, 2♂ (AMNH_PBI 00152163, AMNH_PBI 00152164), 3♀ (AMNH_PBI 00152098–AMNH_PBI 00152100) (ZISP); 16 Aug 1926, A.N. Kiritshenko, 1♂ (AMNH_PBI 00152165), 1♀ (AMNH_PBI 00152101) (ZISP), 1♂ (AMNH_PBI 00152166), 1♀ (AMNH_PBI 00152102) (ZMUH); 18 Aug 1926, A.N. Kiritshenko, 3♂ (AMNH_PBI 00152174, AMNH_PBI 00152167, AMNH_PBI 00152168), 2♀ (AMNH_PBI 00152103, AMNH_PBI 00152104) (ZISP); 19 Aug 1926, A.N. Kiritshenko, 1♂ (AMNH_PBI 00152169), 3♀ (AMNH_PBI 00152105–AMNH_PBI 00152107) (ZISP); 21 Aug 1926, A.N. Kiritshenko, 1♀ (AMNH_PBI 00152108) (ZISP). HOVD AIMAK: 20 km W of southern coast of Duro-Nur [Durge-Nur] Lake, 47.56777°N 93.22666°E, 22 Aug 1968, A.F. Emeljanov, 1♀ (AMNH_PBI 00152317), 1♂ (AMNH_PBI 00152331) (ZISP). Ulyasutain gol River, 25 km N of Bulgan, 47.15°N 93.6°E, 31 Jul 1970, A.F. Emeljanov, 1♂ (AMNH_PBI 00152333) (ZISP). SOUTH GOVI AIMAK: 15 km WNW of Tsoohor [Khurmen], 43.33694°N 103.90055°E, 01 Aug 1967, A.F. Emeljanov, 8♀ (AMNH_PBI 00152304–AMNH_PBI 00152306), 5♂ (AMNH_PBI 00152323, AMNH_PBI 00152324) (ZISP); 01 Aug 1967, I.M. Kerzhner, 5♀ (AMNH_PBI 00152307–AMNH_PBI 00152309), 1♂ (AMNH_PBI 00152325) (ZISP). Navtgar-Ula Mts Range 35 km NW of Yamat-Ula, 43.3°N 104.6°E, 09 Aug 1971, I.M. Kerzhner, *Eurotia* sp. (Amaranthaceae), 4♀ (AMNH_PBI 00152302, AMNH_PBI 00152303), 1♂ (AMNH_PBI 00152216) (ZISP); 09 Aug 1971, A.F. Emeljanov, 2♀ (AMNH_PBI 00152320), 1♂ (AMNH_PBI 00152334) (ZISP). near Dund-Gol, 20 Aug 1969 – 21 Aug 1969, I.M. Kerzhner, 1♂ (AMNH_PBI 00152332) (ZISP). Soviet-Mongolian Expedition, 1970, Unknown, 1♀ (AMNH_PBI 00152321), 4♂ (AMNH_PBI 00152335–AMNH_PBI 00152338) (ZISP). RUSSIAN FEDERATION: ALTAI REP.: Kosh-Agach, 49.98333°N 88.63333°E, 10 Jul 1964, I.M. Kerzhner, 3♂ (AMNH_PBI 00152193–AMNH_PBI 00152195), 4♀ (AMNH_PBI 00152251–AMNH_PBI 00152254) *Chenopodium frutescens* (Amaranthaceae), 1♂ (AMNH_PBI 00152192), 1♀ (AMNH_PBI 00152250) (ZISP); 21 Jul 1964, I.M. Kerzhner, 6♂ (AMNH_PBI 00152157–AMNH_PBI 00152162), 20♀ (AMNH_PBI 00152091–AMNH_PBI 00152097, AMNH_PBI 00152110–AMNH_PBI 00152122) (ZISP); 22 Jul 1964, I.M. Kerzhner, *Chenopodium frutescens* (Amaranthaceae), 11♂ (AMNH_PBI 00152180–AMNH_PBI 00152190), 11♀ (AMNH_PBI 00152237–AMNH_PBI 00152247) (ZISP); 31 Jul 1964, A.F. Emeljanov, 2♂ (AMNH_PBI 00152196, AMNH_PBI 00152197), 26♀ (AMNH_PBI 00152256–AMNH_PBI 00152281) *Chenopodium frutescens* (Amaranthaceae), 1♀ (AMNH_PBI 00152255) (ZISP); 02 Aug 1964, I.M. Kerzhner, *Krascheninnikovia ceratoides* (Amaranthaceae), 9♂ (AMNH_PBI 00152170–AMNH_PBI 00152173, AMNH_PBI 00152175–AMNH_PBI 00152179), 19♀ (AMNH_PBI 00152218–AMNH_PBI 00152236) (ZISP); 25 Aug 1964, I.M. Kerzhner, *Chenopodium frutescens* (Amaranthaceae), 1♂ (AMNH_PBI 00152191), 2♀ (AMNH_PBI 00152248, AMNH_PBI 00152249) (ZISP). — ***Other material***: MONGOLIA: BAYANHONGOR AIMAK: Dzhinst-Ula Mountain, 15 km S of Shine-Dzhinst, 44.48333°N 99.13333°E, 10 Aug 1969, I.M. Kerzhner, 1♀ (AMNH_PBI 00153469) *Eurotia* sp. (Amaranthaceae), 2♀ (AMNH_PBI 00152440) (ZISP). Edringiyn-Nur Range, 100 km SSW of Bulgan [Bayan-Under], 43.58°N 98.06°E, 05 Sep 1970, A.F. Emeljanov, 3♀ (AMNH_PBI 00153456, AMNH_PBI 00153608, AMNH_PBI 00152441) (ZISP). GOVIALTAY AIMAK: Shargyn-Gobi, 40 km SW of Altai [Bor-Udzuur], 45.552°N 91.928°E, 22 Aug 1967 – 23 Aug 1967, I.M. Kerzhner, *Krascheninnikovia ceratoides* (Amaranthaceae), 4♀ (AMNH_PBI 00152438, AMNH_PBI 00152437) (ZISP). W foothills of Ikhe-Bogdo, 44.986°N 99.949°E, 19 Aug 1926, A.N. Kiritshenko, 1♀ (AMNH_PBI 00153422) (ZISP). HOVD AIMAK: 30 km SSW Urdgol [Chandman'], 47.641°N 92.367°E, 09 Jul 1980, I.M. Kerzhner, 1♀ (AMNH_PBI 00153613) (ZISP). SOUTH GOVI AIMAK: 20 km W Barun Bugatyn Khuduk, 42.892°N 102.968°E, 25 Aug 1969 – 27 Aug 1969, I.M. Kerzhner, *Salsola arbuscula* (Amaranthaceae), 1♂ (AMNH_PBI 00152374) (ZISP). UVS AIMAK: 15 km N of Khuv-Us-Gol River estuary, 49.7163°N 90.46729°E, 17 Jul 1968, A.F. Emeljanov, 2♀ (AMNH_PBI 00153605, AMNH_PBI 00153606) (ZISP).

4.8. *Agraptocoris pallescens* sp.n.

Figs. 4D,E, 8G, 11B,D,F, 13D–F, 14N,P,X, 15

Diagnosis. Recognized by the following combination of characters: body small, male 3.5–3.9 mm, female 2.4–2.5 mm; antennomere I with two spinelike dark setae on dorsomesial surface (Fig. 8G); antennomere II shorter than or equal to basal width of pronotum in male, distinctly shorter than head width in female; hemelytron whitish-yellow, without dark pattern, rarely with several faint small pale brown spots on corium (Fig. 4D,E); vestiture composed of silvery woolly setae only, rarely with a few brown setae on apex of corium and cuneus; vesica strongly bent distal to secondary gonopore; secondary gonopore removed from apex; apical blade long and thin, gradually bent close to apex, with weakly sclerotized thorn-shaped outgrowth located closer to subapical curvature than to secondary gonopore (Figs. 11B,D,F, 14N,P).

Easily recognized from congeners by the small size, short antennomere II, and pale whitish coloration. It is similar to *A. nigrisetosus* in having subapical thorn-shaped outgrowth of the vesica, but readily differs in its location and weak sclerotization (Figs. 11A,C,E, 14M,O), as well as external appearance (see diagnosis of *A. nigrisetosus* for discussion of additional characters).

Description. ***Male***: ***Coloration***: Whitish to dirty pale yellow, without greenish tinge (Fig. 4D). Head whitish, sometimes with diffuse yellow markings on vertex and frons; antennomeres I and II uniformly pale yellow; remaining segments somewhat darker, usually pale brown; labrum pale brown; labium dirty yellow, with darkened apex. Pronotum, scutellum and hemelytron uniformly pale whitish, calli and scutellum usually somewhat brighter, yellowish, base of scutellum frequently with orange tinge; clavus, corium and cuneus typically immaculate, very rarely with hardly recognizable small pale brown spots; membrane typically smoky hyaline, transparent, sometimes very slightly and uniformly darkened; veins whitish. Femora pale yellow, immaculate, apex of hind femur sometimes with a few pale brown, very minute and barely recognizable spots on dorsal and ventral surface; all tibiae pale yellow, without spots at bases of tibial spines; tarsi apically darkened. Thoracic venter and abdomen uniformly pale yellow. ***Vestiture***: Dorsum with dense, rather long and somewhat curved, woolly silvery setae, semierect on vertex and anterior part of pronotum, adpressed elsewhere; dark simple setae absent, rarely apex of corium and cuneus with a few brown, adpressed simple setae; venter, antenna, and legs with comparatively short silvery adpressed simple setae; antennomere I with two pale to dark brown spinelike setae on medial surface and one subapical spine-

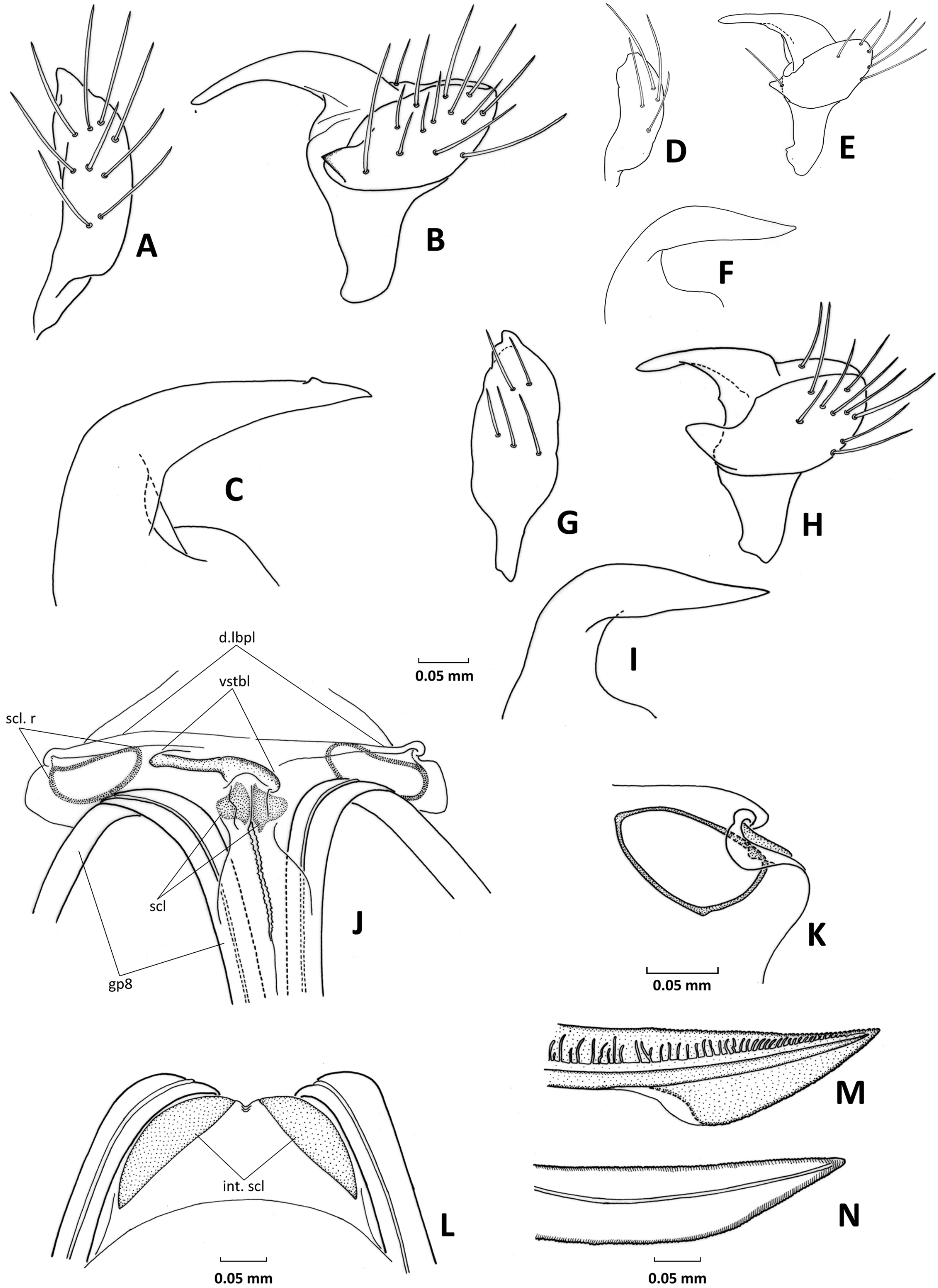

Fig. 13. Male and female genitalia of *Agraptocoris* spp. **A**–**C**: *A. oncotyloides*. **D**–**F**: *A. pallescens*. **G**–**I**: *A. pamiricus*. **J**–**L**: *A. concolor*. **M**,**N**: *A. nigrisetosus*. **A**,**D**,**G**: right paramere. **B**,**E**,**H**: left paramere. **C**,**F**,**I**: apex of phallotheca. **J**: vestibulum and associated structures in ventral view. **K**: sclerotized ring of dorsal labiate plate. **L**: posterior wall of bursa copulatrix. **M**: left gonapophysis 9, lateral view. **N**: left gonapophysis 8, lateral view. — ***Abbreviations***: d. lbpl – dorsal labiate plate of bursa copulatrix; gp8 – gonapophysis 8; int. scl – interramal sclerites of posterior wall; scl – sclerites encircling vulva; scl. r – sclerotized ring of dorsal labiate plate; vstbl – vestibulum.

like setae ventrally. ***Structure***: Body 3.3–3.7 × as long as width of pronotum; total length 3.5–3.9 mm; vertex 1.6–1.9 × as wide as eye, 1.1–1.3 × as wide as length of antennomere I; antennomere II 0.9–1.0 × as long as basal width of pronotum, 1.2–1.4 × as long as width of head; pronotum 2.1–2.2 × as wide as long. ***Genitalia***: Genital segment about 1.1 × as long as width at base; phallotheca as in Fig. 13F, without subapical tooth; right paramere as in Fig. 13D, sensory lobe of left paramere with comparatively wide base and rounded apex, more or less parallel to apical process (Figs. 13F, 14X); vesica S-shaped in lateral view, distinctly bent distal to secondary gonopore; secondary gonopore removed from apex; apical blade long, smoothly curved at midpoint, gradually tapering, with flattened, weakly sclerotized thorn-shaped outgrowth distal to secondary gonopore (Figs. 11B,D,F, 14N,P). — ***Female***: ***Coloration***: Similar to male, uniformly pale yellow, sometimes with pale dirty yellow tinge; dorsum without dark pattern, very rarely with diffuse pale brown markings on head and pronotum or with hardly recognizable pale brown round spots in apical 2/3 of hemelytron; abdominal tergite IX usually with two distinct brown spots (Fig. 4E). ***Vestiture***: As in male; dorsum typically clothed with woolly silvery setae only, rarely with addition of a few brown simple setae on apex of hemelytron. ***Structure***: Body 2.6–3.0 × as long as width of pronotum; total length 2.4–2.5 mm; vertex 2.3–2.6 × as wide as eye, 1.6–2.1 × as wide as length of antennomere I; antennomere II 0.7–0.8 × as long as basal width of pronotum, 0.8–0.9 × as long as width of head; pronotum 2.2–2.5 × as wide as long; hemelytron comparatively short, partly covering abdominal tergite V and usually not reaching tergite VI, claval commissure about 0.7 × as long as combined length of pronotum and scutellum.

Distribution. Widely distributed across the desert zone of Mongolia, spanning from Uvs Aimak in the West to East Govi Aimak in the East (Fig. 15).

Hosts. Recorded from *Pyrethrum* sp. and *Artemisia* spp., including *Artemisia arenaria* DC., *A. frigida* Willd., and *A. juncea* Kar. & Kir. (Asteraceae: Anthemideae). A single female from Nomt-Ula Mt, East Govi Aimak, is recorded from *Hippolytia* sp. (Asteraceae: Anthemideae).

Etymology. The specific epithet is given to denote the overall coloration of the species.

Material examined. ***Holotype***: ♂, MONGOLIA, Govialtay Aimak, 30 km N of Delger, 46.6°N 97.2°E, 25 Aug 1967, A.F. Emeljanov (AMNH_PBI 00153451) (ZISP). — ***Paratypes***: MONGOLIA: BAYANHONGOR AIMAK: Ikhe Bogdo, 15 km SW Orog-Nur Lake, 44.91667°N 100.33333°E, 17 Aug 1967 – 18 Aug 1967, I.M. Kerzhner, 1♀ (AMNH_PBI 00153969) (ZISP); 17 Aug 1967, A.F. Emeljanov, 1♂ (AMNH_PBI 00153681), 2♀ (AMNH_PBI 00153597) (ZISP). Northern mountainside of Tsagan-Bogdo-Ula, 44.7°N 98.8°E, 1500 m, 14 Aug 1969, Zaytsev, 1♂ (AMNH_PBI 00152376) (ZISP). Upper reach of the Baydrag-Gol [Baydarik] River, Khalkha, 45.625°N 99.259°E, 31 Aug 1926, A.N. Kiritshenko, 1♀ (AMNH_PBI 00153443) (ZISP). EAST GOVI AIMAK: 5 km W Tenger-Nur Lake, 42.614°N 108.705°E, 25 Jun 1971, I.M. Kerzhner, 1♀ (AMNH_PBI 00153948) (ZISP); 25 Jun 1971, Kozlov, 1♀ (AMNH_PBI 00153947) (ZISP); 25 Jun 1971, A.F. Emeljanov, 3♂ (AMNH_PBI 00153943), 1♀ (AMNH_PBI 00153952) (ZISP). 28 km ENE Sain-Shand, 44.96°N 110.454°E, 01 Jul 1971, A.F. Emeljanov, 1♂ (AMNH_PBI 00153926) (ZISP). 45 km NE Bayan-Munkh, 45.37815°N 111.44486°E, 03 Jul 1971, I.M. Kerzhner, 3♀ (AMNH_PBI 00153915) (ZISP). 50 km ENE Sain-Shand [Buyant-Uhaa], 45.022°N 110.713°E, 02 Jul 1971, A.F. Emeljanov, 1♂ (AMNH_PBI 00153922), 3♀ (AMNH_PBI 00153928, AMNH_PBI 00153933) (ZISP). Nomt-Ula Mt., 30 km SSE Shokhoi-Nur Lake, 44.448°N 110.95°E, 04 Aug 1971, I.M. Kerzhner, *Hippolytia* sp. (Asteraceae), 1♀ (AMNH_PBI 00153526) (ZISP); 04 Aug 1971, A.F. Emeljanov, 4♀ (AMNH_PBI 00153527, AMNH_PBI 00153524) (ZISP). GOVIALTAY AIMAK: 45 km NE of Altay [Yusun-Bulak], 46.617°N 96.736°E, 25 Aug 1967, A.F. Emeljanov, 3♀ (AMNH_PBI 00153519) *Artemisia juncea* (Asteraceae), 3♀ (AMNH_PBI 00153520) (ZISP). 50 km W of Sayn-Ust [Khukh-Mor't], 47.35°N 93.88°E, 22 Aug 1968, A.F. Emeljanov, 2♂ (AMNH_PBI 00153054), 6♀ (AMNH_PBI 00153174–AMNH_PBI 00153176) (ZISP). Adzh-Bogdo Range, 10 km SSE Mt Ikh-Obo-Ula, 44.86667°N 95.16667°E, 18 Jul 1970, I.M. Kerzhner, 1♂ (AMNH_PBI 00153697) (ZISP). W foothills of Ikhe-Bogdo, 44.986°N 99.949°E, 16 Aug 1926, A.N. Kiritshenko, 1♂ (AMNH_PBI 00152878), 1♀ (AMNH_PBI 00153419) (ZISP). HOVD AIMAK: Altan-Hohiy Mts. Range, 60 km N of Bayan-hushuu [Myangat], 48.86666°N 91.66666°E, 04 Aug 1970, I.M. Kerzhner, 1♂ (AMNH_PBI 00152368) (ZISP). Khara-Belcher-Daba pass, 25 km S of Mankhan, 47.19°N 92.26°E, 02 Aug 1970, A.F. Emeljanov, 1♂ (AMNH_PBI 00152879), 3♀ (AMNH_PBI 00153471–AMNH_PBI 00153473) (ZISP). MIDDLE GOVI AIMAK: Delger-Hangay-ula Mts, 45.23743°N 104.80511°E, 25 Jul 1967, Emeljanov, 2♂ (AMNH_PBI 00153476, AMNH_PBI 00153477), 4♀ (AMNH_PBI 00153479, AMNH_PBI 00153480, AMNH_PBI 00153488, AMNH_PBI 00153489) (ZISP); 25 Jul 1967, I.M. Kerzhner, *Pyrethrum* sp. (Asteraceae), 1♂ (AMNH_PBI 00153475), 9♀ (AMNH_PBI 00153478, AMNH_PBI 00153481–AMNH_PBI 00153487, AMNH_PBI 00153490) (ZISP). SOUTH GOVI AIMAK: 20 km WNW of Bayan-Dalay, 43.55°N 103.3°E, 31 Jul 1967, I.M. Kerzhner, 1♂ (AMNH_PBI 00153684) (ZISP). 30 km NW of Bulgan, 44.2°N 103.2°E, 12 Aug 1967, A.F. Emeljanov, 2♂ (AMNH_PBI 00153039) *Pyrethrum* sp. (Asteraceae), 12♂ (AMNH_PBI 00153029–AMNH_PBI 00153032), 10♀ (AMNH_PBI 00153159, AMNH_PBI 00153160, AMNH_PBI 00153158, AMNH_PBI 00153497) (ZISP). Khongoryn-els, 60 km WNW of Bayan-Dalay, 43.862°N 103.002°E, 30 Jul 1967 – 31 Jul 1967, Emeljanov, 3♂ (AMNH_PBI 00153068, AMNH_PBI 00153069) *Artemisia arenaria* (Asteraceae), 3♂ (AMNH_PBI 00153076), 2♀ (AMNH_PBI 00153533, AMNH_PBI 00153534) (ZISP); 30 Jul 1967 – 31 Jul 1967, I.M. Kerzhner, 6♂ (AMNH_PBI 00153075, AMNH_PBI 00153073) *Artemisia frigida* (Asteraceae), 2♂ (AMNH_PBI 00153072) *Artemisia arenaria* (Asteraceae), 1♂ (AMNH_PBI 00153074), 4♀ (AMNH_PBI 00153536, AMNH_PBI 00153537) (ZISP). Tost Uul, 40 km W of Gurvan-tes, 43.24583°N 100.61083°E, 19 Aug 1969 – 20 Aug 1969, I.M. Kerzhner, 2♂ (AMNH_PBI 00152362), 8♀ (AMNH_PBI 00152429, AMNH_PBI 00152426, AMNH_PBI 00152430) (ZISP); 19 Aug 1969 – 20 Aug 1969, Kozlov, 1♂ (AMNH_PBI 00152364) (ZISP). SOUTH HANGAY AIMAK: 70 km E of Bogd somon, 44.66°N 103.06°E, 12 Aug 1967, A.F. Emeljanov, 3♂ (AMNH_PBI 00153035) (ZISP); 12 Aug 1967, I.M. Kerzhner, 2♀ (AMNH_PBI 00153161) (ZISP). Baga-Bogdo Range, 20 km ESE from the highest point, 44.859°N 101.784°E, 14 Aug 1967, I.M. Kerzhner, 2♀ (AMNH_PBI 00153552) (ZISP). E coast of Tatsyn-Tsagan-nur Lake, 45.146°N 101.504°E, 02 Aug 1969 – 04 Aug 1969, I.M. Kerzhner, 4♂ (AMNH_PBI 00153689, AMNH_PBI 00153690) (ZISP). UVS AIMAK: 30 km NW of Sharbulag [Dzabkhan], 49.025°N 92.828°E, 27 Aug 1968, A.F. Emeljanov, 2♂ (AMNH_PBI 00153063, AMNH_PBI 00153064), 4♀ (AMNH_PBI 00153188, AMNH_PBI 00153190, AMNH_PBI

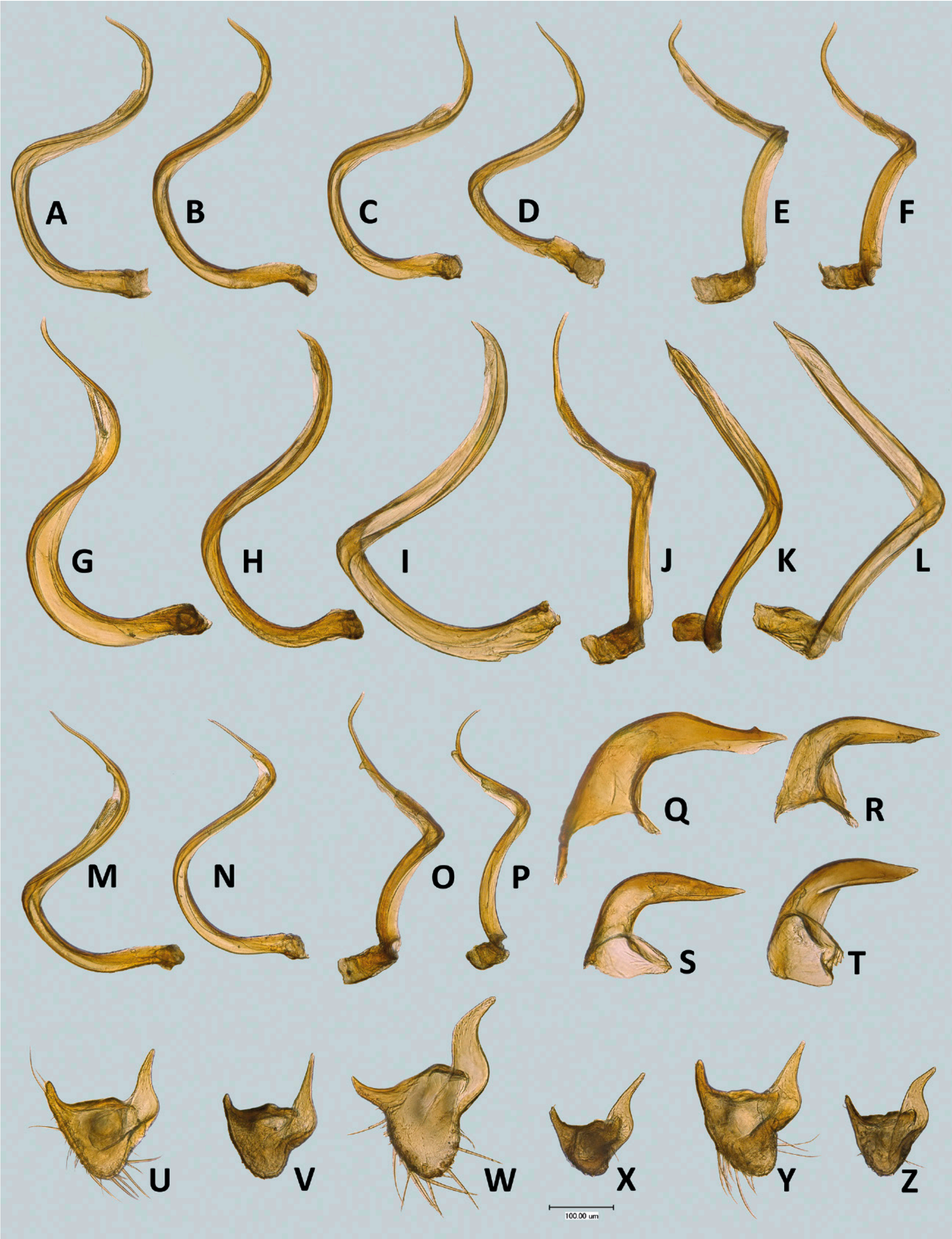

Fig. 14. Photographs of male genitalia of *Agrapocoris* spp. **A**,**B**,**E**: *A. concolor*. **C**,**D**,**F**,**Z**: *A. subconcolor*. **G**,**J**,**S**,**Y**: *A. pamiricus*. **H**,**K**,**R**,**U**: *A. eugeniae*. **I**,**L**,**Q**,**W**: *A. oncotyloides*. **M**,**O**,**T**,**V**: *A. nigrisetosus*. **N**,**P**,**X**: *A. pallescens*. **A** – **D**, **G** – **I**,**M**,**N**: vesica in lateral view. **E**,**F**,**J** – **L**,**O**,**P**: vesica in ventral view. **Q** – **T**: apex of phallotheca. **U** – **Z**: right paramere in caudal view.

00153191, AMNH_PBI 00153065) (ZISP). 30 km S of Khyargas, 48.8°N 93.1°E, 10 Aug 1970, A.F. Emeljanov, 3♂ (AMNH_PBI 00153676, AMNH_PBI 00153675), 3♀ (AMNH_PBI 00153588 – AMNH_PBI 00153590) (ZISP). 40 km N of Urgamal, 48.84°N 94.3°E, 11 Aug 1970, A.F. Emeljanov, 1♀ (AMNH_PBI 00153149) (ZISP).

4.9. *Agraptocoris pamiricus* sp.n.

Figs. 4F,G, 8H, 9A,F, 13G–I, 14G,J,S,Y, 15

Diagnosis. Recognized by the following combination of characters: body large, male 5.6 mm, female 3.4–3.7 mm; antennomere I with 4–5 spinelike dark setae on dorsomesial surface (Fig. 8H); hemelytron in male with regular, dense, minute pale brown spots (Fig. 4F); hemelytron in female with similar faint spots or uniformly pale greenish, reaching or entirely covering abdominal tergite VII (Fig. 4G); head and pronotum clothed with woolly silvery setae only, hemelytron with dark setae only in apical part; vesica large, S-shaped, gradually curved, without additional outgrowth, with secondary gonopore removed from apex; apical blade of vesica long, straight, slightly bent subapically, comparatively wide at base (Figs. 9A,F, 14G,J).

Most similar in large size, coloration, vestiture, and body proportions to *A. concolor* but the latter species differs in having only two mesial setae on antennomere I (Fig. 8A), the different color pattern of hemelytron with minute spots predominantly located along medial fracture of corium or almost absent (Fig. 3A), and smaller vesica with apical blade gradually narrowing and devoid of basal expansion (Figs. 9C,D, 14A,B,E).

Description. ***Male***: ***Coloration***: Whitish yellow with greenish tinge (Fig. 4F). Head pale yellow with greenish stains around antennal fossa; antenna dirty yellow, with segment II somewhat paler than remaining segments; labium yellow, with darkened segment IV. Pronotum, exposed part of mesonotum, and scutellum pale yellow, immaculate, with greenish tinge around calli and along midline of scutellum; hemelytron whitish yellow, entirely covered with regular, dense, small, pale brown spots; membrane uniformly pale brown, semitransparent; veins pale brown. Femora pale yellow, hind femur with very minute and barely recognizable pale brown spots apically; tarsal segment III slightly darkened. Thoracic venter and abdomen pale yellow with intense greenish stains; mesosternum somewhat darkened. ***Vestiture***: Dorsum with dense, rather long and somewhat curved, woolly silvery setae; dark setae absent on head, pronotum and proximal 2/3 of hemelytron, only extreme apex of corium and cuneus with a few brown, adpressed simple setae; venter, antenna, and legs with comparatively short silvery adpressed simple setae; antennomere I with five dark brown spinelike setae: four on dorsomedial surface and subapical seta ventrally (Fig. 8H). ***Structure***: Body 4.2 × as long as width of pronotum; total length 5.6 mm; vertex 1.3 × as wide as eye, equal in width to length of antennomere I; antennomere II 1.2 × as long as basal width of pronotum, 1.9 × as long as width of head; pronotum 2.3 × as wide as long. ***Genitalia***: Genital segment conical, distinctly elongated, 1.2 × as long as width at base; phallotheca with finely attenuated apex, without subapical tooth (Figs. 13I, 14S), right paramere as in Fig. 13G; left paramere with comparatively long, narrowly rounded apically sensory lobe (Figs. 13H, 14Y); vesica large, S-shaped, secondary gonopore removed from apex, apical blade long, of virtually the same width along entire length from, straight and slightly bent only at extreme apex, devoid of any additional processes (Figs. 9A,F, 14G,J). — ***Female***: ***Coloration***: Similar to male, uniformly pale greenish-yellow, usually with faint greenish tinge on pronotum and at sides of hemelytron; dorsum and venter without any dark pattern or with faint, small, pale brown spots on hemelytron (Fig. 4G). ***Vestiture***: Similar to male; brown simple setae scarce, covering distal 1/2–2/3 of hemelytron and exposed parts of abdominal tergites. ***Structure***: Body 3.2–3.4 × as long as width of pronotum; total length 3.4–3.7 mm; vertex 1.8–2.2 × as wide as eye, 1.4–1.5 × as wide as length of antennomere I; antennomere II 0.9–1.0 × as long as basal width of pronotum, 1.1 × as long as width of head; pronotum 2.0–2.3 × as wide as long; hemelytron covering abdominal tergite VI, sometimes reaching apical margin of tergite VII, claval commissure 0.9 × as long as combined length of pronotum and scutellum.

Distribution. Known from two localities in Pamir and Tian-Shan Mountains (Eastern Tajikistan and Central Kyrgyzstan respectively, Fig. 15).

Hosts. *Krascheninnikovia ceratoides* (L.) Gueldenst. (Amaranthaceae: Axyrideae), *Sympegma* sp. (Amaranthaceae: Salsolae).

Discussion. Ten females sampled near Dolon Pass, Kyrgyzstan, also belong to *A. pamiricus* based on the size, greenish ground coloration, color pattern of the dense minute brown spots on hemelytron, and the number of spines of the antennomere I. Both the male holotype and a series of females were collected in alpine meadows at the altitudes of more than 3000 m a.s.l. However, the type locality (Kyzyl-Rabat, Tajikistan) and Dolon Pass are separted by a distance of 450 km and, therefore, I refrain from adding females from the latter locality in the paratype series.

Etymology. The species name refers to the type locality in the Pamir Mountains.

Material examined. ***Holotype***: ♂, TAJIKISTAN: Kyzyl-Rabat, 37.85°N 74.63333°E, 27 Jul 1965, Narchuk, *Krascheninnikovia ceratoides* (Amaranthaceae) (AMNH_PBI 00152378) (ZISP). — ***Other material***: KYRGYZSTAN: Naryn: 5 km N Dolon Pass, Central Tien-Shan, 41.784°N 75.751°E, 07 Jul 1966 – 08 Jul 1966, I.M. Kerzhner, *Sympegma* sp. (Amaranthaceae), 10♀ (AMNH_PBI 00152442–AMNH_PBI 00152446) (ZISP).

4.10. *Agraptocoris subconcolor* sp.n.

Figs. 4H,I, 8I, 9B,E, 14C,D,F,Z, 15

Diagnosis. Recognized by the following combination of characters: body relatively small, male 3.8–4.7 mm, female 2.5–3.0 mm; antennomere I with two spinelike dark setae on dorsomesial surface (Fig. 8I); dorsum with-

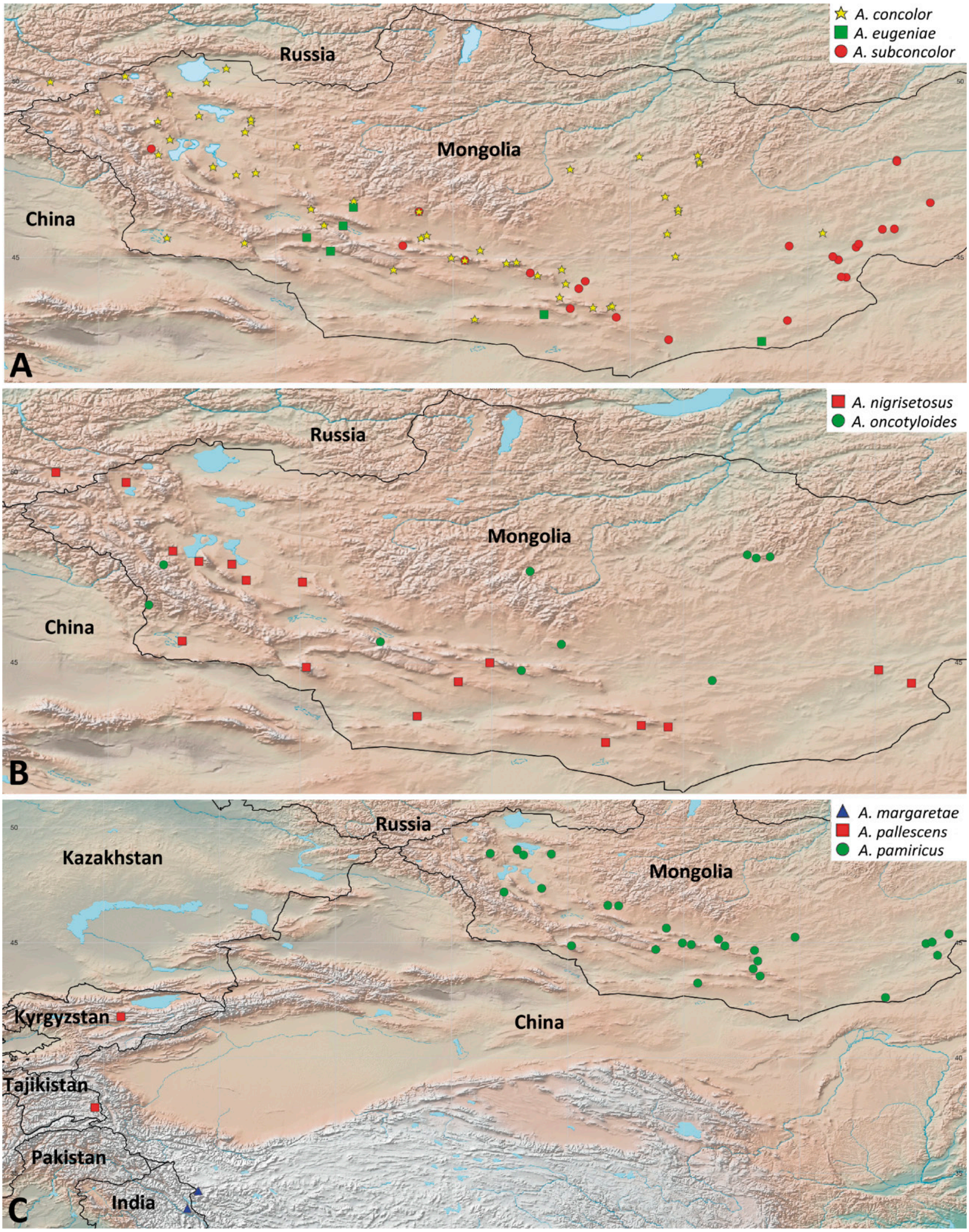

Fig. 15. Distributional maps of *Agraptocoris* spp. A, B, and C showing different sets of species as indicated in the right upper corner.

out dark pattern (Fig. 4H,I); brown simple setae scarce, always absent on head and pronotum, located only on cuneus and extreme apex of corium, rarely on apical half of hemelytron; vesica S-shaped, gradually curved, without additional outgrowth, secondary gonopore removed from apex; apical blade of vesica very thin, smoothly and gradually curved, gradually tapering towards apex (Figs. 9B,E, 14C,D,F).

Most similar to *A. concolor* in the color pattern, body proportions, vestiture, and genitalia structure but differs from it in the smaller body length of the male, the uniformly pale dorsum without pale brown mottling along

Table 1. Measurements (mm) of *Agraptocoris* spp. — ***Abbreviations***: Cun–Clyp – distance between apex of clypeus and apex of corium in dorsal view; Antm1 and Antm2 – length of antennomeres I and II respectively; InterOcDi – width of vertex between mesal margins of compound eyes in dorsal view.

Sex (Number)		Length					Width		
		Body	Cun–Clyp	Pronotum	Antm1	Antm2	Head	InterOcDi	Pronotum
				Agraptocoris concolor					
♂♂ (n = 5)	**Mean**	**5.04**	**4.31**	**0.55**	**0.38**	**1.50**	**0.83**	**0.33**	**1.21**
	SD	0.33	0.25	0.03	0.03	0.14	0.03	0.02	0.07
	Range	0.80	0.65	0.08	0.08	0.33	0.05	0.05	0.18
	Min	4.80	4.00	0.53	0.35	1.30	0.80	0.30	1.15
	Max	5.60	4.65	0.60	0.43	1.63	0.85	0.35	1.33
♀♀ (n = 5)	**Mean**	**3.16**	**2.43**	**0.47**	**0.33**	**1.19**	**0.82**	**0.42**	**1.05**
	SD	0.36	0.24	0.04	0.01	0.13	0.03	0.01	0.12
	Range	0.80	0.63	0.10	0.03	0.33	0.09	0.03	0.33
	Min	2.80	2.13	0.43	0.33	1.03	0.78	0.40	0.93
	Max	3.60	2.75	0.53	0.35	1.35	0.86	0.43	1.25
				Agraptocoris eugeniae					
♂♂ (n = 5)	**Mean**	**4.87**	**4.12**	**0.57**	**0.33**	**1.62**	**0.85**	**0.38**	**1.27**
	SD	0.21	0.19	0.05	0.01	0.15	0.04	0.01	0.07
	Range	0.55	0.50	0.10	0.03	0.43	0.10	0.03	0.18
	Min	4.55	3.83	0.53	0.33	1.38	0.80	0.36	1.18
	Max	5.10	4.33	0.63	0.35	1.80	0.90	0.39	1.35
♀♀ (n =5)	**Mean**	**3.24**	**2.66**	**0.46**	**0.32**	**1.17**	**0.89**	**0.46**	**1.09**
	SD	0.11	0.20	0.04	0.01	0.08	0.05	0.02	0.09
	Range	0.30	0.53	0.10	0.03	0.18	0.13	0.06	0.21
	Min	3.10	2.48	0.43	0.30	1.08	0.84	0.44	1.01
	Max	3.40	3.00	0.53	0.33	1.25	0.96	0.50	1.23
				Agraptocoris margaretae					
♂♂ (n = 2)	Min	3.30	2.58	0.46	0.23	0.90	0.71	0.37	1.00
	Max	3.30	2.75	0.47	0.23	0.93	0.74	0.39	1.04
				Agraptocoris nigrisetosus					
♂♂ (n = 5)	**Mean**	**4.30**	**3.64**	**0.52**	**0.37**	**1.17**	**0.78**	**0.34**	**1.11**
	SD	0.45	0.36	0.05	0.04	0.10	0.04	0.01	0.07
	Range	1.10	0.93	0.10	0.10	0.23	0.10	0.03	0.15
	Min	3.60	3.13	0.48	0.33	1.03	0.73	0.33	1.05
	Max	4.70	4.05	0.58	0.43	1.25	0.83	0.35	1.20
♀♀ (n =5)	**Mean**	**2.93**	**2.13**	**0.44**	**0.30**	**0.81**	**0.79**	**0.41**	**0.96**
	SD	0.19	0.12	0.04	0.00	0.04	0.03	0.01	0.06
	Range	0.45	0.33	0.10	0.00	0.10	0.06	0.03	0.13
	Min	2.70	1.98	0.40	0.30	0.78	0.76	0.40	0.88
	Max	3.15	2.30	0.50	0.30	0.88	0.83	0.43	1.00
				Agraptocoris oncotyloides					
♂♂ (n = 5)	**Mean**	**5.64**	**4.78**	**0.69**	**0.36**	**2.07**	**1.01**	**0.40**	**1.44**
	SD	0.57	0.48	0.05	0.02	0.16	0.02	0.02	0.05
	Range	1.30	1.15	0.10	0.05	0.40	0.05	0.05	0.10
	Min	4.90	4.18	0.65	0.33	1.85	0.98	0.38	1.40
	Max	6.20	5.33	0.75	0.38	2.25	1.03	0.43	1.50
♀♀ (n = 5)	**Mean**	**3.62**	**3.30**	**0.59**	**0.33**	**1.35**	**0.99**	**0.49**	**1.26**
	SD	0.28	0.23	0.04	0.02	0.07	0.04	0.03	0.07
	Range	0.70	0.60	0.10	0.05	0.18	0.10	0.08	0.18
	Min	3.40	2.98	0.55	0.30	1.28	0.95	0.45	1.15
	Max	4.10	3.58	0.65	0.35	1.45	1.05	0.53	1.33
				Agraptocoris pallescens					
♂♂ (n = 5)	**Mean**	**3.80**	**3.28**	**0.51**	**0.31**	**1.02**	**0.76**	**0.36**	**1.07**
	SD	0.17	0.16	0.01	0.01	0.05	0.02	0.02	0.03
	Range	0.40	0.40	0.03	0.03	0.13	0.06	0.04	0.05
	Min	3.50	3.03	0.50	0.30	0.95	0.74	0.34	1.05
	Max	3.90	3.43	0.53	0.33	1.08	0.80	0.38	1.10
♀♀ (n = 5)	**Mean**	**2.44**	**1.82**	**0.39**	**0.22**	**0.66**	**0.76**	**0.41**	**0.88**
	SD	0.05	0.11	0.02	0.03	0.03	0.01	0.02	0.06

Table 1 continued.

Sex		Length					Width		
(Number)		**Body**	**Cun–Clyp**	**Pronotum**	**Antm1**	**Antm2**	**Head**	**InterOcDi**	**Pronotum**
	Range	0.10	0.28	0.05	0.05	0.08	0.03	0.05	0.15
	Min	2.40	1.68	0.38	0.20	0.63	0.75	0.39	0.80
	Max	2.50	1.95	0.43	0.25	0.70	0.78	0.44	0.95
Agraptocoris pamiricus									
♂♂ (n = 1)		5.60	4.63	0.60	0.35	1.68	0.90	0.35	1.35
♀♀ (n = 5)	**Mean**	**3.52**	**2.76**	**0.49**	**0.32**	**1.02**	**0.90**	**0.46**	**1.06**
	SD	0.11	0.11	0.01	0.02	0.03	0.02	0.02	0.04
	Range	0.30	0.25	0.03	0.05	0.08	0.05	0.05	0.08
	Min	3.40	2.63	0.48	0.30	0.98	0.89	0.43	1.03
	Max	3.70	2.88	0.50	0.35	1.05	0.94	0.48	1.10
Agraptocoris subconcolor									
♂♂ (n = 5)	**Mean**	**3.98**	**3.39**	**0.45**	**0.31**	**1.24**	**0.77**	**0.32**	**1.08**
	SD	0.19	0.14	0.03	0.01	0.11	0.02	0.01	0.05
	Range	0.50	0.38	0.05	0.03	0.28	0.05	0.03	0.10
	Min	3.80	3.25	0.43	0.30	1.15	0.75	0.30	1.03
	Max	4.30	3.63	0.48	0.33	1.43	0.80	0.33	1.13
♀♀ (n = 5)	**Mean**	**2.77**	**1.74**	**0.43**	**0.27**	**0.92**	**0.78**	**0.40**	**0.94**
	SD	0.20	0.82	0.03	0.03	0.13	0.03	0.02	0.05
	Range	0.50	1.91	0.05	0.08	0.34	0.08	0.05	0.13
	Min	2.50	0.29	0.40	0.23	0.80	0.75	0.38	0.90
	Max	3.00	2.20	0.45	0.30	1.14	0.83	0.43	1.03

medial fracture, and the longer, somewhat curved, distinctly thinner and gradually tapering apical blade of the vesica. *Agraptocoris subconcolor* is somewhat similar to *A. pallescens* sp.n. in size and coloration, but clearly differs in having a longer antennomere II and differently shaped vesica.

Description. ***Male***: ***Coloration***: Whitish to pale yellow (Fig. 4H). Head whitish, without dark markings; antenna uniformly pale yellow, sometimes segments III and IV pale brown; labrum whitish yellow; labium yellow, with darkened segment IV. Pronotum, scutellum and hemelytron uniformly pale whitish, immaculate; membrane typically smoky hyaline, transparent, sometimes very slightly and uniformly darkened; veins whitish. Femora pale yellow, with a few pale brown, very minute and barely recognizable spots on apex of dorsal surface and ventrally along posterior margin; tibiae pale yellow, without spots at bases of tibial spines; tarsi apically darkened. Thoracic venter and abdomen uniformly pale yellow. ***Vestiture***: Dorsum with dense woolly silvery setae, semierect on vertex and anterior part of pronotum, adpressed elsewhere; dark setae absent on head, pronotum and basal part of hemelytron; apical part of corium and cuneus with scarce, brown, adpressed simple setae; venter, antenna, and legs with comparatively short silvery adpressed simple setae; antennomere I with two brown spinelike setae on medial surface. ***Structure***: Body 3.5 – 3.8 × as long as width of pronotum; total length 3.8 – 4.7 mm; vertex 1.3 – 1.5 × as wide as eye, 0.9 – 1.1 × as wide as length of antennomere I; antennomere II 1.0 – 1.3 × as long as basal width of pronotum, 1.5 – 1.8 × as long as width of head; pronotum 2.2 – 2.6 × as wide as long. ***Genitalia***: Genital segment conical, 1.1 – 1.2 × as long as width at base; extreme apex of phallotheca truncate, without subapical tooth; sensory lobe of left paramere comparatively short, with wide base and rounded apex (Fig. 14Z); vesica S-shaped, gradually curved along entire length, secondary gonopore removed from apex, apical blade long, smoothly curved and devoid of any additional processes, with characteristically attenuated apex (Figs. 9B,E, 14C,D,F). — ***Female***: ***Coloration***: Similar to male, uniformly pale yellow (Fig. 4I). ***Vestiture***: As in male, brown simple setae located on apical part of hemelytron. ***Structure***: Body 2.8 – 3.1 × as long as width of pronotum; total length 2.5 – 3.0 mm; vertex 2.0 – 2.3 × as wide as eye, 1.3 – 1.8 × as wide as length of antennomere I; antennomere II 0.9 – 1.2 × as long as basal width of pronotum, 1.1 – 1.6 × as long as width of head; pronotum 2.1 – 2.3 × as wide as long; apex of hemelytron usually reaching abdominal tergite VI, claval commissure 0.7 – 0.9 × as long as combined length of pronotum and scutellum.

Distribution. Widely distributed in southern Mongolia, spanning from Hovd Aimak in the West to Suhbaatar Aimak in the East (Fig. 15). Principally inhabiting desert and xeric shrublands zone, but also known from temperate grasslands and shrublands zone in Suhbaatar Aimak.

Hosts. Two specimens from the vicinity of Bu-Tsagan (Bayanhongor Aimak, Mongolia) were collected on *Artemisia* sp. (Asteraceae: Anthemideae).

Etymology. The specific epithet is given to denote the similarity of the new species to *A. concolor*.

Material examined. ***Holotype***: ♂, MONGOLIA, South Govi Aimak, Bain-dzag 30 km NNE Bulgan, 44.323°N 103.724°E, 26 Jul 1967, I.M. Kerzhner (AMNH_PBI 00152972) (ZISP). — ***Paratypes***: MONGOLIA: BAYANHONGOR AIMAK: 30 km ENE of Bu-Tsagan, 46.3°N 99.04°E, 20 Aug 1967, A.F. Emeljanov, *Artemisia* sp. (Asteraceae), 1♂ (AMNH_PBI 00153644), 6♀ (AMNH_PBI 00153555, AMNH_PBI 00153554, AMNH_PBI 00153556) *Artemisia* sp. (Asteraceae), 1♂ (AMNH_PBI 00153645) (ZISP). 70 km E of Kherkhero, 45.33°N 98.582°E, 21 Aug 1967, I.M. Kerzhner, 2♂ (AMNH_PBI 00153081), 3♀ (AMNH_PBI 00153544, AMNH_PBI 00153543) (ZISP). Ikhe Bogdo, 15 km SW Orog-Nur Lake, 44.91667°N 100.33333°E, 17 Aug 1967, A.F. Emeljanov, 1♂ (AMNH_PBI 00153682) (ZISP). EAST GOVI AIMAK: 5 km N of Agaruut, 43.21°N 109.43°E, 28 Jun 1971, A.F. Emeljanov, 2♂ (AMNH_PBI 00153984), 2♀ (AMNH_PBI 00153985, AMNH_PBI 00153986) (ZISP). 5 km W Tenger-Nur Lake, 42.614°N 108.705°E, 25 Jun 1971, A.F. Emeljanov, 4♂ (AMNH_PBI 00153939 – AMNH_PBI 00153942), 3♀ (AMNH_PBI 00153949 – AMNH_PBI 00153951) (ZISP); 25 Jun 1971, I.M. Kerzhner, 9♂ (AMNH_PBI 00153944 – AMNH_PBI 00153946), 2♂ (AMNH_PBI 00153696) (ZISP). 20 km SSE of Nudengiin-Hural, 45.32°N 109.48°E, 13 Jun 1971, I.M. Kerzhner, 2♀ (AMNH_PBI 00153991, AMNH_PBI 00153992) (ZISP); 13 Jun 1971, A.F. Emeljanov, 1♂ (AMNH_PBI 00153990), 1♀ (AMNH_PBI 00153993) (ZISP); 13 Jun 1971, Kozlov, 3♂ (AMNH_PBI 00153989) (ZISP). 23 km WSW Bayan-Munkh, 44.932°N 110.87°E, 03 Jul 1971, A.F. Emeljanov, 5♂ (AMNH_PBI 00153528 – AMNH_PBI 00153530, AMNH_PBI 00153908, AMNH_PBI 00153909), 2♀ (AMNH_PBI 00153913, AMNH_PBI 00153914) (ZISP). 35 km NE Bayan-Munkh, 45.28791°N 111.37°E, 03 Jul 1971, A.F. Emeljanov, 1♂ (AMNH_PBI 00153911) (ZISP). 45 km NE Bayan-Munkh, 45.37815°N 111.44486°E, 03 Jul 1971, I.M. Kerzhner, 2♂ (AMNH_PBI 00153910, AMNH_PBI 00153912), 1♀ (AMNH_PBI 00153916) (ZISP). 50 km ENE Sain-Shand [Buyant-Uhaa], 45.022°N 110.713°E, 02 Jul 1971, A.F. Emeljanov, 6♂ (AMNH_PBI 00153917 – AMNH_PBI 00153921), 7♀ (AMNH_PBI 00153927, AMNH_PBI 00153930 – AMNH_PBI 00153932) (ZISP); 02 Jul 1971, I.M. Kerzhner, 6♂ (AMNH_PBI 00153924, AMNH_PBI 00153925), 7♀ (AMNH_PBI 00153929, AMNH_PBI 00153934, AMNH_PBI 00153935) (ZISP). Erdene-Obo, 35 km SE of Shokhoi-Nur Lake, 44.436°N 111.09°E, 27 Jun 1971, A.F. Emeljanov, 1♂ (AMNH_PBI 00153977) (ZISP). Nomt-Ula Mt., 30 km SSE Shokhoi – Nur Lake, 44.448°N 110.95°E, 26 Jun 1971, A.F. Emeljanov, 1♂ (AMNH_PBI 00153521) (ZISP); 04 Aug 1971, A.F. Emeljanov, 2♀ (AMNH_PBI 00153522, AMNH_PBI 00153523) (ZISP). HOVD AIMAK: 15 km SW of Kobdo, 48.08333°N 91.48333°E, 08 Jul 1980, I.M. Kerzhner, 1♂ (AMNH_PBI 00153653), 3♀ (AMNH_PBI 00153562 – AMNH_PBI 00153564) (ZISP). SOUTH GOVI AIMAK: 20 km WNW of Bayan-Dalay, 43.55°N 103.3°E, 31 Jul 1967, I.M. Kerzhner, 1♂ (AMNH_PBI 00153685) (ZISP). Bain-dzag 30 km NNE Bulgan, 44.323°N 103.724°E, 26 Jul 1967 – 28 Jul 1967, I.M. Kerzhner, 14♂ (AMNH_PBI 00153664 – AMNH_PBI 00153667, AMNH_PBI 00153663) (ZISP); 26 Jul 1967, I.M. Kerzhner, 2♂ (AMNH_PBI 00153495, AMNH_PBI 00153496) (ZISP). Navtgar-Ula Mts Range 35 km NW of Yamat-Ula, 43.3°N 104.6°E, 09 Aug 1971, A.F. Emeljanov, 4♂ (AMNH_PBI 00153953, AMNH_PBI 00153954) (ZISP); 09 Aug 1971, I.M. Kerzhner, 1♂ (AMNH_PBI 00153981), 1 larva (AMNH_PBI 00153982) (ZISP). Sair Undyn-Gol, 25 km S Khan-Bogdo Mt. [Ihbulag], 42.663°N 106.077°E, 23 Jun 1971, A.F. Emeljanov, 1♂ (AMNH_PBI 00153997), 5♀ (AMNH_PBI 00153988, AMNH_PBI 00154000, AMNH_PBI 00153976), 1♀ (AMNH_PBI 00153998) (ZISP). near Dund-Gol, 20 Aug 1969 – 21 Aug 1969, I.M. Kerzhner, 2♂ (AMNH_PBI 00152358) (ZISP). somon Bulgan, 44.1128°N 103.5425°E, 10 Aug 1967 – 11 Aug 1967, I.M. Kerzhner, 4♂ (AMNH_PBI 00153674, AMNH_PBI 00153673) (ZISP). SOUTH HANGAY AIMAK: Arts Bogdo Mts. Range, 12 km S of Hovd, 44.558°N 102.173°E, 08 Sep 1970, I.M. Kerzhner, 1♂ (AMNH_PBI 00153694) (ZISP). SUHBAATAR AIMAK: 5 km ENE of Barun-Khuduk, 47.76°N 112.52°E, 04 Jul 1971, A.F. Emeljanov, 2♂ (AMNH_PBI 00153499, AMNH_PBI 00153500), 3♀ (AMNH_PBI 00153505, AMNH_PBI 00153507) (ZISP); 04 Jul 1979, I.M. Kerzhner, 1♀ (AMNH_PBI 00153506) (ZISP). 5 km SE of Barun-Khuduk, 47.72°N 112.52°E, 04 Jul 1971, A.F. Emeljanov, 4♂ (AMNH_PBI 00153498, AMNH_PBI 00153501) (ZISP); 04 Jul 1971, Kozlov, 1♂ (AMNH_PBI 00153973) (ZISP). 12 km NE of Bayan-Delger, 45.8°N 112.112°E, 04 Jul 1971, I.M. Kerzhner, 1♂ (AMNH_PBI 00153503) (ZISP). 20 km SE of Barun-Urta, 46.553°N 113.463°E, 14 Jul 1971, A.F. Emeljanov, 1♂ (AMNH_PBI 00153502), 1♀ (AMNH_PBI 00153509) (ZISP). 22 km WNW of Bayan-Delger, 45.81°N 112.45°E, 04 Jul 1971, A.F. Emeljanov, 1♂ (AMNH_PBI 00153504), 1♀ (AMNH_PBI 00153508) (ZISP); 04 Jul 1971, I.M. Kerzhner, 2♀ (AMNH_PBI 00153510, AMNH_PBI 00153511) (ZISP).

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File 1: konstantinov-agraptocorismiridae-asp2019-electronic-supplement-1.nex — Matrix for morphological characters. — DOI: 10.26049/ASP77-1-2019-05/1

File 2: konstantinov-agraptocorismiridae-asp2019-electronic-supplement-2.docx — **Table S1.** USI numbers of figured specimens. — DOI: 10.26049/ASP77-1-2019-05/2