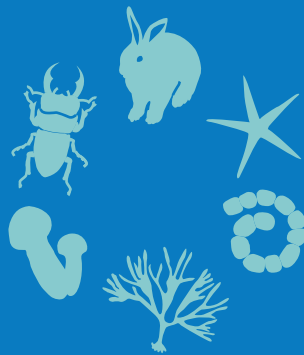


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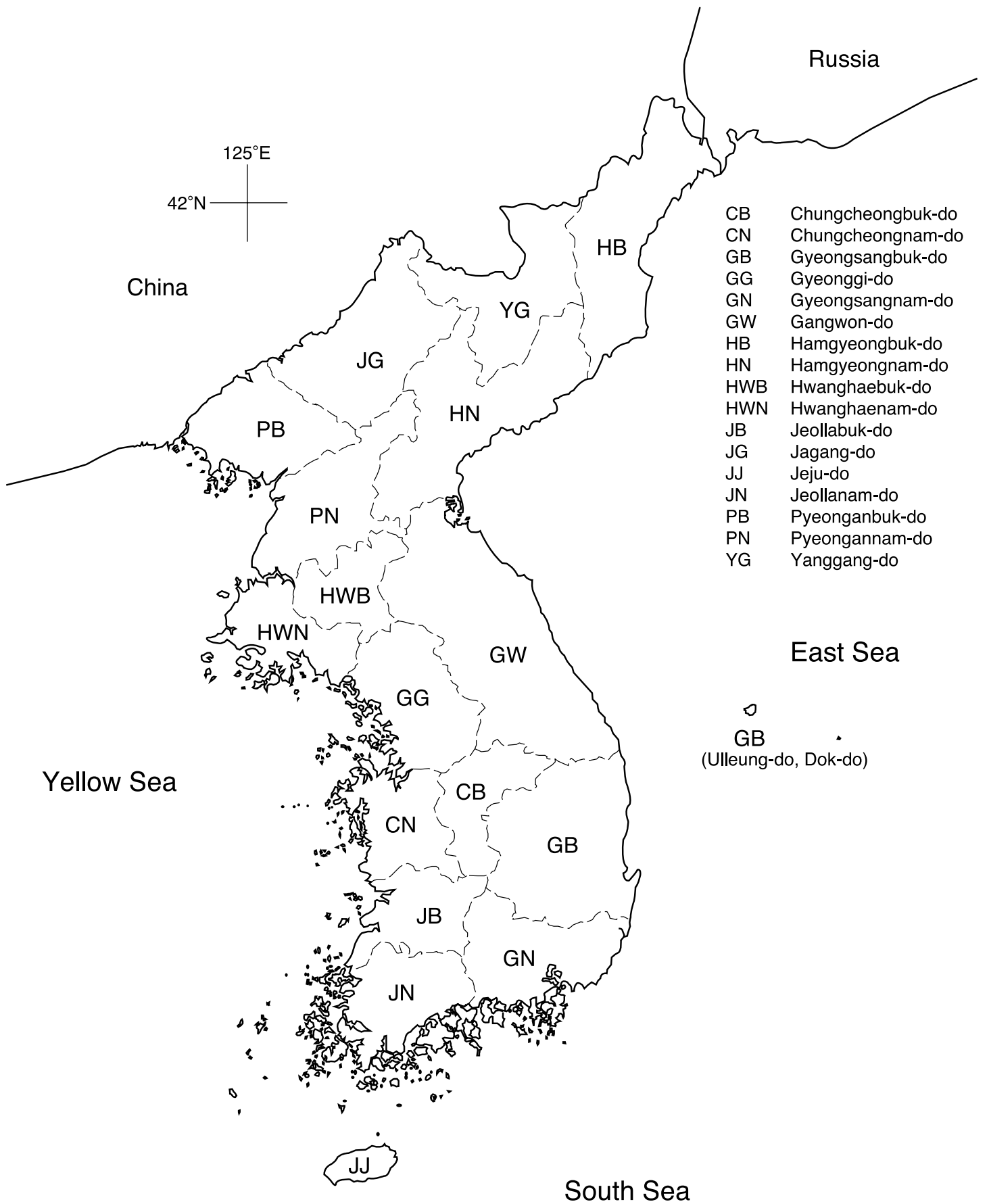
Arthropoda: Insecta: Hemiptera: Miridae

Mirinae I



Flora and Fauna of Korea

National Institute of Biological Resources
Ministry of Environment



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2015

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Sunghoon Jung and Junggon Kim
Chungnam National University

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A Korean translation of this issue is simultaneously published for Korean speaking readers. This English version therefore should be regarded as an original publication that has nomenclatural priority.



The Flora and Fauna of Korea logo was designed to represent six major target groups of the project including vertebrates, invertebrates, insects, algae, fungi, and bacteria. The book cover and the logo were designed by Jee-Yeon Koo.

Preface

The biological resources include all the composition of organisms and genetic resources which possess the practical and potential values essential to human live. Biological resources will be firm competition of the nation because they will be used as fundamental sources to make highly valued products such as new lines or varieties, new material, and drugs. As the Nagoya Protocol was adopted in 2010 and entered into force in the 12th Conference of Parties of the Convention on Biological Diversity (CBD) in 2014, it is expected that the competition to get biological resources will be much intensive under the rapidly changed circumstance on the access and benefic sharing of the genetic resources (ABS). Therefore, each nation is investigating and clearing information of native species within its territory in order to secure its sovereignty rights over biological resources.

The National Institute of Biological Resources of the Ministry of Environment has been publishing the 'Flora and Fauna of Korea' since 2006 to manage biological resources in comprehensive ways and to enhance national competitiveness by building up the foundation for the sovereignty over biological resources. Professional research groups consisting of professors and related experts of taxonomy examined systematically a total of 12,631 species for the past eight years to publish 151 volumes in both Korean and English versions, and two volumes of World Monograph covering 216 species. This year, 11 volumes of the Flora and Fauna of Korea each in Korean and English versions including 517 species of invertebrates, insects, vascular plants, algae and fungi are additionally published. Flora and Fauna of Korea were the first professional records to describe all the species of the nation in a comprehensive way, and they would contribute to level up the taxonomic capacity. Furthermore, publication of flora and fauna through identification of native species and investigation of national biota would be helpful to declare sovereignty rights over our native biological resources, be used as positive proof, and be utilized to provide the basic information of biological resources for industrial application.

The National Institute of Biological Resources of the Ministry of Environment will continue to accelerate the project of the publication of the 'Flora and Fauna of Korea'. Personally I would like to express my sincere appreciation for Professor Sunghoon Jung and Dr. Junggon Kim of Chungnam National University who have continuously made a lot of efforts to publish an excellent version of Korean fauna.

Sang-Bae Kim

President

National Institute of Biological Resources

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List of Taxa

- Class Insecta Linnaeus, 1758
 - Order Hemiptera Linnaeus, 1758
 - Suborder Heteroptera Latreille, 1810
 - Infraorder Cimicomorpha Leston, 1954
 - Family Miridae Hahn, 1831
 - Subfamily Mirinae Hahn, 1831
 - Tribe Mirini Hahn, 1833
 - Genus *Adelphocoris* Reuter, 1896
 - Adelphocoris albonotatus* (Jakovlev, 1881)
 - Adelphocoris demissus* Horváth, 1905
 - Adelphocoris fasciaticollis* Reuter, 1903
 - Adelphocoris lineolatus* (Goeze, 1778)
 - Adelphocoris obliquefasciatus* Lindberg, 1934
 - Adelphocoris piceosetosus* Kulik, 1965
 - Adelphocoris ponghvariensis* Josifov, 1978
 - Adelphocoris quadripunctatus* (Fabricius, 1794)
 - Adelphocoris reicheli* (Fieber, 1836)
 - Adelphocoris rufescens* Hsiao, 1962
 - Adelphocoris suturalis* (Jakovlev, 1882)
 - Adelphocoris tenebrosus* (Reuter, 1875)
 - Adelphocoris triannulatus* (Stål, 1858)
 - Adelphocoris variabilis* (Uhler, 1896)
 - Genus *Apolygus* China, 1941
 - Apolygus hilaris* (Horváth, 1905)
 - Apolygus infamis* (Kerzhner, 1977)
 - Apolygus limbatus* (Fallén, 1807)
 - Apolygus lucorum* (Meyer-Dür, 1843)
 - Apolygus nigrovirens* (Kerzhner, 1988)
 - Apolygus pulchellus* (Reuter, 1906)
 - Apolygus spinolae* (Meyer-Dür, 1841)
 - Apolygus subhilaris* Yasunaga, 1992
 - Apolygus subpulchellus* (Kerzhner, 1988)
 - Genus *Castanopsides* Yasunaga, 1992
 - Castanopsides kerzhneri* (Josifov, 1985)
 - Castanopsides potanini* (Reuter, 1906)
 - Genus *Cyphodemidea* Reuter, 1903
 - Cyphodemidea saundersi* (Reuter, 1896)
 - Genus *Eurystylus* Stål, 1871
 - Eurystylus coelestialium* (Kirkaldy, 1902)
 - Eurystylus luteus* Hsiao, 1941
 - Genus *Loristes* Josifov et Kerzhner, 1972
 - Loristes decorates* (Reuter, 1908)

Genus *Orthops* (Fieber, 1858)

Orthops scutellatus Uhler, 1877

Genus *Polymerias* Yasunaga, 1997

Polymerias oppacipennis (Lindberg, 1934)

Genus *Stenotus* Jakovlev, 1877

Stenotus rubrovittatus (Matsumura, 1913)

Tribe Stenodemini China, 1943

Genus *Stenodema* Laporte, 1833

Stenodema calcarata (Fallén, 1807)

Stenodema rubrinervis Horváth, 1905

Stenodema sibirica Bergroth, 1914

Stenodema trispinosa Reuter, 1904

Introduction

Mirinae (Hemiptera: Heteroptera: Miridae) is the largest subfamily of the family Miridae, called “plant bugs.” Mirinae includes more than 4,000 species globally (Cassis and Schuh, 2012). In Korea, Mirinae comprises approximately a sixth of the total number of heteropteran species (Kwon et al., 2001).

Most Mirinae species are phytophagous, surviving on various plants, such as herbs and trees (Lehr, 1988). Mirinae also contains zoophagous and zoophytophagous species, with a variety of morphological characters adapted to prey types or habitats. Some Mirinae species, such as *Apolygus lucorum* and *A. spinolae*, are major insect pests of various fruits and crops (e.g., grape, persimmon, and cotton) in Korea and adjacent countries (Japan and China) (Lee et al., 2002; Pan et al., 2013). However, some of the predatory Mirinae species have considerable potential as biological control agents. Predators in the sister-group in Miridae (e.g., *Nesidiocoris tenuis*, *Macrolophus pygmaeus*, and *M. melanotoma*) have been used in greenhouses to control whiteflies, aphids, and mites (Evangelou et al., 2013). Therefore, Mirinae is an important group economically, since it contains insect pests and potential biological control agents.

A total of 99 species and 40 genera have been recorded from the Korean Peninsula to date (Kwon et al., 2001; Seong and Lee, 2007; Cho et al., 2008); however, there have been limited taxonomic studies on Korean Mirinae. Most Korean species were studied by Josifov and Kerzhner in the late 1900s (Josifov and Kerzhner, 1972; Josifov, 1978; Josifov, 1985).

In the book, the first in a series of taxonomic studies on Mirinae from the Korean Peninsula, clear taxonomic information on 36 species and 10 genera, such as morphological characters and biology of each species, has been provided, including the major genera *Adelphocoris* and *Apolygus*.

Materials and Methods

Samples in this study were collected from the Korean Peninsula, and were deposited in the collection of Laboratory of Systematic Entomology, Department of Applied Biology, Chungnam National University, Daejeon, Korea and Division of Applied Entomology in National Academy of Agricultural Science, Suwon, Korea.

To examine external morphological characters of each specimen, photographs of dried specimens were taken under the microscope (Leica M165 C). And then, to observe internal morphological characters such as parameres and vesica, genital segment of male was cut. After cut, it was soaked and boiled in 10% KOH solution at 70°C at about 1–5 hour until segment became transparent. After it was transparent, genital segment was dissected with genitalia and parameres in distilled water. After observation, photographs of important morphological characters are taken, and they are made of slide specimen and deposited. All measurements are given in millimeters (mm). Terminology used in this study follows Yasunaga (1999) and Braimah et al. (1982). The new record site or new host plant of each species is indicated by an asterisk (*). Abbreviations for depositories of each specimens, specimen collection sites and measurements are as follows:

Depository

CNU Chungnam National University, Daejeon, Korea

NASS Division of Applied Entomology in National Academy of Agricultural Science, Suwon, Korea

ELKU Entomological Laboratory, Faculty of Agriculture, Kyushu University, Fukuoka, Japan

Collection sites

GG Gyeonggi-do, GW Gangwon-do, CB Chungcheongbuk-do, CN Chungcheongnam-do, GB Gyeongsangbuk-do, GN Gyeongsangnam-do, JB Jeollabuk-do, JN Jeollanam-do, JJ Jeju-do, YG Yanggang-do, PB Pyeonganbuk-do, PN Pyeongannam-do, HWB Hwanghaebuk-do, HWN Hwanghaenam-do, HB Hamgyeongbuk-do, HN Hamgyeongnam-do.

Measurements

BL Body length (tylus-apex of membrane), HL Head length (excluding collar), HW Head width (including compound eyes), VW vertex width, ASI First antennal segment length, ASII Second antennal segment length, ASIII Third antennal segment length, ASIV Fourth antennal segment length, TAL Total antennal length, PL mesal pronotal length, PW basal pronotal maximal width (straight), SW anterior scutellum width, SL mesal scutellum length, EL outer embolial margin length (straight), CL outer cuneal margin length (straight), HEW hemelytron width (maximum).

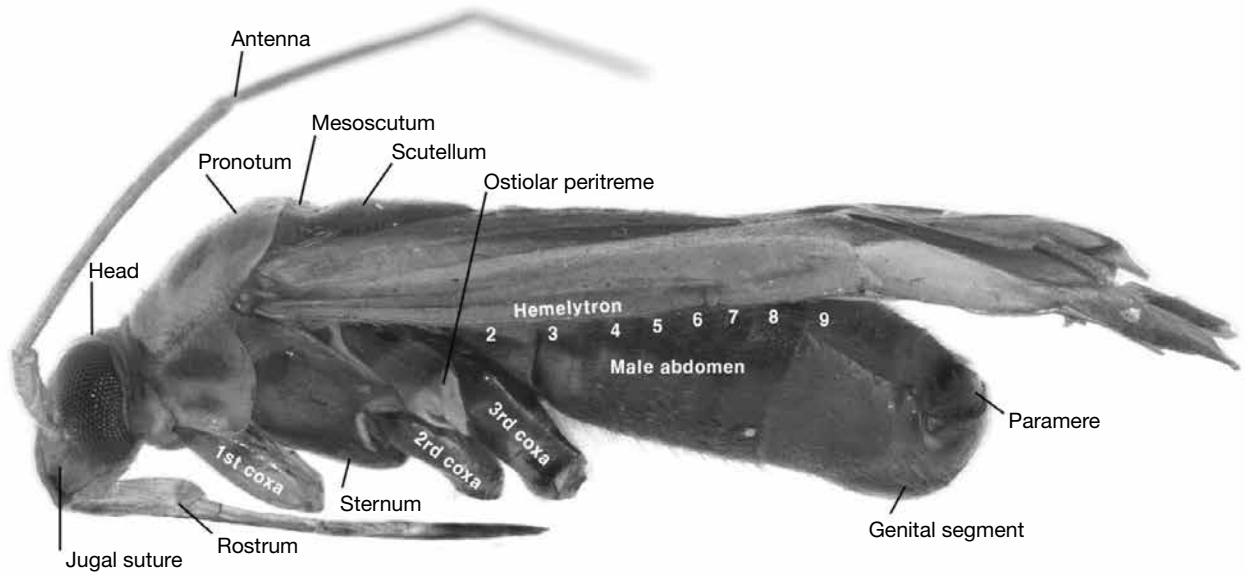


Fig. 1. Total body of male and genital segment in lateral view.

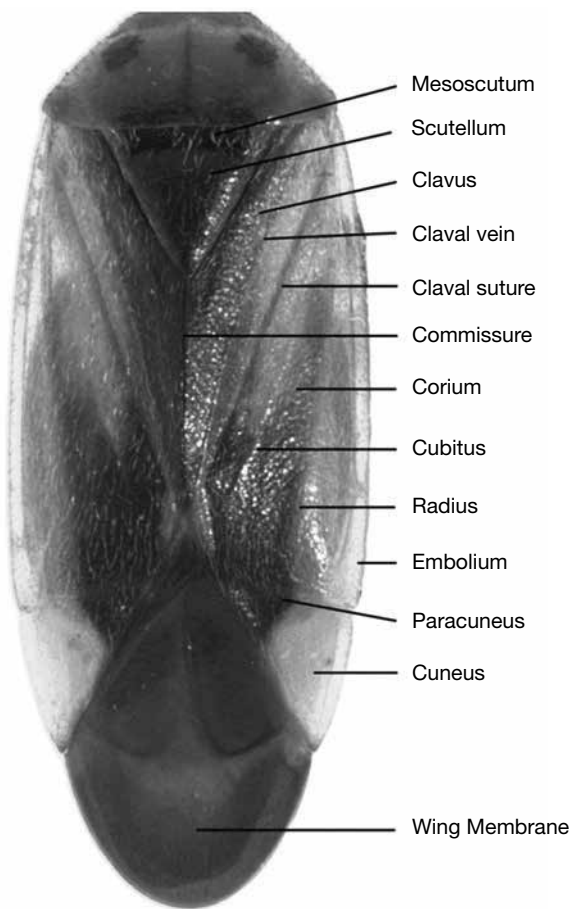


Fig. 2. Body in dorsal view.

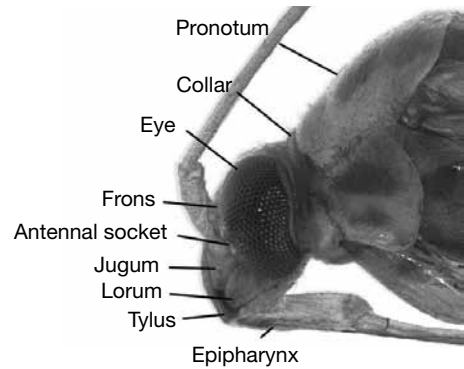


Fig. 3. Head and thorax part in lateral view.

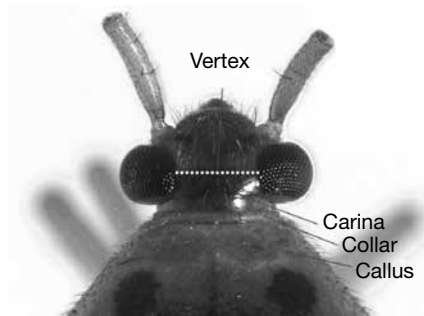


Fig. 4. Head and thorax part in dorsal view.

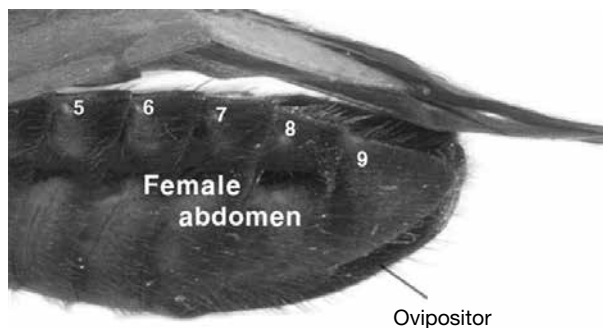


Fig. 5. Abdomen of female and ovipositor in genital segment in lateral view.

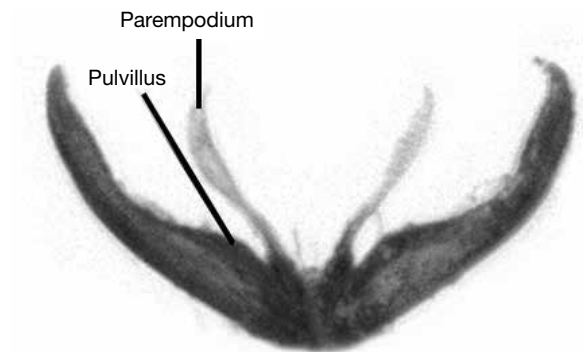


Fig. 6. Shape of claw as a key in Mirinae.

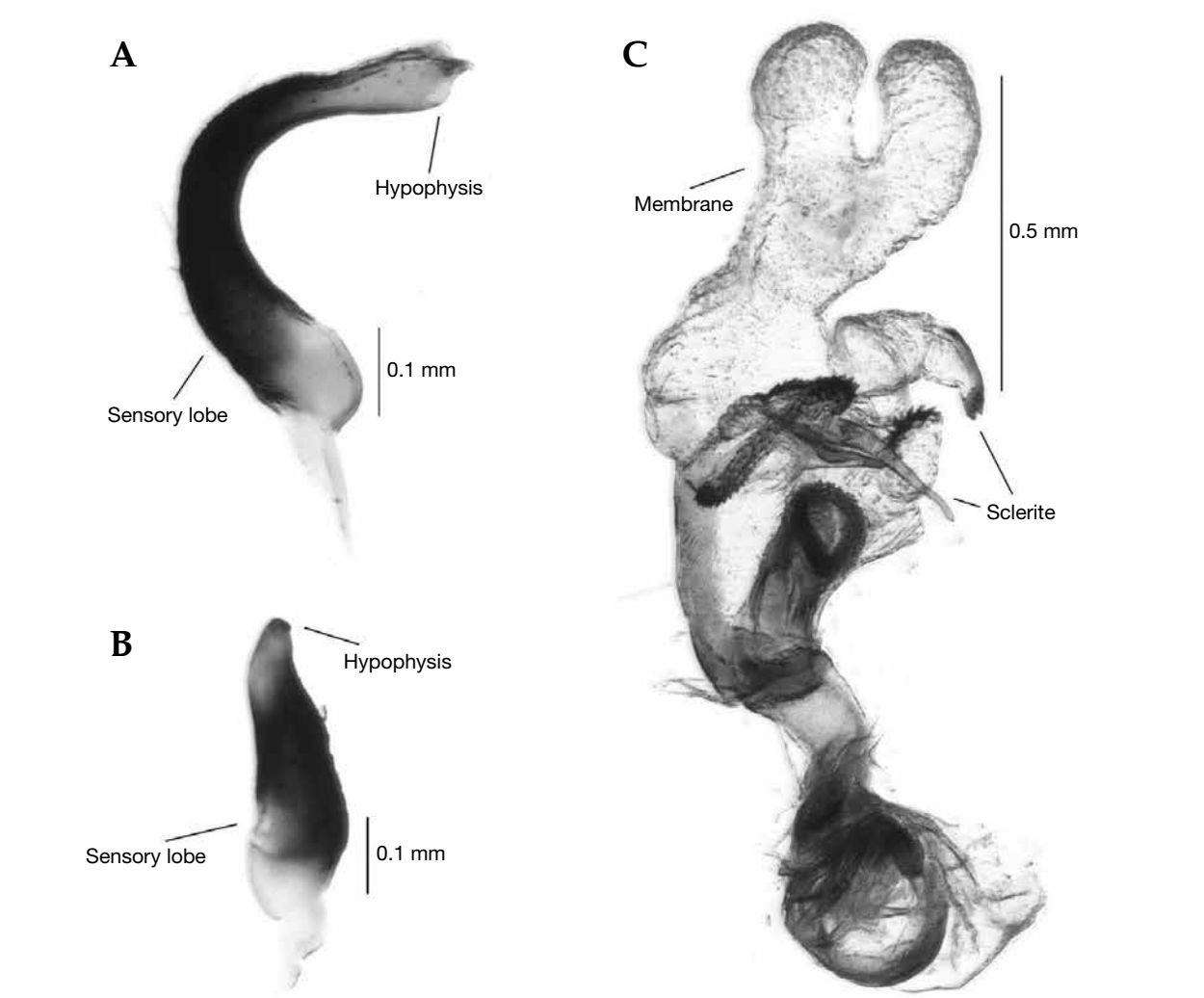


Fig. 7. Parameres and vesica (*Loristes decoratus* (Reuter, 1908)). A: left paramere; B: right paramere; C: vesica.

Taxonomic Notes

Class Insecta

Order Hemiptera Linnaeus, 1758

Family Miridae Hahn, 1833

Subfamily Mirinae Hahn, 1833

External morphological characters of members of the Mirinae are follows: Body various colorations, approximately 3–15 mm, round oval to elongated oval. Compound eyes somewhat big, ocelli absent; antennae somewhat long and thin; rostrum reaching to midcoxae or hindcoxae. Pronotum trapezoid; a pair of callus swollen. Hemelytra with corium and cuneus. Leg somewhat long, pretarsus with parempodia (Fig. 6). Genital segment with a pair of parameres; parameres asymmetrical; left paramere larger than right paramere. Vesica membranous, with sclerites.

Type: *Miris* Fabricius, 1794.

SPECIES: Over 4,000 (99 in Korea).

DISTRIBUTION: Worldwide.

KOREA: Countrywide.

Tribe Mirini Hahn, 1833

Mirini Hahn, 1833: 234. Type genus: *Miris* Fabricius, 1794.

Capsini Burmeister, 1835: 263. Type genus: *Capsus* Fabricius, 1803.

Dionconotini Reuter, 1910: 129, 131 (Dionconotaria). Type genus: *Dionconotus* Reuter, 1894.

DIAGNOSIS: Body elongated oval or oval and variable colorations; head generally small; antennae generally shorter than length of body; second antennal segment longer than third antennal segment; pronotum thick laterally.

Genus *Adelphocoris* Reuter, 1896

Adelphocoris Reuter, 1896: 168. Type Species: *Cimex seticornis* Fabricius, 1775.

Fulgentius Distant, 1904: 103. Synonymized by Josifov and Kerzhner (1944).

Key to the Korean *Adelphocoris* species

1. Body dark brown, corium with whitish markings 2
 – Body color not as above 3
2. Corium with a pair of whitish thick markings, cuneus with a pair of whitish narrow markings *A. albonotatus*
 – Corium with a pair of oblique and long pale markings, cuneus with a pair of circular pale markings *A. obliquefasciatus*
3. Body brown to fuscous 4
 – Body brown or reddish brown 13
4. Pronotum with longitudinal suture 5
 – Pronotum without longitudinal suture 6
5. Clavus entirely dark brown *A. variabilis*
 – Clavus greenish brown or sometimes partly dark brown *A. suturalis*
6. Pronotum entirely dark brown 7
 – Pronotum not dark brown 8
7. First antennal segment dark brown, base of second antennal segment dark brown *A. tenebrosus*
 – First antennal segment pale brown, base of second antennal segment pale brown *A. reicheli*
8. Pronotum with dark markings 9
 – Pronotum without dark markings 11
9. Scutellum with longitudinal stripes 10
 – Scutellum without any stripes, pronotum with four dark markings *A. quadripunctatus*
10. Comb-shaped spicule of vesica with 15 teeth *A. lineolatus*
 – Comb-shaped spicule of vesica with 12 teeth *A. ponghvariensis*
11. Hemelytra brown, covered with silvery pubescences *A. piceosetosus*
 – Hemelytra fuscous 12
12. Cuneus pale brown tinged with red *A. demissus*
 – Cuneus entirely pale brown *A. triannulatus*
13. Body brown, scutellum brown with a large pale spot *A. fasciaticollis*
 – Body reddish brown, scutellum reddish brown *A. rufescens*

1. *Adelphocoris albonotatus* (Jakovlev, 1881) (Pl. 1a–e)

Calocoris albonotatus Jakovlev, 1881: 194.

Fulgentius mandarinus Distant, 1904: 104.

Trichophoroncus albonotatus Carvalho, 1959: 269; Hsiao and Meng, 1963: 444; Kulik, 1965: 11.

Adelphocoris albonotatus Josifov and Kerzhner, 1972: 164; Yasunaga, 1990: 728.

DIAGNOSIS: Body almost soft dark brown, four white band, corium with whitish thick band, cuneus with whitish narrow band.

DESCRIPTION: Male: Body generally dark brown, elongated, both side margins of body parallel. Head dark brown, covered with short pubescences; ocelli absent; frons with long dark brown setae; tylus dark brown. Antennae generally dark brown, first antennal segment pale reddish brown, somewhat shorter than fourth; second antennal segment dark brown, wholly covered with dark brown short stiff setae, incrassate towards its apex; the followings somewhat dark brown, pubes

cent; basal 1/4 of third and basal of fourth lightly yellowish white. Rostrum entirely dark reddish brown reaching to hindcoxae. Pronotum dark brown; collar lightly yellowish white, with dark brown hairs; scutellum dark brown. Hemelytra dark brown, with characteristic four wedged-shaped white bands on corium and cuneus, bearing dark brown hairs except for white portions which bear only silverish hairs; cuneus twice as long as basal width; membrane dark grayish brown. Legs dark brown except for first and second tarsal segments paler, somewhat long; femora with several rows of short spines. Abdomen almost dark brown. Left paramere constricted subapically, not widened apically; vesica membranous, with oval comb-shaped spicule arranging about 30 teeth on inner margin.

Female: as in male except for more rounded and bigger size, and developed brownish ovipositor through abdomen ventrally.

MEASUREMENTS (in mm): Male (n=1): BL: 6.96; HL: 0.60; HW: 1.18; VW: 0.50; ASI: 1.04; ASII: 3.04; ASIII: 2.61; ASIV: 1.26; TAL: 7.95; PL: 1.09; PW: 1.96; SW: 1.06; SL: 0.97; EL: 3.17; CL: 0.93; HEW: 1.04.

SPECIMEN EXAMINED: [CNU] 1♂ Horogoru, Wondang-ri, Jangam-myeon, Yeoncheon-gun, GG, 3.vii.2014, J.G. Kim; 1♂1♀ Pyeongsan-gun, HWB, North Korea (in label: Korea, Pjôngsan zwischen Sorivon und Kesông), 4.viii.1974, M. Josifov.

HOST: *Gossypium indicum* (cf. Kor. Soc. Plant Prot., 1986), *G. herbaceum* (cf. Kor. Soc. Plant Prot., 1986), *Lespedeza bicolor* (cf. For. Res. Inst., 1995), *L. cuneata* (cf. For. Res. Inst., 1995), *L. cyrtobotrya* (cf. For. Res. Inst., 1995), *L. maximowiczii* (cf. For. Res. Inst., 1995), *L. thunbergii intemedia* (cf. For. Res. Inst., 1995), *Lespedeza* spp. (cf. For. Res. Inst., 1995).

DISTRIBUTION: Korea, China, Japan, Russia.

REGION: Palaearctic region.

KOREA: GG.

2. *Adelphocoris demissus* Horváth, 1905 (Pl. 2a–e)

Adelphocoris demissus Horváth, 1905: 418.

Adelphocoris triannulatus Linnavuori, 1963: 78.

Adelphocoris demissus Yasunaga, 1990: 612.

DIAGNOSIS: Antaenae stripes, inner cuneal part tinged with reddish brown.

DESCRIPTION: Male: Body generally dark brown, elongated oval, covered with densely silvery pubescences. Head dark brown, with sparse silver pubescences; ocelli absent; tylus dark brown. Antennae generally dark brown, first antennal segment usually dark brown, thicker than other segments; second segment 1/2 basal part pale brown, other part dark brown; third segment 1/3 basal part pale brown, other part dark brown; fourth segment 1/4 basal part pale brown, other part dark brown. Rostrum entirely dark brown, reaching to midcoxae. Pronotum dark brown, glossy, posterior margin of pronotum pale brown, covered with silvery pubescences; scutellum dark brown, posterior apex of scutellum pale brown, entirely covered with silvery pubescences. Hemelytra entirely dark brown, covered with short silvery hairs; cuneus pale brown except for inner part tinged with reddish brown. Legs generally dark brown; femora red dish dark brown; tibiae pale brown, with dark brown setae; tarsus pale brown except for third segment dark brown. Abdomen dark brown. Left and right paramere with hypophysis and sensory lobe; vesica membranous, with comb-shaped

spicule with approximately 25 teeth on its inner margin; hookshaped spicule rectangular.

Female: as in male except for more rounded and bigger size, and developed brownish ovipositor through abdomen ventrally.

MEASUREMENTS (in mm): Male (n=1) BL: 7.72; HL: 0.54; HW: 1.23; VW: 0.36; ASI: 0.89; ASII: 2.87; ASIII: 2.20; ASIV: 1.48; TAL: 7.44; PL: 1.02; PW: 2.19; SW: 1.38; SL: 1.21; EL: 3.82; CL: 1.11; HEW: 1.37.

SPECIMEN EXAMINED: [CNU] 1♂1♀ Sodong-ri, Ilun-myeon, Geoje-si, GN, Light trap, 21.vii.2014, J.G. Kim.

HOST: Unknown.

DISTRIBUTION: Korea, Japan.

REGION: Palaearctic region.

KOREA: GN.

3. *Adelphocoris fasciaticollis* Reuter, 1903 (Pl. 3a–c)

Adelphocoris fasciaticollis Reuter, 1903: 8; Hsiao, 1962: 84; Hsiao and Meng, 1963: 443.

DIAGNOSIS: Body almost brown, anterior lobe of pronotum pale brown, scutellum with a large pale brown marking.

DESCRIPTION: Male: Dorsal surface generally brown, elongated oval, lateral margin parallel. Head pale brown, shining; vertex sometimes with a narrow longitudinal sulcation. Pronotum shining, anterior lobe pale brown, posterior lobe dark brown, posterior margin pale brown; scutellum almost brown with a large pale brown spot, covered with short pubescences. Hemelytra dark brown; clavus and corium dark brown. Legs entirely brown, femora reddish brown, sometimes pale brown, with irregular dark patches; tibiae almost pale brown; tarsus pale brown, third tarsal segment dark brown. Abdomen somewhat dark brown, with several rows of pale spots laterally in female. Left paramere rounded, apex of left paramere somewhat actuated; Right paramere gradually tapered towards apex; vesica membranous, with one combshaped spicule subtriangular, arranging approximately 12 teeth on its inner margin; hookshaped spicule with one narrow fan-shaped process subbasally (Zheng et al., 2004).

Female: as in male except for somewhat more rounded oval than male.

SPECIMEN EXAMINED: None.

HOST: Unknown.

DISTRIBUTION: Korea, China.

REGION: Palaearctic region.

KOREA: Pyongyang (Kwon et al., 2001).

REMARKS: Specimens of this species from the Korean Peninsula are not examined in this study.

4. *Adelphocoris lineolatus* (Goeze, 1778) (Pl. 4a–e)

Cimex lineolatus Goeze, 1778: 267.

Cimex albinus Geoffoy, 1785: 208.

Lygaeus chenopodii Fallén, 1807:74.

Capsus brevicollis Meyer-Dur, 1843: 47.

Calocoris lineolatus bisbipunctatus Reuter, 1891: 189.

Adelphocoris lineolatus Slater, 1950: 33; Southwood and Leston, 1959: 292; Kerzhner, 1964: 952; Yasunaga, 1990: 607.

DIAGNOSIS: Body almost pale brown, one pair of longitudinal stripe in scutellum.

DESCRIPTION: Male: Body somewhat pale brown, with irregular dark markings. Head yellowish pale brown, vertex with tiny punctures, covered with short hairs; ocelli absent; tylus dark brown. Antennae almost pale brown, first segment covered with dark brown hairs, somewhat thicker than others, third and fourth slightly darker. Rostrum almost pale brown, reaching to midcoxae. Pronotum generally brown, anterior part of pronotum yellowish brown, with two or four dark brown markings; collar generally brown; scutellum pale brown, with a pair of longitudinal stripe in the middle part, covered with white pubescence, mesoscutum dark brown, mesal length somewhat long. Hemelytra generally brown, with grayish brown lines on clavus, corium and lateral margin of embolium; cuneus dark brown spot apically. Legs generally brown; femora with distinct dark patches; third tarsal segment dark brown. Abdomen pale brown. Left paramere moderately widened apically; right paramere stubby at the tip; vesica membranous, with one combshaped spicule arranging approximately 15 teeth.

Female: as in male except for more rounded and bigger size, and developed brownish ovipositor through abdomen ventrally.

MEASUREMENTS (in mm): Male (n=1) BL: 8.68; HL: 0.54; HW: 1.29; VW: 0.36; ASI: 1.05; ASII: 2.97; ASIII: 2.61; ASIV: 1.32; TAL: 7.95; PL: 0.99; PW: 2.30; SW: 1.32; SL: 1.32; EL: 4.46; CL: 1.51; HEW: 1.45.

SPECIMEN EXAMINED: [CNU] 2♂♂ Cheongjin-si, HB, North Korea (in label: 10 km, Südl., Chông-dzin), 13.vi.1975, M. Josifov; 3♀♀ Boseok-ri, Impi-myeon, Unjeon-gun, PB, North Korea (in label: 1000 m, Bosôk-ri), 20.vii.1974, M. Josifov.

HOST: *Allium cepa* (cf. Kor. Soc. Plant Prot., 1986), *A. fistulosum* (cf. Kor. Soc. Plant Prot., 1986), *Artemisia princeps* (cf. Kor. Soc. Plant Prot., 1986), *A. montana* (cf. Kor. Soc. Plant Prot., 1986), *A. princeps* var. *orientalis* (cf. Kor. Soc. Plant Prot., 1986), *Glycine max* (cf. Kor. Soc. Plant Prot., 1986), *Lathyrus quinquerivius* (cf. Kor. Soc. Plant Prot., 1986), *L. palustris* var. *cinearifolius* (cf. Kor. Soc. Plant Prot., 1986), *Lathyrus* spp. (cf. Kor. Soc. Plant Prot., 1986), *Medicago hispida* (cf. Kor. Soc. Plant Prot., 1986), *M. sativa* (cf. Kor. Soc. Plant Prot., 1986), *Trifolium repens* (cf. Kor. Soc. Plant Prot., 1986), *T. pretense* (cf. Kor. Soc. Plant Prot., 1986).

DISTRIBUTION: Korea, China, Japan, N. Africa, N. America, Russia.

REGION: Palaearctic region.

KOREA: HB, PB.

REMARKS: This species is well known as a insect pest of alfalfa in North America (Wheeler, 2000).

5. *Adelphocoris obliquefasciatus* Lindberg, 1934 (Pl. 5a–c)

Adelphocoris obliquefasciatus Lindberg, 1934: 15; Carvalho, 1959: 17; Kulik, 1965: 43.

DIAGNOSIS: Body almost dark brown, collar and first antennal segment dark, corium with a pair of oblique and long pale markings, cuneus with a pair of quadrangular pale markings.

DESCRIPTION: Male: Body generally dark brown, elongated, both side margins of body parallel. Head dark brown, covered with short pubescences; ocelli absent; frons with long dark brown setae. Antennae generally dark brown, first antennal segment dark brown; second antennal segment dark brown, wholly covered with dark brown short stiff setae, incrassate towards its apex; other segments somewhat dark brown except for pale bases, pubescent. Pronotum dark brown; collar dark brown; scutellum dark brown. Hemelytra dark brown; corium with a pair of oblique and long pale markings and a pair of quadrangular pale markings on corium and cuneus; membrane dark grayish brown. Legs dark brown; femora with several rows of short spines. Abdomen almost dark brown. Left paramere constricted subapically, not widened apically; vesica membranous, with oval comb-shaped spicule arranging about 28 teeth on inner margin (Zheng et al., 2004).

Female: as in male except for somewhat more rounded oval than male.

SPECIMEN EXAMINED: None.

HOST: Unknown.

DISTRIBUTION: Korea, China, Russia.

REGION: Palearctic region.

KOREA: GG (Kwon et al., 2001).

REMARKS: Specimens of this species from the Korean Peninsula are not examined in this study.

6. *Adelphocoris piceosetosus* Kulik, 1965 (Pl. 6a–e)

Adelphocoris piceosetosus Kulik, 1965: 147; Yasunaga, 1990: 725.

DIAGNOSIS: Body almost reddish pale brown or sometimes mottled, covered with silvery pubescences.

DESCRIPTION: Male: Body somewhat slender. Head greenish and reddish brown, with silvery hairs; head with eyes about 3.7 times as wide as vertex in male, 2.7 times in female; vertex with a pair of depressions. Antennae pale brown, wholly covered with short pubescence; first and second segments somewhat tinged with dark red; the former bearing several dark brown setae inward. Rostrum somewhat brown, apical segment somewhat dark brown, reaching to hindcoxae.

Pronotum pale greenish brown, with a pair of reddish brown spots laterally or with transversely arranged 4 brown spots, densely covered with silverish pubescence; mesal length of collar slightly shorter than width of fourth antennal segment; exposed part of mesonotum and scutellum somewhat pale reddish brown, with silvery pubescence, the latter with of several dark hairs; ostiolar peritreme somewhat yellowish white. Hemelytra brown or somewhat pale brown, with irregular pale reddish markings, bearing densely silvery hairs and distinct dark hairs all over; basal part of cuneus pale red, apex of cuneus pale red mark; membrane grayish brown, relatively translucent; membrane vein pale reddish brown. Legs pale brown; femora with many dark patches and irregular pale reddish spots; tibial spines prominent; third tarsal segment dark brown apically. Abdomen somewhat reddish brown; surroundings of spiracles darker. Right paramere projected dorsally near the basal part, blunt at the tip; left paramere constricted subapically, with rather somewhat large apical process; vesica membranous, with comb-shaped spicule arranging approximately 20

long teeth on its inner margin with several small teeth its below.

Female: as in male except for more rounded and bigger size, and developed brownish ovipositor through abdomen ventrally.

MEASUREMENTS (in mm): Male (n=1) BL: 6.32; HL: 0.43; HW: 1.19; VW: 0.36; ASI: 0.78; ASII: 2.43; ASIII: 1.91; ASIV: 0.46; TAL: 5.58; PL: 0.88; PW: 1.98; SW: 1.10; SL: 1.06; EL: 3.20; CL: 1.06; HEW: 1.05.

SPECIMEN EXAMINED: [CNU] 2♂♂3♀♀ Jeoksang-san (Mt), Jeoksang-myeon, Muju-gun, JB, 7.viii.2014, J.G. Kim; 5♂♂7♀♀ Geumgang arboretum, Donam-ri, Geumnam-myeon, Sejong, 28.vii.2014, J.G. Kim.

HOST: *Lespedeza bicolor* (cf. Kerzhner, 1988), *L. cuneata* (cf. For. Res. Inst., 1995), *L. cyrtobotrya* (cf. For. Res. Inst., 1995), *L. maximowiczii* (cf. For. Res. Inst., 1995), *L. thunbergii* (cf. For. Res. Inst., 1995).

DISTRIBUTION: Korea, China, Japan, Russia.

REGION: Palaearctic region.

KOREA: CB*, JB*.

7. *Adelphocoris ponghvarensis* Josifov, 1978 (Pl. 7a–e)

Adelphocoris ponghvarensis Josifov, 1978: 282.

DIAGNOSIS: Body almost pale brown, one pair of longitudinal stripe in scutellum, mesal length of mesoscutum somewhat short, comb-shaped spicule with 12 teeth.

DESCRIPTION: Male: Body somewhat pale brown, elongated oval. Head yellowish pale brown, vertex with tiny punctures, covered with short hairs; ocelli absent; tylus dark brown. Antennae almost pale brown, first segment covered with dark brown hairs, somewhat thicker than others, third and fourth slightly darker. Rostrum almost pale brown, reaching to hindcoxae. Pronotum generally brown, anterior part of pronotum yellowish brown, with two or four dark brown markings; collar generally brown; scutellum pale brown, with a pair of longitudinal stripe in the middle part, covered with white pubescence, mesoscutum dark brown, mesal length somewhat short. Hemelytra generally brown, with grayish brown lines on clavus, corium and lateral margin of embolium; cuneus dark brown spot apically. Legs generally brown; femora with distinct dark patches, with dark spines; third tarsal segment dark brown. Abdomen pale brown. Left paramere moderately widened apically; right paramere stubby at the tip; vesica membranous, with one comb-shaped spicule arranging approximately 12 teeth.

Female: as in male except for more rounded and bigger size, and developed brownish ovipositor through abdomen ventrally.

MEASUREMENTS (in mm): Male (n=1) BL: 6.45; HL: 0.52; HW: 1.13; VW: 0.40; ASI: 0.83; ASII: 2.48; ASIII: 2.18; ASIV: 1.28; TAL: 6.77; PL: 0.89; PW: 1.79; SW: 1.01; SL: 0.94; EL: 3.12; CL: 0.99; HEW: 1.12.

SPECIMEN EXAMINED: Holotype: [CNU] 2♂♂2♀♀ Pyeongyang, North Korea (in label: Korea, Ponghvare bei Pjongjang), 23.viii.1970, M. Josifov.

HOST: Unknown.

DISTRIBUTION: Korea, China, Russia.

REGION: Palaearctic region.

KOREA: Pyeongyang.

8. *Adelphocoris quadripunctatus* (Fabricius, 1794) (Pl. 8a–c)

Lygaeus quadripunctatus Fabricius, 1794: 172.

Capsus annulicornis Sahlberg, 1848: 100 (junior primary homonym of *Capsus annulicornis* Herich-Shaeffer, 1835; Synonymized by Thomson, 1871: 420).

Adelphocoris annulicornis var. *confluens* Reuter, 1896: 226.

Adelphocoris quadripunctatus var. *innotata* Reuter, 1906: 20.

Adelphocoris quadripunctatus var. *scutellaris* Reuter, 1906: 21.

DIAGNOSIS: Body generally pale brown with distinct dark setae, apex of second antennal segment dark brown; four distinct punctures on pronotum.

DESCRIPTION: Male: Body generally pale brown, elongated oval. Head greenish brown; vertex with tiny punctures, covered with short hairs; ocelli absent. Antennae almost brown, first segment brown covered with dark brown hairs, somewhat thicker than others; basal part of second segment brown, apical part dark brown, third and fourth dark brown. Pronotum yellowish brown, four distinct dark brown punctures; collar yellowish brown; scutellum yellowish brown, covered with distinct dark setae, mesal length somewhat short. Hemelytra pale brown, with grayish brown lines on clavus, corium and lateral margin of embolium; cuneus dark brown spot apically. Legs generally brown; femora with distinct dark patches, with dark spines; third tarsal segment dark brown. Abdomen greenish pale brown, with dark spots. Left paramere moderately widened apically; right paramere stubby at the tip; vesica membranous, with one comb-shaped spicule arranging approximately 22 teeth (Zheng et al., 2004).

Female: as in male except for somewhat more rounded oval than male.

SPECIMEN EXAMINED: None.

HOST: Unknown.

DISTRIBUTION: Korea, China, Europe, Japan, Kazakhstan, Mongolia, N. Africa, Russia.

REGION: Palearctic region.

KOREA: YG (Kwon et al., 2001).

REMARKS: Specimens of this species from the Korean Peninsula are not examined in this study. Kwon et al., (2001) reported this species from Korea, but the specimen is doubtful of misidentification of *A. piceosetosus*.

9. *Adelphocoris reicheli* (Fieber, 1836) (Pl. 9a–e)

Phytocoris reichelii Fieber, 1836: 103.

Adelphocoris reicheli Wagner, 1961: 37.

Adelphocoris flavicornis Hsiao, 1962: 81.

Adelphocoris reicheli Wagner and Weber, 1964: 155; Wagner, 1974: 285; Zheng and X. Li, 1989: 79; Yasunaga, 1990: 615.

DIAGNOSIS: Pronotum almost dark brown, with a distinct M-shaped yellow line on hemelytra.

DESCRIPTION: Male: Body generally pale brown, elongated oval, dorsal surface shining dark brown. Head dark brown, shining, sparsely covered with short silvery pubescences; vertex sometimes with a narrow longitudinal sulcation; antennal tubercles and their surroundings yellow-

ish brown; jugum bearing dark brown stiff hairs; tylus somewhat pale. Antennae generally pale brown, first antennal segment and basal part of second varying from brown to pale brown; remainder dark brown; third and fourth pale brown basally. Rostrum almost brown, fourth rostral segment dark brown, reaching to midcoxae. Pronotum shining dark brown, covered with indistinct short pubescence; collar pale brown; scutellum generally dark brown, covered with short pubescences. Hemelytra dark brown, covered with silvery pubescences and indistinct dark hairs; clavus and corium dark brown. Legs entirely brown, femora reddish brown, sometimes pale brown, with irregular dark patches; tibiae almost pale brown; tarsus pale brown, third tarsal segment dark brown. Abdomen somewhat dark brown, with several rows of pale spots laterally in female. Left paramere similar with congeners, apex of left paramere somewhat actuated; Right paramere gradually tapered towards apex; vesica membranous, with one comb-shaped spicule subtriangular, arranging approximately 18 teeth on its inner margin; hook-shaped spicule with one broad fan-shaped process subbasally.

Female: as in male except for more rounded and bigger size, and developed brownish ovipositor through abdomen ventrally.

MEASUREMENTS (in mm): Male (n=1) BL: 8.92; HL: 0.57; HW: 1.31; VW: 0.52; ASI: 1.23; ASII: 3.34; ASIII: 2.12; ASIV: 1.13; TAL: 7.82; PL: 1.02; PW: 2.42; SW: 1.66; SL: 1.45; EL: 4.41; CL: 1.52.

SPECIMEN EXAMINED: [CNU] 4♂♂6♀♀ Gwangchi-san (Mt), Yanggu-eup, Yanggu-gun, GW, 9.vii.2014, J.G. Kim; 3♂♂2♀♀ Jeoksang-san (Mt), Jeoksang-myeon, Muju-gun, JB, 7.viii.2014, J.G. Kim.

HOST: *Lespedeza bicolor*.

DISTRIBUTION: Korea, China, Japan, Russia.

REGION: Palearctic region.

KOREA: GW, JB*.

10. *Adelphocoris rufescens* Hsiao, 1962 (Pl. 10a–c)

Adelphocoris rufescens Hsiao, 1962: 82.

DIAGNOSIS: Pronotum yellowish with dark brown band on posterior part, scutellum reddish brown, Hemelytra almost reddish brown.

DESCRIPTION: Male: Body almost reddish brown, elongated oval, covered with distinct dark brown setae. Head reddish brown; vertex sometimes with a narrow longitudinal sulcation; antennal tubercles and their surroundings yellowish brown. Antennae generally brown, apex of second antennal segment dark brown; third and fourth reddish brown. Pronotum yellowish brown with dark brown band on posterior part; scutellum reddish brown. Hemelytra reddish brown, covered with distinct dark hairs. Legs reddish brown, femora reddish brown, sometimes pale brown, with irregular dark patches; tibiae almost pale brown; tarsus pale brown, third tarsal segment dark brown. Abdomen somewhat reddish brown. Left paramere similar with congeners, apex of left paramere somewhat actuated; Right paramere gradually tapered towards apex; vesica membranous, with one combshaped spicule subtriangular, arranging approximately 16 teeth on its inner margin; hook-shaped spicule with one narrow fan-shaped process subbasally (Zheng et al., 2004).

Female: as in male except for somewhat more rounded oval than male.

SPECIMEN EXAMINED: None.

HOST: *Lespedeza bicolor* (cf. Kerzhner, 1988).

DISTRIBUTION: Korea, China, Russia.

REGION: Palaearctic region.

KOREA: Unknown.

REMARKS: Specimens of this species from the Korean Peninsula are not examined in this study.

11. *Adelphocoris suturalis* (Jakovlev, 1882) (Pl. 11a–e)

Calocoris suturalis Jakovlev, 1882: 169.

Adelphocoris suturalis Miyamoto, 1957: 76; Yasunaga, 1990: 609.

DIAGNOSIS: Body almost yellow and pale yellow, two dark brown spots and longitudinal line in pronotum, hindfemur mottled brown.

DESCRIPTION: Male: Body relatively oval. Head shining, varying from yellowish pale brown to reddish dark brown, partially dark brown, sometimes reddish, with sparse silky pubescences; vertex slightly sulcate longitudinally; tylus shining dark brown. Antennae pale brown; first segment with brownish hairs, third and fourth somewhat darker. Rostrum pale brown, fourth rostral segment almost dark brown, reaching to hindcoxae. Pronotum pale greenish brown, with variable a pair of dark brown markings, usually with a pair of dark brown spots, with longitudinal line, covered with silky pubescences; collar pale brown or greenish brown, with long silky pubescences; propleuron with a dark brownish marking behind eye; exposed part of mesonotum dark brown, sometimes pale laterally; scutellum dark brown, most part smooth, covered with silverish pubescences. Hemelytra yellow, with variable large dark marking medially, covered with silvery pubescences, but lacking dark hairs; membrane grayish brown, commonly translucent. Legs pale greenish brown; femora with irregular dark patches; apical half of third tarsal segments dark brown. Abdomen somewhat pale brown, with variable dark brown markings, Left paramere similar with congeners, apex of left paramere somewhat actuated; Right paramere scarcely somewhat tapered towards apex; vesica membranous, comb-shaped spicule somewhat swollen subbasally, arranging approximately 18 teeth on its inner margin.

Female: as in male except for more rounded and bigger size, and developed brownish ovipositor through abdomen ventrally.

MEASUREMENTS (in mm): Male (n=1) BL: 7.90; HL: 0.62; HW: 1.32; VW: 0.56; ASI: 0.83; ASII: 2.87; ASIII: 2.10; ASIV: 0.97; TAL: 6.77; PL: 1.13; PW: 2.35; SW: 1.47; SL: 1.25; EL: 3.72; CL: 1.30; HEW: 1.47.

SPECIMEN EXAMINED: [CNU] 4♂♂6♀♀ Gung-dong, Yuseong-gu, Daejeon, 28.v.2014, J.G. Kim.

HOST: *Avena sativa* (cf. Kor. Soc. Plant Prot., 1986), *Glycine max* (cf. Kor. Soc. Plant Prot., 1986), *Hordeum vulgare* var. *hexastichon* (cf. Kor. Soc. Plant Prot., 1986), *H. vulgare* var. *nudum* (cf. Kor. Soc. Plant Prot., 1986), *Secale cereal* (cf. Kor. Soc. Plant Prot., 1986), *Triticum aestivum* (cf. Kor. Soc. Plant Prot., 1986).

DISTRIBUTION: Korea, China, Japan, Russia.

REGION: Palaearctic region.

KOREA: CN.

12. *Adelphocoris tenebrosus* (Reuter, 1875) (Pl. 12a–e)

Calocoris tenebrosus Reuter, 1875: 544.

Adelphocoris tenebrosus Yasunaga, 1990: 616.

DIAGNOSIS: First and second antennal segment entirely dark brown, other segments pale brown, cuneus almost dark brown.

DESCRIPTION: Male: Body generally dark brown, elongated oval, covered with densely silvery pubescences. Head dark brown, with sparse silver pubescences; ocelli absent; tylus dark brown. Antennae generally pale brown, first antennal segment usually pale brown, thicker than other segments; second antennal segment entirely dark brown. Rostrum entirely dark brown, reaching to midcoxae. Pronotum dark brown, glossy, posterior margin of pronotum pale brown, covered with silvery pubescences; scutellum dark brown, posterior apex of scutellum pale brown, entirely covered with silvery pubescences. Hemelytra entirely dark brown, covered with short silvery hairs; cuneus almost dark brown. Legs generally dark brown; femora reddish dark brown; tibiae pale brown, with dark brown setae; tarsus pale brown except for third segment dark brown. Abdomen dark brown. Left and right paramere with hypophysis and sensory lobe; vesica membranous, with comb-shaped spicule with approximately 25 teeth on its inner margin; hook-shaped spicule rectangular.

Female: as in male except for more rounded and bigger size, and developed dark brownish ovipositor through abdomen ventrally.

MEASUREMENTS (in mm): Male (n=1) BL: 7.90; HL: 0.62; HW: 1.32; VW: 0.56; ASI: 0.83; ASII: 2.87; ASIII: 2.10; ASIV: 0.97; TAL: 6.77; PL: 1.13; PW: 2.35; SW: 1.47; SL: 1.25; EL: 3.72; CL: 1.30; HEW: 1.47.

SPECIMEN EXAMINED: [CNU] 1♂ Onpho-ri, Kyeongsung-gun, HGB, North Korea (in label: Onpho-ri, distr. Kjøngsông), 1.ix.1970, M. Josifov; 1♀ Myohyang-san (Mt), Yeongbyeon-gun, PB, North Korea (in label: Mjohjang-san, Korea), 2.vii.1990, M. Josifov.

HOST: Unknown.

DISTRIBUTION: Korea, China, Japan, Russia.

REGION: Palearctic region.

KOREA: HB, PB.

13. *Adelphocoris triannulatus* (Stål, 1858) (Pl. 13a–e)

Deraeocoris triannulatus Stål, 1858: 183.

Calocoris nigriceps Sahlberg, 1878: 25.

Adelphocoris funebris Reuter, 1904: 34.

Adelphocoris triannulatus Linnavuori, 1965: 267; Yasunaga, 1990: 611.

DIAGNOSIS: Body somewhat oval, first antennal segment usually brown; 1/2 basal part yellowish brown; third segment almost dark brown except for pale yellowish white basal part; fourth segment almost pale brown except for yellowish white basal part, cuneus entirely pale brown.

DESCRIPTION: Male: Body rather oval, very variable in color and size. Head shining dark brown, with sparse silvery pubescences; vertex with a pair of round shallow depressions between eyes; ocelli absent; tylus dark brown. Antennae generally dark brown, first antennal segment usually brown, thicker than other segments; 1/2 basal part yellowish brown; third segment almost dark

brown except for pale yellowish white basal part; fourth segment almost pale brown except for yellowish white basal part. Rostrum shining dark reddish brown, second and third segments somewhat paler, reaching to midcoxae. Pronotum varying from brown to dark brown, shining, sometimes pale anterior to calli and along posterior margin, covered with silky pubescences; collar varying from pale shining brown to dark brown; exposed part of mesonotum and scutellum brown or dark brown, with silvery pubescences; apex of scutellum pale brown, covered with silvery hairs; ostiolar peritreme yellowish white. Hemelytra varying from brown to dark brown, covered with silvery hairs and dark hairs, moderately declivous posteriorly; cuneus dark brown except for yellowish white median portion; membrane dark grayish brown, hardly translucent. Femora varying from pale brown to dark brown; tibiae pale brown, except for apices and bases dark; tarsi pale brown, except for apical half of third segments dark brown. Abdomen varying from brown to dark brown, sometimes with irregular pale portions. Parameres similar with congener species in this group; vesica membranous, with comb-shaped spicule arranging approximately 16 teeth on its inner margin; hook-shaped spicule somewhat blunt at the tip.

Female: as in male except for more rounded and bigger size, and developed dark brownish ovipositor through abdomen ventrally.

MEASUREMENTS (in mm): Male (n=1) BL: 7.76; HL: 0.55; HW: 1.24; VW: 0.37; ASI: 1.10; ASII: 2.68; ASIII: 2.31; ASIV: 1.27; TAL: 7.36; PL: 1.17; PW: 2.18; SW: 1.26; SL: 1.15; EL: 3.78; CL: 1.28; HEW: 1.45.

SPECIMEN EXAMINED: [CNU] 7♂♂8♀♀ Gung-dong, Yuseong-gu, Daejeon, 28.v.2014, J.G. Kim; 2♂♂3♀♀ Sodong-ri, Ilun-myeon, Geoje-si, GN, 21.vii.2014, J.G. Kim; 3♂♂2♀♀ Jeoksang-san (Mt), Jeoksang-myeon, Muju-gun, JB, 7.viii.2014, J.G. Kim; 2♂♂1♀♀ Geumgang arboretum, Donam-ri, Geumnam-myeon, Sejong, 28.vii.2014, J.G. Kim.

HOST: *Trifolium* spp. (cf. Kerzhner, 1988).

DISTRIBUTION: Korea, China, Japan, Russia.

REGION: Palearctic region.

KOREA: CN, GN, JB.

14. *Adelphocoris variabilis* (Uhler, 1896) (Pl. 14a–c)

Calocoris variabilis Uhler, 1897: 267.

Adelphocoris variabilis Miyamoto, 1957: 76; Carvalho, 1959: 23; Yasunaga, 1990: 614.

DIAGNOSIS: Body yellowish; pronotum with two longitudinal dark stripes or almost dark brown, pronotal collar dark brown; clavus dark brown, apical part of corium with triangular dark brown, hindfemur dark brown.

DESCRIPTION: Male: Body generally dark brown, elongated oval, somewhat larger than other congeners.

Head shining, varying from yellowish pale brown to dark brown, with sparse silky pubescences. Antennae almost dark brown; first segment brown with brownish hairs; base and apical part of second segment dark brown; third and fourth somewhat darker except for pale bases. Pronotum dark brown, or sometimes greenish brown with variable a pair of dark brown markings, with longitudinal line; exposed part of mesonotum dark brown; scutellum dark brown, or sometimes pale brown. Hemelytra yellowish brown; clavus entirely dark brown; apical part of corium with triangular dark spots; membrane grayish brown. Legs generally brown; hindfemur entirely dark brown.

Abdomen generally brown. Left paramere similar with congeners, apex of left paramere somewhat actuated; Right paramere scarcely somewhat tapered towards apex; vesica membranous, comb-shaped spicule somewhat swollen subbasally, arranging approximately 27 teeth on its inner margin (Yasunaga, 1990a).

SPECIMEN EXAMINED: None.

HOST: Unknown.

DISTRIBUTION: Korea, Japan, Russia.

REGION: Palearctic region.

KOREA: CB, GB, GN, JJ (Kwon et al., 2001).

REMARKS: Specimens of this species from the Korean Peninsula are not examined in this study.

Genus *Apolygus* China, 1941

Apolygus China, 1941: 60 (as subgenus of *Lygus*; upgraded by Miyamoto, 1987: 582; Lu & Zheng, 1997: 162). Type species: *Lygaeus limbatus* Fallen, 1807.

Apolygus Kerzhner, 1972: 287; Yasunaga and Yasunaga, 2000: 81.

Key to the Korean *Apolygus* species

1. Body generally greenish 2
 - Body generally reddish brown or yellowish green 4
2. Apex of cuneus with dark spot 3
 - Apex of cuneus without any spot, apex of second antennal segment pale brown, vesica with broad wing-shaped sclerite *A. lucorum*
3. Rostrum reaching hindcoxae *A. nigrovirens*
 - Rostrum not reaching hindcoxae *A. spinolae*
4. Body reddish brown 5
 - Body yellowish green, clavus partly dark brown or entirely dark brown, legs sanguineous *A. limbatus*
5. Base of second antennal segment pale brown 6
 - Base of second antennal segment dark brown 8
6. Scutellum pale brown 7
 - Scutellum almost dark brown, vesica with needle-shaped spicule, median sclerite thin, sublateral sclerite broad *A. infamis*
7. Lorum with red spot, scutellum brown, cuneus without reddish band, apical part of femur sanguineous, vesica without needle-shaped spicule, wing-shaped sclerite longer than ventral sclerite *A. subpulchellus*
 - Lorum with dark spot, scutellum pale brown, apical part of femur pale brown tinged with red, vesica with needle-shaped spicule, wing-shaped sclerite broad *A. pulchellus*
8. Second antennal segment almost or entirely dark brown, tylus almost pale brown except for its apex, vesica with short needle-shaped spicule *A. subhilaris*
 - Second antennal segment dark brown with pale part in middle, tylus entirely dark brown, vesica with long needle-shaped spicule *A. hilaris*

15. *Apolygus hilaris* (Horváth, 1905) (Pl. 15a–e)

Cyphodema hilare Horváth, 1905: 419.

Lygus adustus hilaris Linnavuori, 1963: 81.

Lygocoris (Apolygus) hilaris Josifov and Kerzhner, 1972: 158; Yasunaga, 1992: 16.

DIAGNOSIS: Body generally reddish brown, basal part of second antennal segment dark brown, vesica membranous with long needle-shaped spicule, ventral sclerite dentate.

DESCRIPTION: Male: Body generally reddish brown, oval, covered with silvery pubescences. Head almost reddish pale brown; ocelli absent; tylus almost dark brown. Antennae entirely reddish brown; first antennal segment reddish brown, somewhat thick; basal part and 1/2 apical part of second segments dark brown; third segment and fourth segment dark brown except for basal apex pale brown. Rostrum almost dark brown, rostrum reaching to midcoxae. Pronotum generally reddish brown, glossy, posterior margin of pronotum pale brown, covered with silvery pubescences; scutellum generally reddish brown, generally covered with silvery short pubescences. Hemelytra generally reddish pale brown, covered with short silvery hairs, posterior margin of corium dark brown, anterior margin and apex of cuneus dark brown. Legs almost pale brown, hindfemur reddish dark brown with scattered reddish spots; tibia reddish pale brown, with dark brown spine; third tarsal segment dark brown. Abdomen greenish pale brown. Left and right paramere with hypophysis and sensory lobe; vesica membranous, with one needle-shaped spicule and five sclerites, ventral sclerite dentate.

Female: as in male except for more rounded and bigger size, and developed brownish ovipositor through abdomen ventrally.

MEASUREMENTS (in mm): Male (n=1) BL: 4.96; HL: 0.34; HW: 1.00; VW: 0.41; ASI: 0.63; ASII: 1.62; ASIII: 1.14; ASIV: 0.61; TAL: 4.00; PL: 1.02; PW: 2.00; SW: 1.11; SL: 0.92; EL: 2.34; CL: 0.87; HEW: 1.23.

SPECIMEN EXAMINED: [CNU] 2♂♂5♀♀ Jeoksang-san (Mt), Jeoksang-myeon, Muju-gun, JB, 7.viii. 2014, J.G. Kim.

HOST: *Lespedeza bicolor* (cf. Kerzhner, 1988).

DISTRIBUTION: Korea, China, Japan, Russia.

REGION: Palearctic region.

KOREA: JB*.

16. *Apolygus infamis* (Kerzhner, 1977) (Pl. 16a–c)

Lygocoris (Apolygus) infamis Kerzhner, 1977: 17; Kerzhner, 1978: 39.

DIAGNOSIS: Body generally reddish brown; base of second antennal segment pale brown; scutellum pale brown, hindfemur sanguineous, vesica with needle-shaped spicule, median sclerite thin, sublateral sclerite broad.

DESCRIPTION: Male: Body generally reddish brown, oval, covered with silvery pubescences. Head almost reddish pale brown; ocelli absent; tylus almost dark brown; lorum with a pair of dark spot. Antennae entirely brown; first antennal segment reddish brown, somewhat thick; basal part and 1/2 apical part of second segments dark brown. Pronotum generally reddish brown, glossy,

sometimes with brown spots, covered with silvery pubescences; scutellum generally pale brown, entirely covered with crispen. Hemelytra generally reddish pale brown, covered with short silvery hairs, posterior margin of corium dark brown, anterior margin and apex of cuneus dark brown. Legs almost pale brown, hindfemur reddish; tibia reddish pale brown, with dark brown spine; third tarsal segment dark brown. Abdomen greenish dark brown. Left and right paramere with hypophysis and sensory lobe; vesica membranous, vesica with needle-shaped spicule, median sclerite thin, sublateral sclerite broad (Kerzhner, 1977).

Female: as in male except for somewhat bigger and more rounded oval than male.

SPECIMEN EXAMINED: None.

HOST: Unknown.

DISTRIBUTION: Korea, Japan, Russia.

REGION: Palearctic region.

KOREA: JN (Kwon et al., 2001).

REMARKS: Specimens of this species from the Korean Peninsula are not examined in this study. Kwon et al., (2001) reported this species based on a specimen from Korea, but the specimen is doubtful of misidentification.

17. *Apolygus limbatus* (Fallén, 1807)

Lygaeus limbatus Fallén, 1807: 85.

Lygocoris limbatus f. *aberrata* Stichel, 1958: 740.

Lygocoris limbatus f. *progressiva* Stichel, 1958: 740.

Lygocoris limbatus f. *terminata* Stichel, 1958: 740.

DIAGNOSIS: Body generally yellowish green, clavus partly or entirely dark brown, inner part of cuneus dark brown, legs sanguineous.

DESCRIPTION: Male: Body generally yellowish green, elongated oval. Head almost greenish brown; ocelli absent. Antennae almost dark brown; first antennal segment brown, somewhat thick; basal part and apical part of second segments dark brown; third segment and fourth segment dark brown except for basal part pale brown. Pronotum generally dark brown, sometimes anterior part greenish brown; scutellum almost dark brown. Hemelytra generally greenish pale brown; clavus partly or entirely dark brown; posterior inner margin of corium dark brown, inner part of cuneus dark brown. Legs sanguineous; hindfemur with two dark brown rings; tibia reddish brown, with dark brown spine; third tarsal segment dark brown. Abdomen greenish pale brown. Left and right paramere with hypophysis and sensory lobe; vesica membranous, with six sharp sclerites (Wagner and Weber, 1964).

Female: as in male except for somewhat bigger and more rounded oval than male.

SPECIMEN EXAMINED: None.

HOST: Unknown.

DISTRIBUTION: Korea, Europe, Russia.

REGION: Palearctic region.

KOREA: GB (Kwon et al., 2001).

REMARKS: Specimens of this species from the Korean Peninsula are not examined in this study. This species is a typical European mirine bug, so the Korean record is not quite certain.

18. *Apolygus lucorum* (Meyer-Dür, 1843) (Pl. 18a–e)

Capsus lucorum Meyer-Dür, 1843: 46.

Capsus declivis Scholtz, 1847: 125 (Synonymized by Fieber, 1861: 275).

Lygus lucorum var. *maculatus* Reuter, 1896: 108.

Lygus (*Lygus*) *lucorum* f. *concolor* Stichel, 1930: 184 (junior primary homonym of *Lygus concolor* Poppius, 1914).

DIAGNOSIS: Body generally greenish brown; cuneus entirely green, wing-shaped sclerite broad, sublateral sclerite present.

DESCRIPTION: Male: Body generally greenish brown, oval, covered with silvery pubescences. Head almost yellowish brown; ocelli absent; tylus almost dark brown. Antennae almost brown; first and second antennal segment pale brown, first segment somewhat thick; third and fourth antennal segments dark brown. Rostrum almost brown, rostrum reaching to hindcoxae. Pronotum generally greenish brown, glossy, sometimes with brown spots, covered with silvery pubescences; scutellum generally green, entirely covered with silvery pubescences; mesoscutum pale brown. Hemelytra generally green, covered with short silvery hairs, cuneus entirely green. Legs almost green, hindfemur with two dark brown rings; tibia with dark brown spine; third tarsal segment dark brown. Abdomen almost green. Left and right paramere with hypophysis and sensory lobe; vesica membranous, with five sclerites, sublateral sclerite present.

Female: as in male except for more rounded and bigger size, and developed brownish ovipositor through abdomen ventrally.

MEASUREMENTS (in mm): Male (n=1) BL: 5.34; HL: 0.38; HW: 1.04; VW: 0.39; ASI: 0.46; ASII: 1.72; ASIII: 1.15; ASIV: 0.50; TAL: 3.83; PL: 0.76; PW: 1.79; SW: 1.12; SL: 0.97; EL: 2.50; CL: 0.99; HEW: 1.16.

SPECIMEN EXAMINED: [CNU] 1♂1♀ Gung-dong, Yuseong-gu, Daejeon-si, Korea, 28.v.2014, J.G. Kim; [CNU] 1♂2♀♀ Gung-dong, Yuseong-gu, Daejeon-si, Korea, 9.vi.2014, J.G. Kim; [CNU] 1♂ Nam-myeon, Yanggu-gun, Gangwon-do, Korea, 9.vii.2014, by light trap, J.G. Kim; [CNU] 8♂♂ 11♀♀ Seo-myeon, Chuncheon-si, Gangwon-do, Korea, 10.vii.2014, J.G. Kim; [CNU] 9♂♂12♀♀ Maebang-san (Mt), Dae-dong, Yuseong-gu, Daejeon-si, Korea, 12.viii.2014, by light trap, J.G. Kim; [CNU] 1♂ Jocheon-eup, Jeju-si, Jeju-do (Is.), Korea, 20.ix.2014, J.G. Kim.

HOST: Unknown.

DISTRIBUTION: Korea, Armenia, China, Europe, Georgia, Japan, Kazakhstan, Russia, Turkey, Uzbekistan.

REGION: Palaearctic region.

KOREA: CN, GW, JJ.

REMARKS: This species is well known as a insect pest of various crops such as fruits and flowers (Pan et al., 2013).

19. *Apolygus nigrovirens* (Kerzhner, 1988) (Pl. 19a–e)

Lygocoris nigrovirens Kerzhner, 1988: 21.

Apolygus nigrovirens Yasunaga, 1992: 15.

DIAGNOSIS: Body generally greenish brown, rostrum not reaching hind coxae, sometimes clavus dark brown, vesica with four sclerites.

DESCRIPTION: Male: Body generally greenish brown, oval, covered with silvery pubescences. Head almost greenish brown; ocelli absent; basal apex of tylus dark brown. Antennae entirely brown; first antennal segment pale brown, somewhat thick; posterior apex of second antennal segment dark brown, third segment and fourth segment entirely dark brown. Rostrum almost brown, rostrum reaching to midcoxae. Pronotum generally greenish brown, glossy, sometimes posterior part of pronotum dark brown markings, covered with silvery pubescences; scutellum almost greenish brown, covered with silvery short pubescences. Hemelytra generally greenish brown, covered with short silvery hairs, sometimes clavus dark brown, posterior margin of corium dark brown, anterior margin and posterior apex of cuneus dark brown. Legs almost greenish brown, femur with dark brown rings; tibia with dark brown spine; third tarsal segment dark brown. Abdomen greenish pale brown. Left and right paramere with hypophysis and sensory lobe; vesica membranous, with four sclerites.

Female: as in male except for more rounded and bigger size, and developed brownish ovipositor through abdomen ventrally.

MEASUREMENTS (in mm): Male (n=1) BL: 4.88; HL: 0.36; HW: 1.04; VW: 0.38; ASI: 0.51; ASII: 1.54; ASIII: 1.06; ASIV: 0.77; TAL: 3.88; PL: 0.76; PW: 1.65; SW: 0.95; SL: 0.93; EL: 2.34; CL: 0.89; HEW: 1.01.

SPECIMEN EXAMINED: [NAAS] 2♂♂1♀ Geumgok-ri, Byeonggok-myeon, Yeongdeok-gun, GB, 1.vii.2009, Y.B. Lee.

HOST: *Thermopsis lupinoides* (Linnaeus) (Fabaceae) (Kerzhner, 1988; Yasunaga, 1992a).

DISTRIBUTION: Korea, China, Japan, Russia.

REGION: Palearctic region.

KOREA: CB, CN, GB, GG, GN, GW, JJ, JN (Kwon et al., 2001).

20. *Apolygus pulchellus* (Reuter, 1906) (Pl. 20a–e)

Lygus pulchellus Reuter, 1906: 33.

Lygocoris fujianensis Wang and Zheng, 1982: 119.

Lygocoris pulchellus Yasunaga, 1991: 60.

Lygocoris (Apolygus) pulchellus Yasunaga, 1992: 291.

Apolygus pulchellus Zheng, 2004: 168.

DIAGNOSIS: Body generally reddish brown; base of second antennal segment pale brown; lorum with a pair of dark spots; scutellum pale brown vesica membranous with one needle-shaped spicule and five sclerites, wing-shaped sclerite dentate, lateral sclerite straight form.

DESCRIPTION: Male: Body generally reddish brown, oval, covered with silvery pubescences. Head almost reddish pale brown; ocelli absent; tylus almost dark brown; lorum with a pair of

dark spot. Antennae entirely brown; first antennal segment reddish brown, somewhat thick; basal part and 1/2 apical part of second segments dark brown. Rostrum almost pale brown, rostrum reaching to hindcoxae. Pronotum generally reddish brown, glossy, sometimes with brown spots, covered with silvery pubescences; scutellum generally pale brown, entirely covered with crispen. Hemelytra generally reddish pale brown, covered with short silvery hairs, posterior margin of corium dark brown, anterior margin and apex of cuneus dark brown. Legs almost pale brown, hindfemur with reddish dark brown rings; tibia reddish pale brown, with dark brown spine; third tarsal segment dark brown. Abdomen greenish dark brown. Left and right paramere with hypophysis and sensory lobe; vesica membranous, with one needle-shaped spicule and five sclerites, wing-shaped sclerite dentate, lateral sclerite straight form.

Female: as in male except for more rounded and bigger size, and developed brownish ovipositor through abdomen ventrally.

MEASUREMENTS (in mm): Male (n=1) BL: 3.89; HL: 0.27; HW: 1.03; VW: 0.33; ASI: 0.44; ASII: 1.16; ASIII: 0.76; ASIV: 0.56; TAL: 2.92; PL: 0.77; PW: 1.60; SW: 0.95; SL: 0.78; EL: 1.94; CL: 0.73; HEW: 0.94.

SPECIMEN EXAMINED: [CNU] 2♂♂ 3♀♀ Jeoksang-san (Mt), Jeoksang-myeon, Muju-gun, JB, 7.viii. 2014, J.G. Kim.

HOST: *Lespedeza bicolor*.

DISTRIBUTION: Korea, China, Japan.

REGION: Palaearctic region.

KOREA: JB*.

21. *Apolygus spinolae* (Meyer-Dür, 1841) (Pl. 21a-e)

Capsus spinolae Meyer-Dür, 1841: 86.

Lygocoris (Apolygus) spinolae Carvalho, 1959: 139.

Lygus (Apolygus) spinolai Wagner and Weber, 1964: 203.

Lygocoris (Apolygus) spinolae Yasunaga, 1992: 11.

Lygocoris spinolae Yasunaga, 1996: 59.

DIAGNOSIS: Body generally greenish brown, rostrum reaching to hindcoxae, apex of cuneus dark brown markings, vesica with four sclerites, sublateral sclerite absent.

DESCRIPTION: Male: Body generally greenish brown, oval, covered with silvery pubescences. Head almost yellowish brown; ocelli absent; tylus almost dark brown. Antennae almost brown; first and second antennal segment pale brown, first segment somewhat thick; third and fourth antennal segments dark brown. Rostrum almost brown, rostrum reaching to hindcoxae. Pronotum generally greenish brown, glossy, sometimes with brown spots, covered with silvery pubescences; scutellum generally green, entirely covered with silvery pubescences; mesoscutum pale brown. Hemelytra generally green, covered with short silvery hairs, apex of cuneus dark brown markings. Legs almost green, hindfemur with two dark brown rings; tibia with dark brown spine; third tarsal segment dark brown. Abdomen almost green. Left and right paramere with hypophysis and sensory lobe; vesica membranous, with four sclerites, sublateral sclerite absent.

Female: as in male except for more rounded and bigger size, and developed brownish ovipositor through abdomen ventrally.

MEASUREMENTS (in mm): Male (n=1) BL: 4.71; HL: 0.26; HW: 1.16; VW: 0.46; ASI: 0.50; ASII: 1.44; ASIII: 1.00; ASIV: 0.68; TAL: 3.62; PL: 0.86; PW: 1.78; SW: 1.07; SL: 0.84; EL: 2.25; CL: 0.78; HEW: 1.08.

SPECIMEN EXAMINED: [CNU] 3♂♂5♀♀ Gung-dong, Yuseong-gu, Daejeon, 23.ix.2014, J.G. Kim; 2♂♂3♀♀ Gung-dong, Yuseong-gu, Daejeon, 7.x.2014, J.G. Kim.

HOST: *Vitis vinifera* (Kwon et al., 2001).

DISTRIBUTION: Korea, China, Europe, Japan, Russia.

REGION: Palaearctic region.

KOREA: CN*.

REMARKS: This species is reported as a insect pest of fruits such as grapevine and apple (Lee et al., 2002).

22. *Apolygus subhilaris* Yasunaga 1992 (Pl. 22a–e)

Lygocoris (Apolygus) subhilaris Yasunaga, 1992: 20.

Apolygus subhilaris Seong and Lee, 2007: 323.

DIAGNOSIS: Body generally reddish brown, second antennal segment entirely dark brown, vesica with distinct short needle-shaped spicule.

DESCRIPTION: Male: Body generally reddish brown, oval, covered with silvery pubescences. Head almost reddish pale brown; ocelli absent; tylus almost dark brown. Antennae entirely dark brown; first antennal segment reddish pale brown, somewhat thick. Rostrum almost pale brown, 1/2 apical part of fourth rostral segment dark brown. Pronotum generally reddish brown, glossy; scutellum generally reddish brown, generally covered with silvery short pubescences. Hemelytra generally reddish pale brown, covered with short silvery hairs, posterior margin of corium dark brown, anterior margin and apex of cuneus dark brown. Legs almost pale brown, hindfemur reddish dark brown with scattered reddish spots; tibia reddish pale brown, with dark brown spine; third tarsal segment dark brown. Abdomen reddish pale brown. Left and right paramere with hypophysis and sensory lobe; vesica membranous, short needle-shaped spicule and with five sclerites.

Female: as in male except for more rounded and bigger size, and developed brownish ovipositor through abdomen ventrally.

MEASUREMENTS (in mm): Male (n=1) BL: 4.76; HL: 0.30; HW: 1.09; VW: 0.39; ASI: 0.49; ASII: 1.72; ASIII: 0.99; ASIV: 0.61; TAL: 3.81; PL: 0.78; PW: 2.01; SW: 1.33; SL: 0.96; EL: 2.46; CL: 0.90; HEW: 1.21.

SPECIMEN EXAMINED: Holotype: [ELKU] 1♂ Irikawa Valley (700–780 m), Oku-Chichibu, Saitama Pref., Honshu, 15.viii.1984, M. Hayashi et al.; [CNU] 1♂1♀ Jeoksang-san (Mt), Jeoksang-myeon, Muju-gun, JB, 7.viii.2014, J.G. Kim.

HOST: *Lespedeza bicolor* (Seong and Lee, 2007).

DISTRIBUTION: Korea, Japan.

REGION: Palaearctic region.

KOREA: JB*.

23. *Apolygus subpulchellus* (Kerzhner, 1988) (Pl. 23a–e)

Lygocoris (*Apolygus*) *subpulchellus* Kerzhner, 1988: 23.

Lygocoris subpulchellus Yasunaga, 1991: 61.

Lygocoris (*Apolygus*) *subpulchellus* Yasunaga, 1992: 292.

DIAGNOSIS: Body generally reddish brown, abdomen almost reddish brown, elongated wing-shaped sclerite.

DESCRIPTION: Male: Body generally reddish brown, oval, covered with silvery pubescences. Head almost reddish pale brown; ocelli absent; tylus almost dark brown. Antennae almost pale brown; first antennal segment reddish pale brown, somewhat thick; 1/4 apical part of second antennal segment dark brown; apical part of third antennal segment dark brown. Rostrum almost pale brown, 1/2 apical part of fourth rostral segment dark brown, rostrum reaching to hindcoxae. Pronotum generally reddish brown, glossy, covered with golden pubescences; scutellum generally pale brown. Hemelytra generally reddish pale brown, covered with short golden hairs, posterior margin of corium dark brown, anterior margin and apex of cuneus dark brown. Legs almost pale brown, femur reddish brown with scattered reddish spots; tibia reddish pale brown, with dark brown spine; third tarsal segment dark brown. Abdomen almost reddish brown. Left and right paramere with hypophysis and sensory lobe; vesica membranous, with five sclerites, wing-shaped sclerite elongated, not dentate.

Female: as in male except for more rounded and bigger size, and developed brownish ovipositor through abdomen ventrally.

MEASUREMENTS (in mm): Male (n=1) BL: 4.07; HL: 0.42; HW: 0.99; VW: 0.32; ASI: 0.45; ASII: 1.69; ASIII: 0.78; ASIV: 0.70; TAL: 3.62; PL: 0.86; PW: 1.81; SW: 1.06; SL: 0.69; EL: 2.09; CL: 0.69; HEW: 1.01.

SPECIMEN EXAMINED: [CNU] 1♂2♀♀ Jeoksang-san (Mt), Jeoksang-myeon, Muju-gun, JB, 7.viii. 2014, J.G. Kim.

HOST: Unknown.

DISTRIBUTION: Korea, Japan, Russia.

REGION: Palaearctic region.

KOREA: JB*.

Genus *Castanopsides* Yasunaga, 1992

Castanopsides Yasunaga, 1992: 45. Type Species: *Castanopsides hasegawai* Yasunaga, 1992.

Castanopsides Yasunaga, 1998: 100; Zheng and Xu, 2004: 699; Yasunaga and Duwal, 2008: 405.

Key to the Korean *Castanopsides* species

1. Callus with a pair of dark spot, cuneus reddish, left paramere with distinct protuberances ventrally *C. kerzhneri*
- Callus with two pairs of dark spot, cuneus pale brown, left paramere without protuberances
..... *C. potanini*

24. *Castanopsides kerzhneri* (Josifov, 1985) (Pl. 24a–e)

Lygocoris (*Arbolygus*) *kerzhneri* Josifov, 1985: 91.

Castanopsides kerzhneri Yasunaga, 1998: 112.

DIAGNOSIS: A pair of dark brown spot at callus and reddish cuneus, and left paramere with protuberances.

DESCRIPTION: Male: Body generally reddish brown, elongated oval, covered with silvery pubescences. Head pale brown, with tiny sparse silver pubescences; vertex with vertical groove; ocelli absent; tylus dark brown. Antennae generally pale brown, first antennal segment pale brown; second segment 1/3 apical part dark brown, with entirely rough setae; third and fourth segment almost pale brown except for dark brown apex. Rostrum entirely pale brown, reaching to mid-coxae. Pronotum almost pale brown, central part of pronotum somewhat greenish dark brown, covered with silvery pubescences; callus reddish pale brown with a pair of dark brown spot; scutellum brown, with silvery pubescences. Hemelytra almost reddish pale brown, covered with short silvery hairs; cuneus reddish brown, cuneal apex dark brown; membrane grayish dark brown with reddish vein. Legs generally yellowish pale brown; hind femora dark brown, tibiae with dark brown setae in a row; tarsus yellowish pale brown except for third segment dark brown. Abdomen almost dark brown. Left paramere with hypophysis and sensory lobe, with additionally protuberances; vesica membranous, with one long spicule.

Female: as in male except for more rounded and bigger size, and developed dark brownish ovipositor through abdomen ventrally.

MEASUREMENTS (in mm): Male (n=1) BL: 6.85; HL: 0.48; HW: 1.20; VW: 0.42; ASI: 0.93; ASII: 2.71; ASIII: 1.08; ASIV: 0.38; TAL: 5.10; PL: 1.23; PW: 2.46; SW: 1.41; SL: 1.13; EL: 3.49; CL: 1.18; HEW: 1.49.

SPECIMEN EXAMINED: [CNU] 2♂♂2♀♀ Gung-dong, Yuseong-gu, Daejeon, Light Trap, 19.v.2014, J.G. Kim; 3♂♂4♀♀ Gung-dong, Yuseong-gu, Daejeon, Light Trap, 4.vi.2014, J.G. Kim.

HOST: *Quercus aliena* (Park et Josifov, 1991), *Q. mongolica* (cf. Kerzhner, 1988).

DISTRIBUTION: Korea, China, Japan, Russia.

REGION: Palearctic region.

KOREA: CN*.

25. *Castanopsides potanini* (Reuter, 1906) (Pl. 25a–e)

Lygus potanini Reuter, 1906: 35.

Calocoris amurensis Lindberg, 1934: 17.

Lygocoris (*Arbolygus*) *potanini* Kerzhner, 1978: 39.

Arbolygus potanini Yasunaga, 1993: 290.

Castanopsides potanini Yasunaga, 1998: 110.

DIAGNOSIS: Two pairs of dark brown spot at callus and pale gray cuneus.

DESCRIPTION: Male: Body generally reddish brown, elongated oval, covered with silvery pubescences. Head pale brown, with tiny sparse silver pubescences; vertex with vertical groove; ocel-

li absent; tylus dark brown. Antennae generally pale brown, first antennal segment pale brown; second segment 1/3 apical part dark brown, with entirely rough setae; third and fourth segment almost pale brown except for dark brown apex. Rostrum entirely pale brown, reaching to midcoxae. Pronotum almost pale brown, posterior margin of pronotum somewhat dark brown, covered with silvery pubescences; callus reddish pale brown with two pairs of dark brown spot; scutellum pale brown, with silvery pubescences. Hemelytra almost reddish pale brown, covered with short silvery hairs; cuneus pale gray, cuneal apex dark brown; membrane grayish dark brown with reddish vein. Legs generally reddish pale brown; hind femora somewhat reddish dark brown, tibiae with dark brown setae in a row; tarsus yellowish pale brown except for third segment dark brown. Abdomen almost dark brown. Left and right paramere with hypophysis and sensory lobe; vesica membranous, with one long and thick spicule.

Female: as in male except for more rounded and bigger size, and developed brownish ovipositor through abdomen ventrally.

MEASUREMENTS (in mm): Male (n=1) BL: 7.04; HL: 0.49; HW: 1.22; VW: 0.49; ASI: 0.84; ASII: 2.53; ASIII: 1.21; ASIV: 0.48; TAL: 5.06; PL: 1.14; PW: 2.24; SW: 1.29; SL: 1.09; EL: 3.40; CL: 1.13; HEW: 1.39.

SPECIMEN EXAMINED: [CNU] 2♂♂2♀♀ Gung-dong, Yuseong-gu, Daejeon, Light Trap, 19.v.2014, J.G. Kim; 3♂♂4♀♀ Gung-dong, Yuseong-gu, Daejeon, Light Trap, 4.vi.2014, J.G. Kim; 2♂♂2♀♀ Gwangchi-san (Mt), Yanggu-eup, Yanggu-gun, GW, 9.vii.2014, J.G. Kim.

HOST: *Quercus dentata* (cf. Josifov, 1992).

DISTRIBUTION: Korea, China, Japan, Russia.

REGION: Palearctic region.

KOREA: CN*.

REMARKS: This species is reported as predominantly zoophagous species on its host plant (Yasunaga, 1998).

Genus *Cyphodemidea* Reuter, 1903

Cyphodemidea Reuter, 1903: 17. Type Species: *Cyphodemidea variegata* Reuter, 1903.

Cyphodemidea Kerzhner and Matocq, 1994: 66; Schwartz and Foottit, 1998: 354.

26. *Cyphodemidea saundersi* (Reuter, 1896) (Pl. 26a–e)

Lygus saundersi Reuter, 1896: 97.

Cyphodemidea saundersi Schwartz and Foottit, 1998: 356.

DIAGNOSIS: Body generally brown, scutellum with a pair of dark brown spots.

DESCRIPTION: Male: Body generally yellowish brown, oval, covered with golden pubescences. Head brown, with tiny sparse golden pubescences; vertex with vertical dark brown stripe; ocelli absent; tylus dark brown. Antennae generally dark brown, first antennal segment pale brown; Rostrum entirely brown, reaching to hindcoxae. Pronotum almost brown, with pale brown vertical stripe, 1/2 anterior part of pronotum dark brown, 1/2 posterior part of pronotum pale brown

with dark brown spot at both side, covered with silvery pubescences; collar pale brown; callus pale brown; scutellum pale brown, with a pair of somewhat big dark brown spot, mesoscutum covered with densely golden pubescences. Hemelytra almost brown, covered with densely golden hairs; 4/5 embolial margin pale brown; cuneus almost pale brown, basal cuneal margin dark brown, cuneal apex dark brown; membrane grayish dark. Legs generally pale brown; hind femora somewhat dark brown with dark brown markings, tibiae pale brown with 1–2 dark brown markings at both sides, with dark brown setae in a row; tarsus yellowish pale brown except for third segment dark brown. Abdomen almost dark brown with yellowish spots in the middle of 4–7 segments. Left and right paramere with hypophysis and sensory lobe; vesica membranous, with one long and thick spicule.

Female: as in male except for more rounded and bigger size, and developed dark brownish ovipositor through abdomen ventrally.

MEASUREMENTS (in mm): Male (n=1) BL: 4.62; HL: 0.31; HW: 0.94; VW: 0.46; ASI: 0.46; ASII: 1.11; ASIII: 0.80; ASIV: 0.80; TAL: 3.17; PL: 0.88; PW: 1.79; SW: 1.00; SL: 0.78; EL: 2.23; CL: 0.79; HEW: 1.10.

SPECIMEN EXAMINED: [CNU] 1♂ Onpho-ri, Kyeongsung-gun, HB, North Korea (in label: Onpho-ri, Kreis, Kjôngsông), 12.vi.1975, M. Josifov; 2♂♂2♀♀ Hajinbu-ri, Jinbu-myeon, Pyeongchang-gun, GW, 14.iv.2014, J.G. Kim.

HOST: Unknown.

DISTRIBUTION: Korea, China, Japan.

REGION: Palearctic region.

KOREA: GW, HB.

Genus *Eurystylus* Stål, 1871

Eurystylus Stål, 1871: 671. Type Species: *Eurystylus costalis* Stål, 1871.

Eyrycyrtus Reuter, 1879: 34.

Olympiocapsus Kirkaldy, 1902: 255.

Sabellicus Distant, 1904: 114.

Eurystylus Odhiambo, 1958: 257.

Key to the Korean *Eurystylus* species

1. Scutellum entirely brown, femur entirely brown *E. luteus*
- Scutellum pale brown except for each apex, femur whitish pale brown basally *E. coelestialium*

27. *Eurystylus coelestialium* (Kirkaldy, 1902) (Pl. 27a–e)

Olympiocapsus coelestialium Kirkaldy, 1902: 255.

Eyrycyrtus bioculatus Reuter, 1908: 495.

Eurystylus coelestialium Miyamoto, 1957: 77; Linnavuori, 1961: 157; Kerzhner, 1978: 41; Zheng and Chen, 1991: 199.

DIAGNOSIS: Each apex of scutellum pale brown spot, inner part of femur whitish pale brown.

DESCRIPTION: Male: Body generally dark brown, elongated oval, covered with densely golden pubescences. Head grayish brown, with sparse grayish pubescences; ocelli absent; tylus dark brown. Antennae generally dark brown, first and second antennal segments thicker than other segments, first antennal segment covered with short pubescences; second segment basal apex pale brown, clavate; 1/2 basal part of third segment pale brown; apex of basal part of fourth segment pale brown. Rostrum generally dark brown; 1/2 basal part of first rostral segment pale brown, second rostral segment pale brown, other segments dark brown, rostrum reaching to midcoxae. Pronotum generally dark brown, covered with golden pubescences, with a pair of dark brown circular spot; scutellum pale brown, middle part of scutellum somewhat dark brown, entirely covered with golden pubescences. Hemelytra entirely pale brown, with scattered dark brown spots, covered with short golden hairs; cuneus entirely dark brown except for middle part tinged with reddish brown. Legs partly pale and dark brown; femora inner part pale brown, outer part dark brown; tibiae upper part and apex of lower part dark brown, lower part pale brown; tarsus entirely dark brown. Abdomen dark brown. Left and right paramere with hypophysis and sensory lobe; vesica membranous, with lone one spicule and three lateral sclerites.

Female: as in male except for more rounded and bigger size, and developed dark brownish ovipositor through abdomen ventrally.

MEASUREMENTS (in mm): Male (n=1) BL: 6.25; HL: 0.46; HW: 1.14; VW: 0.54; ASI: 1.16; ASII: 2.35; ASIII: 0.90; ASIV: 0.69; TAL: 5.10; PL: 1.33; PW: 2.23; SW: 1.35; SL: 1.29; EL: 2.95; CL: 1.17; HEW: 1.25.

SPECIMEN EXAMINED: [CNU] 2♂♂3♀♀ Gung-dong, Yuseong-gu, Daejeon, 14.v.2014, J.G. Kim; 2♂♂2♀♀ Gung-dong, Yuseong-gu, Daejeon, 15.ix.2014, J.G. Kim.

HOST: *Avena sativa* (cf. Kor. Soc. Plant Prot., 1986), *Beta vulgaris* var. *saccharifera* (cf. Kor. Soc. Plant Prot., 1986), *Glycine max* (cf. Kor. Soc. Plant Prot., 1986), *Hordeum vulgare* var. *hexastichon* (cf. Kor. Soc. Plant Prot., 1986), *Oryza sativa* (cf. Kor. Soc. Plant Prot., 1986), *O. sativa* var. *terrestris* (cf. Kor. Soc. Plant Prot., 1986), *Secale cereal* (cf. Kor. Soc. Plant Prot., 1986), *Trifolium repens* (cf. Kor. Soc. Plant Prot., 1986), *Triticum aestivum* (cf. Kor. Soc. Plant Prot., 1986), *Humulus japonicus**.

DISTRIBUTION: Korea, China, Japan, Russia.

REGION: Palaearctic region.

KOREA: CN*.

28. *Eurystylus luteus* Hsiao 1941 (Pl. 28a–e)

Eurystylus luteus Hsiao, 1941: 247; Josifov and Kerzhner, 1972: 162; Zheng and Chen, 1991: 199.

DIAGNOSIS: Scutellum entirely brown, femur entirely brown.

DESCRIPTION: Male: Body generally brown, elongated oval, covered with densely golden pubescences. Head brown, with sparse grayish pubescences; ocelli absent; tylus brown. Antennae generally dark brown, first and second antennal segments thicker than other segments, first antennal segment covered with short pubescences; second segment basal apex pale brown, clavate; apex of basal part of third segment pale brown; apex of basal part of fourth segment pale brown. Rostrum generally dark brown; 1/2 basal part of first rostral segment pale brown, second rostral segment pale brown, other segments dark brown, rostrum reaching to midcoxae. Pronotum generally

brown, covered with golden pubescences, with a pair of dark brown oval spot; scutellum entirely brown, entirely covered with golden pubescences. Hemelytra entirely pale brown, with scattered dark brown spots, covered with short golden hairs; cuneus almost dark brown, middle part pale brown. Legs entirely dark brown, with scattered pale brown. Abdomen dark brown. Left and right paramere with hypophysis and sensory lobe, vesica membranous, with four sclerites.

Female: as in male except for more rounded and bigger size, and developed brownish ovipositor through abdomen ventrally.

MEASUREMENTS (in mm): Male (n=1) BL: 5.37; HL: 0.47; HW: 1.12; VW: 0.51; ASI: 0.93; ASII: 1.90; ASIII: 0.55; ASIV: 0.54; TAL: 3.92; PL: 1.19; PW: 2.01; SW: 1.23; SL: 1.20; EL: 2.59; CL: 0.87; HEW: 1.14.

SPECIMEN EXAMINED: [CNU] 2♂♂ 3♀♀ Geumgang arboretum, Donam-ri, Geumnam-myeon, Sejong, 28.vii.2014, J.G. Kim.

HOST: Unknown.

DISTRIBUTION: Korea, China, Japan.

REGION: Palaearctic region.

KOREA: CN*.

Genus *Loristes* Josifov and Kerzhner, 1972

Loristes Josifov and Kerzhner, 1972: 162. Type Species: *Loristes decorates* Reuter, 1908.

Loristes Yasunaga, 1991: 1; Yasunaga, 2008: 396.

29. *Loristes decoratus* (Reuter, 1908) (Pl. 29a–e)

Adelphocoris decorates Reuter, 1908: 488; Kulik, 1965: 43.

Loristes decorates Josifov and Kerzhner, 1972: 164; Yasunaga, 1991: 4; Yasunaga, 1993: 289; Yasunaga, 2008: 398.

DIAGNOSIS: Body generally dark brown with three pairs of pale brown spots.

DESCRIPTION: Male: Body generally dark brown, elongated oval, covered with densely golden pubescences. three pairs of pale brown patterns in hemelytra. Head dark brown, glossy, with sparse golden pubescences; ocelli absent; tylus dark brown. Antennae generally dark brown, first and second antennal segments thicker than other segments, first and second antennal segments covered with short grayish pubescence; basal part of third segment pale brown; apex of basal part of fourth segment pale brown. Rostrum generally pale brown except for fourth rostral segment, fourth rostral segment dark brown, rostrum reaching to midcoxae. Pronotum generally dark brown, glossy, posterior margin of pronotum pale brown, covered with golden pubescences, collar pale brown; scutellum generally dark brown, posterior apex of scutellum pale brown, entirely covered with golden pubescences. Hemelytra generally dark brown, outer margin of hemelytra with three pairs of pale brown big patterns, covered with short golden hairs. Legs almost pale brown, hindfemur reddish dark brown with scattered dark brown spots; tibia with dark brown setae in a row; tarsus third segment dark brown. Abdomen dark brown. Left and right paramere with hypo-

physis and sensory lobe; vesica membranous, with five sclerites.

Female: as in male except for more rounded and bigger size, and developed dark brownish ovipositor through abdomen ventrally.

MEASUREMENTS (in mm): Male (n=1) BL: 8.69; HL: 0.52; HW: 1.19; VW: 0.59; ASI: 1.21; ASII: 2.45; ASIII: 1.71; ASIV: 0.77; TAL: 6.14; PL: 1.19; PW: 2.50; SW: 1.57; SL: 1.34; EL: 4.17; CL: 1.65; HEW: 1.41.

SPECIMEN EXAMINED: [CNU] 1♂ Gung-dong, Yuseong-gu, Daejeon, 14.v.2014, J.G. Kim; 1♂1♀ Duta-san (Mt), Samhwa-dong, Donghae-si, GW, 30.v.2014, J.G. Kim.

HOST: *Lonicera chrysantha* (cf. For. Res. Inst., 1995), *L. japonica* (cf. For. Res. Inst., 1995), *L. maackii* (cf. For. Res. Inst., 1995), *Syringa dilatata* (cf. For. Res. Inst., 1995), *S. vulgaris* (cf. For. Res. Inst., 1995), *Weigela praecox* (cf. Josifov, 1992), *W. subsessilis* (cf. For. Res. Inst., 1995).

DISTRIBUTION: Korea, China, Japan, Russia.

REGION: Palearctic region.

KOREA: CN*, GW.

Genus *Orthops* Fieber, 1858

Orthops Fieber, 1858: 311. Type Species. *Orthops compestris* Fallén, 1807; Wagner and Weber, 1964: 211; Wagner, 1974: 412; Eyles, 1999: 339.

Montanorthops Ghauri, 1978: 126. Treated as subgenus by Kerzhner, 1988: 69.

30. *Orthops scutellatus* Uhler, 1877 (Pl. 30a–e)

Orthops scutellatus Uhler, 1877: 420; Kelton, 1980: 100.

Lygus buchmanani Poppius, 1914: 359. Synonymized by Schwartz and Eyles, 1999: 224.

Orthops udonis Yasunaga, Miyamoto and Kerzhner, 1996: 93.

DIAGNOSIS: Body generally brown, scutellum pale brown covered with silvery pubescences.

DESCRIPTION: Male: Body generally brown, oval, covered with densely silvery pubescences. Head generally pale brown, with sparse silvery pubescences; ocelli absent; frons dark brown; tylus dark brown. Antennae generally brown, first antennal segments pale brown. Rostrum generally brown, 1/2 apical part of fourth rostral segment dark brown, rostrum not reaching to midcoxae. Pronotum generally brown, glossy, covered with silvery pubescences, callus dark brown; scutellum generally pale brown, entirely covered with silvery pubescences, mesoscutum dark brown. Hemelytra generally pale brown; clavus dark brown; 1/2 posterior part of corium dark brown, covered with short silvery hairs. Legs almost pale brown, hindfemur with scattered dark brown markings; third tarsal segment dark brown. Abdomen pale brown, upper part of abdomen dark brown. Left paramere and right paramere with hypophysis and sensory lobe; vesica membranous, with two sclerites.

Female: as in male except for more rounded and bigger size, and developed dark brownish ovipositor through abdomen ventrally.

MEASUREMENTS (in mm): Male (n=1) BL: 4.88; HL: 0.31; HW: 0.96; VW: 0.44; ASI: 0.40; ASII: 1.21;

ASIII: 0.64; ASIV: 0.52; TAL: 2.77; PL: 0.92; PW: 1.77; SW: 1.08; SL: 0.79; EL: 2.15; CL: 0.79; HEW: 1.11.

SPECIMEN EXAMINED: [CNU] 1♂1♀ Samjiyeon, Samjiyeon-eup, Samjiyeon-gun, YG, North Korea (in label: Samdzijôn, Jangkangdo, Korea), 5.ix.1989, M. Josifov.

HOST: *Angelica sinensis* (Kwon et al., 2001), *Cnidium officinale* (Kwon et al., 2001).

DISTRIBUTION: Korea, China, Japan, Mongolia, Russia.

REGION: Palaearctic region.

KOREA: YG.

Genus *Polymerias* Yasunaga, 1997

Polymerias Yasunaga, 1997: 116. Type Species: *Polymerias opacipennis* Lindberg, 1934.

31. *Polymerias opacipennis* (Lindberg, 1934) (Pl. 31a–e)

Calocoris opacipennis Lindberg, 1934: 17.

Polymerias lonicerae Yasunaga, 1997: 118. Synonymized by Rosenzweig, 1997: 157.

DIAGNOSIS: Body generally dark brown covered with silvery pubescences.

DESCRIPTION: Male: Body generally dark brown, elongated oval, covered with densely silvery pubescences. Head dark brown, with sparse silvery pubescences; ocelli absent; tylus dark brown. Antennae entirely dark brown, covered with short pubescences. Rostrum entirely dark brown, rostrum not reaching to midcoxae. Pronotum entirely dark brown, covered with silvery pubescences; scutellum entirely dark brown, covered with silvery pubescences. Hemelytra entirely dark brown, covered with short silvery hairs. Legs almost dark brown, first and second segments of tarsus pale brown. Abdomen dark brown. Left and right paramere with hypophysis and sensory lobe.

Female: as in male except for more rounded and bigger size, and developed dark brownish ovipositor through abdomen ventrally.

MEASUREMENTS (in mm): Male (n=1) BL: 7.12; HL: 0.41; HW: 1.07; VW: 0.59; ASI: 0.86; ASII: 1.77; ASIII: 0.97; ASIV: 0.44; TAL: 4.04; PL: 1.07; PW: 2.42; SW: 1.52; SL: 1.27; EL: 3.41; CL: 1.30; HEW: 1.57.

SPECIMEN EXAMINED: [CNU] 2♂♂2♀♀ Gaeseong, North Korea (in label: bagiân, 20 km, NO Kes-ông), 21–23.v.1975, M. Josifov.

HOST: *Lonicera chrysantha* (cf. For. Res. Inst., 1995), *L. insularis* (cf. For. Res. Inst., 1995), *L. japonica* (cf. For. Res. Inst., 1995), *L. maackii* (cf. For. Res. Inst., 1995), *L. praeflorens* (cf. For. Res. Inst., 1995), *L. ruprechtiana* (cf. For. Res. Inst., 1995).

DISTRIBUTION: Korea, Japan, Russia.

REGION: Palaearctic region.

KOREA: Gaeseong.

Genus *Stenotus* Jakovlev, 1877

- Stenotus* Jakovlev, 1877: 288. Type Species: *Stenotus binotatus* Jakovlev, 1877.
Makua Kirkaldy, 1902: 282. Synonymized by Poppius, 1912: 60.
Korasiocapsus Kirkaldy, 1902: 260. Synonymized by Reuter, 1910: 167.
Umslopogas Kirkaldy, 1902: 254. Synonymized by Reuter, 1910: 167.
Zulaimena Kirkaldy, 1902: 256. Synonymized by Reuter, 1910: 167.
Nymannus Distant, 1904: 195. Synonymized by Carvalho, 1981: 5.
Tancredus Distant, 1904: 195. Synonymized by Poppius, 1911: 16.
Charitocoris Reuter, 1904: 10. Synonymized by Poppius, Bergroth, 1926: 64.
Indoelum Kirkaldy, 1906: 138. Synonymized by Distant, 1910: 240.
Elthemus Distant, 1909: 451. Synonymized by Cherot, 2000: 38.
Lygopsis Poppius, 1912: 85. Synonymized by Linnavuori, 1975: 29; 1986: 141.
Stenotus Wagner and Weber, 1964: 189; Wagner, 1974: 375; Linnavuori, 1975: 29; Cherot, 2000: 38.

32. *Stenotus rubrovittatus* (Matsumura, 1913) (Pl. 32a–e)

- Calocoris rubrovittatus* Matsumura, 1913: 1217.
Stenotus rubrocinctus Linnavuori, 1961: 157. Synonymized by Kerzhner, 1972: 284.
Stenotus rubrivittatus Hsiao and Meng, 1963: 442; Akramovskaya and Kerzhner, 1978: 825.

DIAGNOSIS: Pronotum greenish brown, hemelytra with longitudinal reddish band.

DESCRIPTION: Male: Body generally greenish pale brown, with longitudinal reddish stripe in middle part of hemelytra, elongated oval, covered with densely silvery pubescences. Head greenish brown, glossy, vertex with longitudinal groove, covered with sparse silvery pubescences; ocelli absent; tylus dark brown. Antennae entirely reddish pale brown. Rostrum almost yellowish pale brown except for fourth rostral segment dark brown, rostrum reaching to hindcoxae. Pronotum generally greenish brown, glossy, covered with silvery pubescences; scutellum generally reddish brown, mesoscutum dark brown, entirely covered with silvery short pubescences. Hemelytra generally greenish pale brown with longitudinal reddish stripe in middle part, covered with short silvery hairs. Legs almost pale brown, hindfemur reddish dark brown with scattered reddish spots; tibia reddish pale brown; tarsus third segment dark brown. Abdomen greenish pale brown. Left and right paramere with hypophysis and sensory lobe; vesica membranous.

Female: as in male except for more rounded and bigger size, and developed dark brownish ovipositor through abdomen ventrally.

MEASUREMENTS (in mm): Male (n=1) BL: 5.53; HL: 0.63; HW: 0.90; VW: 0.41; ASI: 0.47; ASII: 1.72; ASIII: 1.15; ASIV: 0.91; TAL: 4.25; PL: 0.74; PW: 1.49; SW: 0.87; SL: 0.74; EL: 2.87; CL: 0.79; HEW: 0.90.

SPECIMEN EXAMINED: [CNU] 2♂♂5♀♀ Gung-dong, Yuseong-gu, Daejeon, 2.vii.2014, J.G. Kim; 4♂♂7♀♀ Gung-dong, Yuseong-gu, Daejeon, 12.viii.2014, J.G. Kim; 3♂♂5♀♀ Gung-dong, Yuseong-gu, Daejeon, 16.ix.2014, J.G. Kim.

HOST: *Avena sativa* (cf. Kor. Soc. Plant Prot., 1986), *Glycine max* (cf. Kor. Soc. Plant Prot., 1986), *Hordeum vulgare* var. *hexastichon* (cf. Kor. Soc. Plant Prot., 1986), *H. vulgare* var. *nudum* (cf. Kor. Soc. Plant Prot., 1986), *Setaria italic* (cf. Kor. Soc. Plant Prot., 1986), *Trifolium repens* (cf. Kor. Soc. Plant

Prot., 1986), *Triticum aestivum* (cf. Kor. Soc. Plant Prot., 1986), *Oryza sativa**.

DISTRIBUTION: Korea, China, Japan, Russia.

REGION: Palaearctic region.

KOREA: CN*.

REMARKS: This species is reported as a insect pest of Poaceae plant and its seed (Yasunaga et al., 2001).

Tribe Stenodemini China, 1943

Pithanini Douglas & Scott, 1865: 28, 280 (Pithanidae). Type genus: *Pithanus* Fieber, 1858.

Myrmecorini Reuter, 1883: 564 (Myrmecoraria). Type genus: *Myrmecoris* Gorski, 1852.

Stenodemini China, 1943: 262. Type genus: *Stenodema* Laporte, 1833.

DIAGNOSIS: Body generally greenish and brownish, elongated and narrow, with distinct punctures; head porrected dorsally; frons with longitudinal sulcus; pronotal collar flat; lateral margin of pronotum carinate; lateral margin of hemelytron parallel.

Genus *Stenodema* Laporte, 1832

Stenodema Laporte, 1832: 40. Type Species: *Stenodema virens* Linnaeus, 1767.

Brachystira Fieber, 1858: 301. Synonymized by Reuter, 1875: 17.

Neomiris Distant, 1892: 113. Synonymized by Carvalho, 1952: 84.

Stenodema Southwood and Leston, 1959: 303; Kelton, 1961: 450; Wagner and Weber, 1964: 91; Kerzhner, 1964: 958; Carvalho and Afonso, 1977: 819; Schwartz, 2008: 1173.

Key to the Korean *Stenodema* species

1. Hindfemur with two or three subapical protuberances 2
 - Hindfemur without any protuberances 3
2. Hindfemur with two subapical protuberances *S. calcarata*
 - Hindfemur with three subapical protuberances *S. trispinosa*
3. First antennal segment with densely long pubescences, outer margin of hemelytra with pale brown stripe *S. sibiricus*
 - First antennal segment with short pubescences, outer margin of hemelytra with greenish stripe *S. rubrinervis*

33. *Stenodema calcarata* Fallén, 1807 (Pl. 33a–c)

Miris calcaratus Fallén, 1807: 110.

Stenodema calcarata Kerzhner, 1978: 42; Tamanini, 1982: 97.

DIAGNOSIS: Hindfemur with one distinct protuberance and one small protuberance.

DESCRIPTION: Male: Body generally brown, elongated, covered with sparse short silvery pubescences. Head entirely brown, triangular shape, covered with long silvery pubescences; vertex with longitudinal groove; ocelli absent; tylus entirely brown. Antennae generally brown, first antennal segments relatively thick, with brown setae. Rostrum entirely dark brown, rostrum not reaching to midcoxae. Pronotum entirely brown, with longitudinal stripe in the middle part and broadly tiny holes, covered with sparse silvery pubescences; scutellum brown, with longitudinal stripe in the middle part. Hemelytra entirely brown, with stripes pale brown with veins. Legs entirely brown, hindfemur with scattered dark brown spots, with one big protuberance and one small protuberance. Abdomen almost brown with horizontal dark brown stripe. Left and right paramere with hypophysis and sensory lobe.

Female: as in male except for greenish brown body and reddish brown antennae.

MEASUREMENTS (in mm): Male (n=1) BL: 8.72; HL: 0.81; HW: 0.94; VW: 0.44; ASI: 0.96; ASII: 2.67; ASIII: 1.22; ASIV: 0.69; TAL: 5.54; PL: 1.13; PW: 1.63; SW: 0.91; SL: 0.88; EL: 3.96; CL: 1.27; HEW: 0.99.

SPECIMEN EXAMINED: [CNU] 3♂♂5♀♀ Gung-dong, Yuseong-gu, Daejeon, 28.iv.2014, J.G. Kim; 2♂♂3♀♀ Boksu-dong, Seo-gu, Daejeon, 7.v.2014, J.G. Kim.

HOST: *Poaceae* spp.*, *Hordeum vulgare* var. *hexastichon**

DISTRIBUTION: Korea, China, Japan.

REGION: Palaearctic region.

KOREA: CN.

34. *Stenodema rubrinervis* Horváth, 1905 (Pl. 34a–c)

Stenodema rubrinerve Horváth, 1905: 417.

DIAGNOSIS: First antennal segment with short pubescences, outer margin of hemelytra with greenish stripes.

DESCRIPTION: Male: Body generally brown, elongated, covered with sparse short silvery pubescences. Head entirely brown, triangular shape, covered with long silvery pubescences; vertex with longitudinal groove; ocelli absent; tylus entirely brown. Antennae generally brown, first antennal segments relatively thick, with brown setae. Rostrum entirely dark brown, rostrum not reaching to midcoxae. Pronotum entirely brown, with longitudinal stripe in the middle part and broadly tiny holes, covered with sparse silvery pubescences; scutellum brown, with longitudinal stripe in the middle part. Hemelytra entirely brown, outer margin of hemelytra with greenish stripes, with stripes pale brown with veins. Legs entirely green, hindfemur with scattered dark brown spots, tarsus dark brown. Abdomen almost brown. Left and right paramere with hypophysis and sensory lobe.

Female: as in male except for bigger size, margin of hemelytra with greenish stripe, and developed brownish ovipositor through abdomen ventrally.

MEASUREMENTS (in mm): Male (n=1) BL: 8.61; HL: 1.04; HW: 1.13; VW: 0.56; ASI: 1.33; ASII: 3.28; ASIII: 1.94; ASIV: 1.39; TAL: 7.94; PL: 1.40; PW: 1.74; SW: 0.97; SL: 0.89; EL: 3.99; CL: 1.02; HEW: 0.95.

SPECIMEN EXAMINED: [CNU] 1♂4♀♀ Gung-dong, Yuseong-gu, Daejeon, 28.iv.2014, J.G. Kim.

HOST: *Avena sativa* (cf. Kor. Soc. Plant Prot., 1986), *Hordeum vulgare* var. *hexastichon* (cf. Kor. Soc. Plant Prot., 1986), *Poa pratensis* (cf. Kor. Soc. Plant Prot., 1986), *P. annua* (cf. Kor. Soc. Plant Prot., 1986), *Secale cereal* (cf. Kor. Soc. Plant Prot., 1986), *Triticum aestivum* (cf. Kor. Soc. Plant Prot., 1986).

DISTRIBUTION: Korea, China, Japan.

REGION: Palaearctic region.

KOREA: CN*.

35. *Stenodema sibirica* Bergroth, 1914 (Pl. 35a–c)

Stenodema sibiricum Bergroth, 1914: 183.

Stenodema sibiricum Kerzhner, 1973: 90; Kerzhner, 1978: 42.

DIAGNOSIS: Antennae entirely reddish brown, first antennal segment with densely long pubescences, outer margin of hemelytra with pale brown stripe.

DESCRIPTION: Male: Body generally brown, elongated, covered with silvery pubescences. Head entirely brown, triangular shape, covered with long silvery pubescences; vertex with longitudinal groove; ocelli absent; tylus entirely brown. Antennae entirely reddish brown, first antennal segments relatively thick, with densely long brown pubescences. Rostrum entirely dark brown, rostrum not reaching to midcoxae. Pronotum entirely brown, with longitudinal stripe in the middle part, with broadly tiny holes, covered with sparse silvery pubescences, lateral margin of pronotum pale brown; scutellum brown, with longitudinal stripe in the middle part. Hemelytra entirely brown, outer margin of hemelytra with pale brown stripe, with stripes pale brown with veins. Legs entirely brown, femur with scattered dark brown spots. Abdomen almost brown, left and right paramere with hypophysis and sensory lobe.

Female: as in male except for bigger size, and developed brownish ovipositor through abdomen ventrally.

MEASUREMENTS (in mm): Male (n=1) BL: 7.76; HL: 0.92; HW: 1.09; VW: 0.58; ASI: 1.15; ASII: 2.64; ASIII: 1.33; ASIV: 1.30; TAL: 6.42; PL: 1.18; PW: 1.86; SW: 1.17; SL: 1.00; EL: 3.97; CL: 0.92; HEW: 0.98.

SPECIMEN EXAMINED: [CNU] 2♂♂ 3♀♀ Onpho-ri, Kyeongsung-gun, HB, North Korea (in label: Onpho-ri, Kreis, Kjøngsông), 12.vi.1975, M. Josifov.

HOST: Poaceae spp.

DISTRIBUTION: Korea, China, Japan, Russia.

REGION: Palaearctic region.

KOREA: HB.

36. *Stenodema trispinosa* Reuter, 1904 (Pl. 36a–c)

Stenodema trispinosum Reuter, 1904: 8.

Stenodema trispinosa Kelton, 1980: 26; Wheeler and Henry, 1992: 92.

DIAGNOSIS: Hindfemur with two distinct protuberances and one small protuberance.

DESCRIPTION: Male: Body generally brown, elongated, covered with sparse short silvery pubes-

cences. Head entirely brown, triangular shape, covered with long silvery pubescences; vertex with longitudinal groove; ocelli absent; tylus entirely brown. Antennae generally brown, first antennal segments relatively thick, with brown setae. Rostrum entirely dark brown, rostrum not reaching to midcoxae. Pronotum entirely brown, with longitudinal stripe in the middle part and broadly tiny holes, covered with sparse silvery pubescences; scutellum brown, with longitudinal stripe in the middle part. Hemelytra entirely brown, with stripes pale brown with veins. Legs entirely brown, hindfemur with scattered dark brown spots, with two big protuberances and one small protuberance. Abdomen almost brown. Left and right paramere with hypophysis and sensory lobe.

Female: as in male except for greenish body, reddish antennae, and developed brownish ovipositor through abdomen ventrally.

MEASUREMENTS (in mm): Male (n=1) BL: 7.24; HL: 0.81; HW: 0.97; VW: 0.49; ASI: 0.87; ASII: 2.17; ASIII: 1.00; ASIV: 0.70; TAL: 4.74; PL: 1.13; PW: 1.61; SW: 0.87; SL: 0.75; EL: 3.68; CL: 0.96; HEW: 0.94.

SPECIMEN EXAMINED: [CNU] 2♂♂3♀♀ Samjiyeon, Samjiyeon-eup, Samjiyeon-gun, YG, North Korea (in label: 1400 m, Samdzijôn, Jangkangdo, North Korea), 28.viii.1977, M. Josifov.

HOST: Poaceae spp.

DISTRIBUTION: Korea, China, Russia.

REGION: Palaearctic region.

KOREA: YG.

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Plates



1a



2a



4a



6a



7a



9a



11a



12a



13a



15a

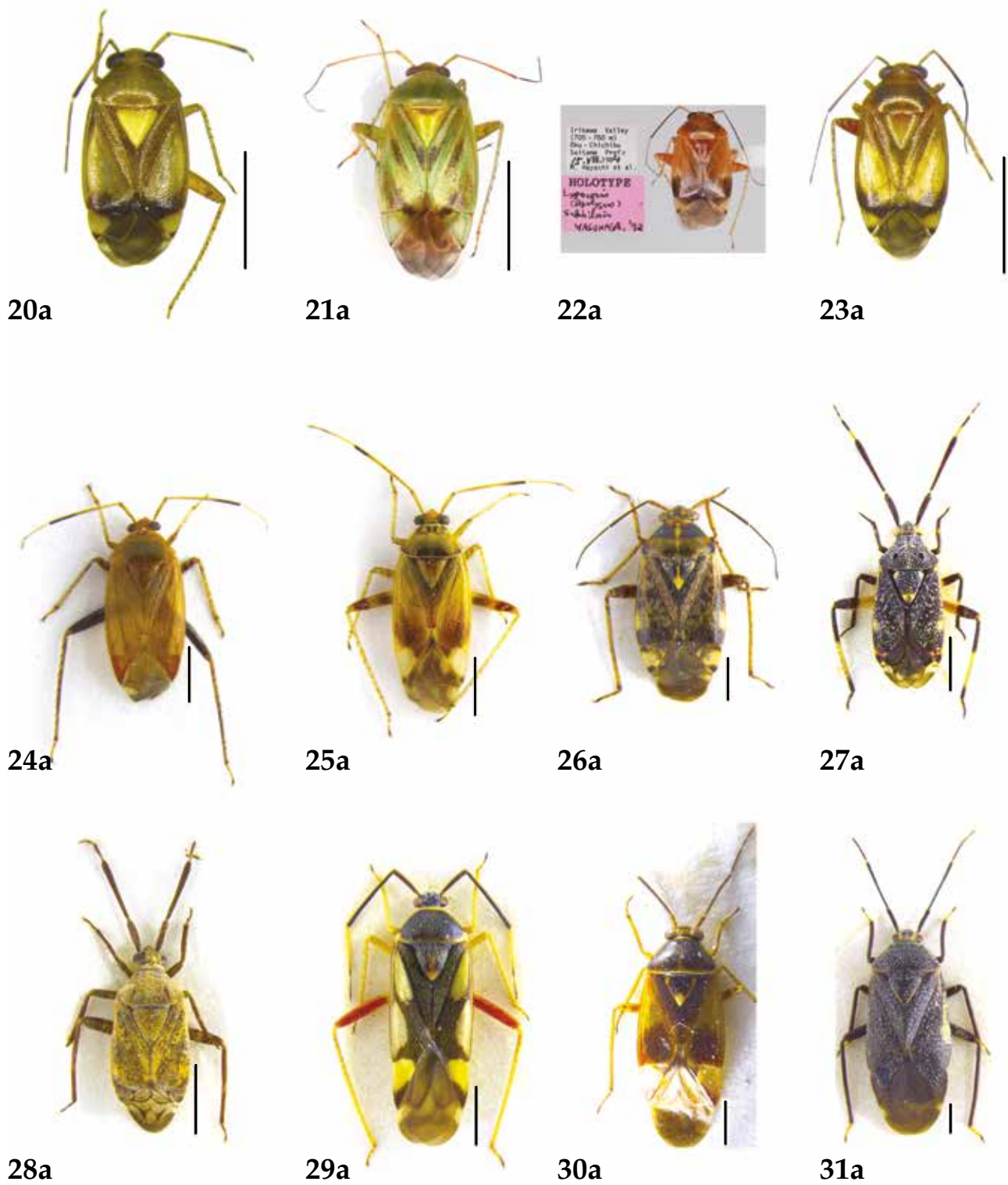


18a

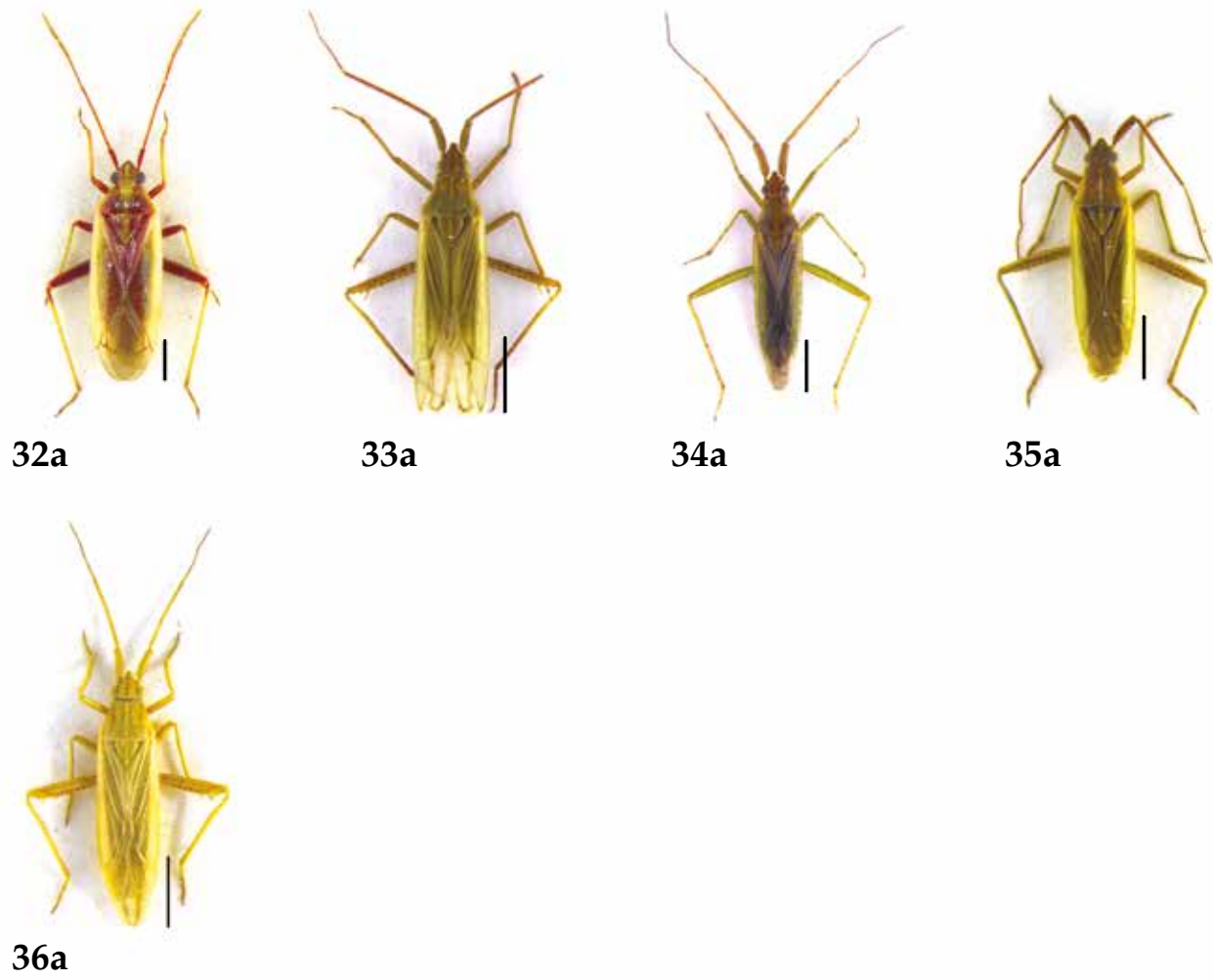


19a

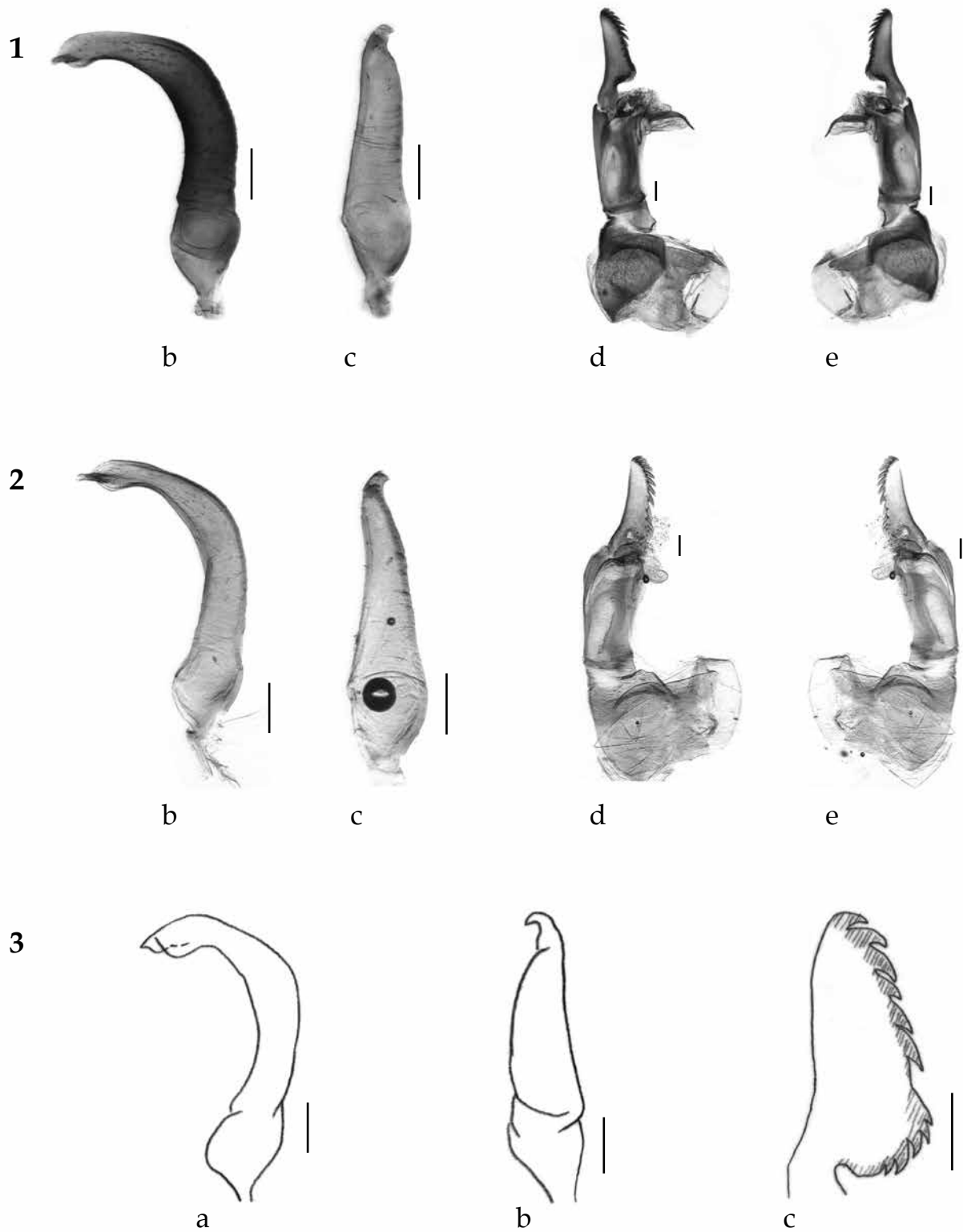
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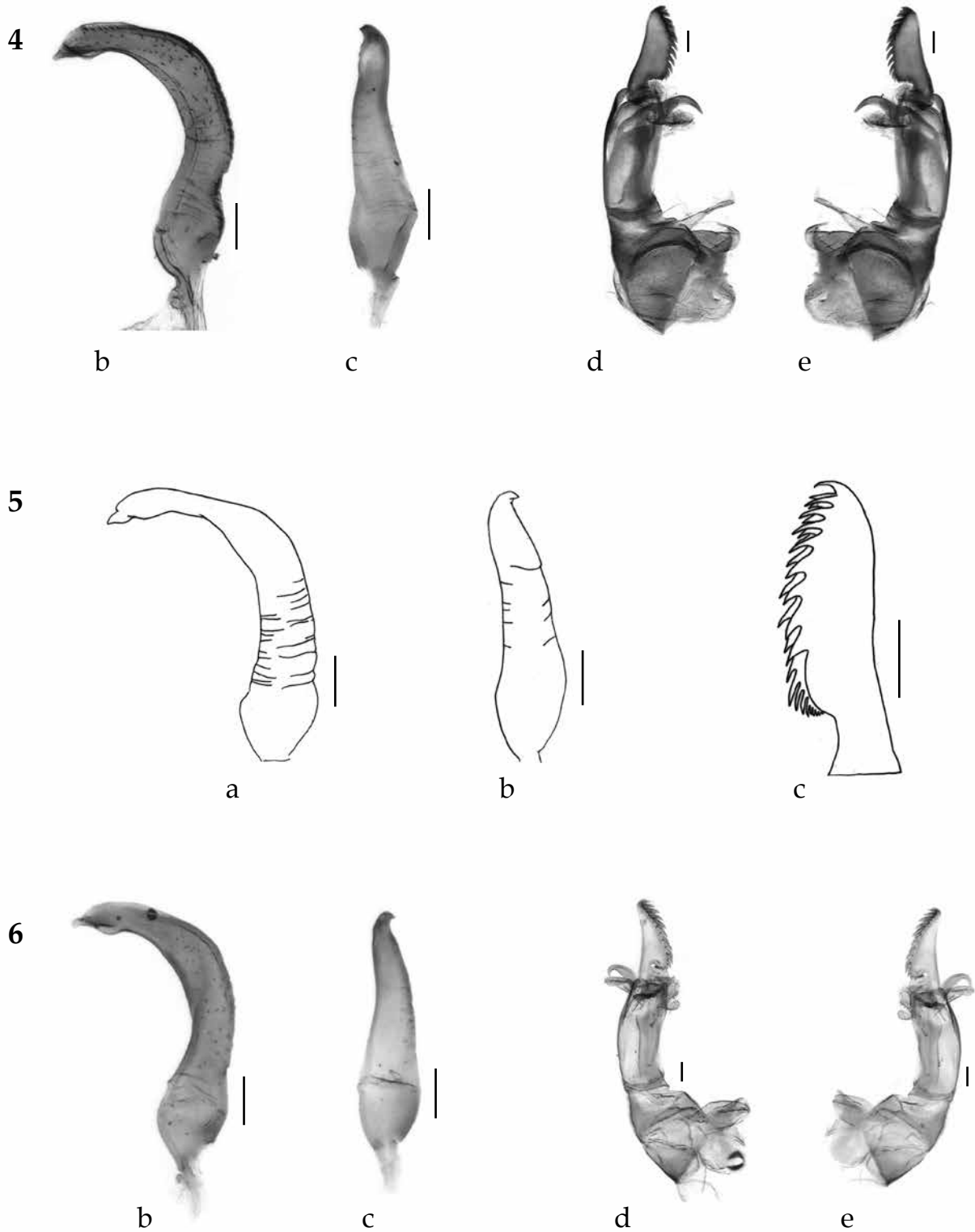
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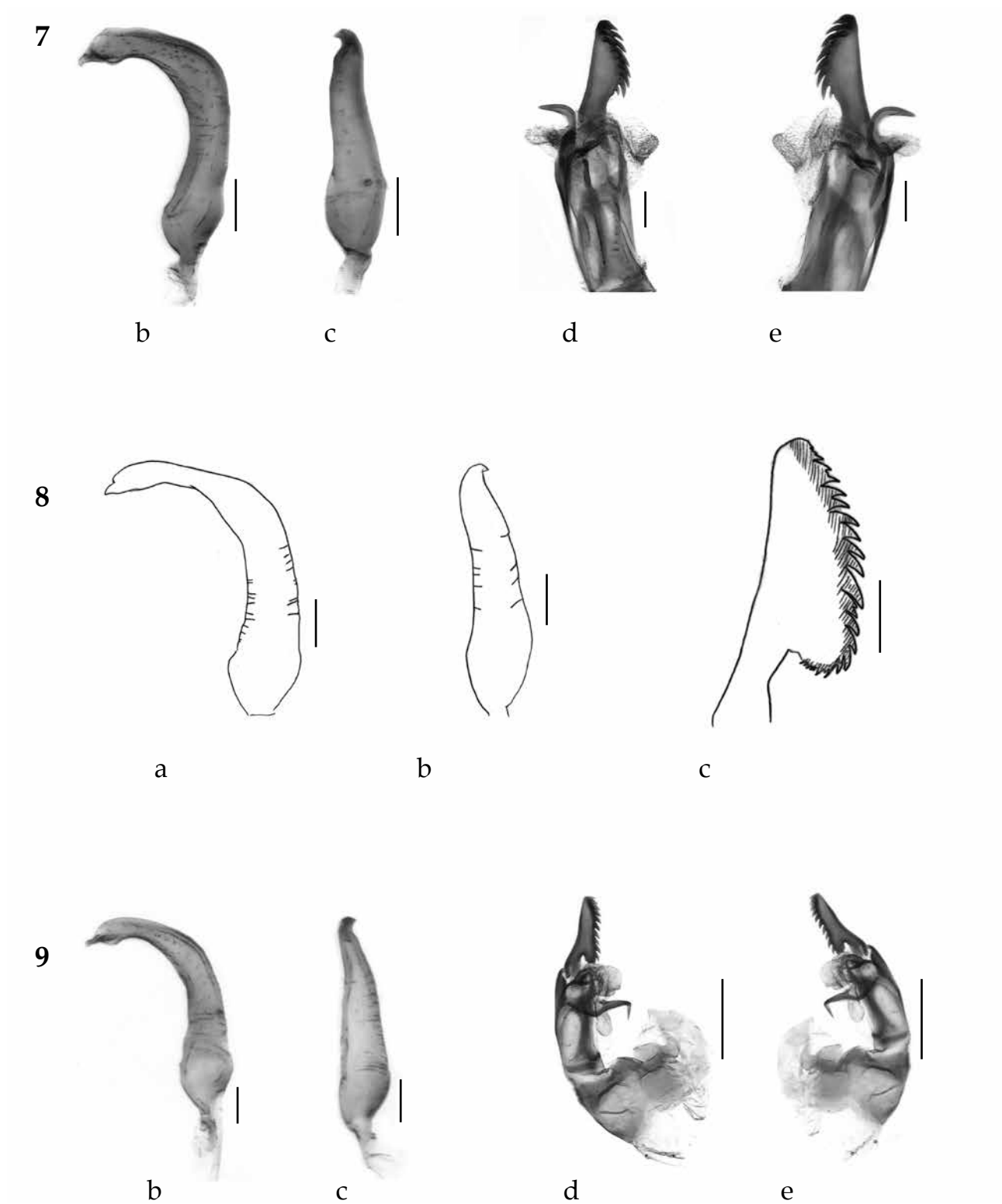
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1. *Adelphocoris albonotatus*. b. Left paramere; c. right paramere; d, e. vesica. Scale bars: b-e=0.1 mm; 2. *Adelphocoris demissus*. b. Left paramere; c. right paramere; d, e. vesica. Scale bars: b-e=0.1 mm; 3. *Adelphocoris fasciaticollis*. a. Left paramere; b. right paramere; c. vesica. Scale bars: a-c=0.1 mm.

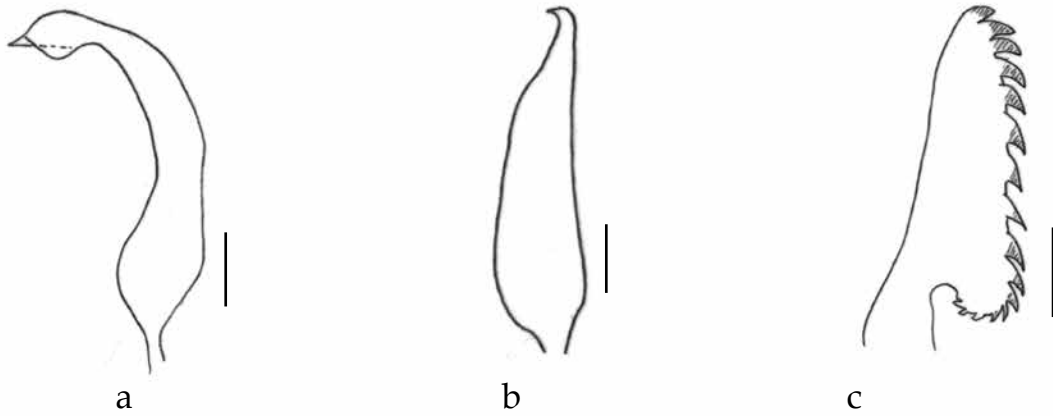


4. *Adelphocoris lineolatus*. b. Left paramere; c. right paramere; d, e. vesica. Scale bars: b-e=0.1 mm;
 5. *Adelphocoris obliquefasciatus*. a. Left paramere; b. right paramere; c. vesica; Scale bars: a-c=0.1 mm;
 6. *Adelphocoris piceosetosus*. b. Left paramere; c. right paramere; d, e. vesica. Scale bars: b-e=0.1 mm.

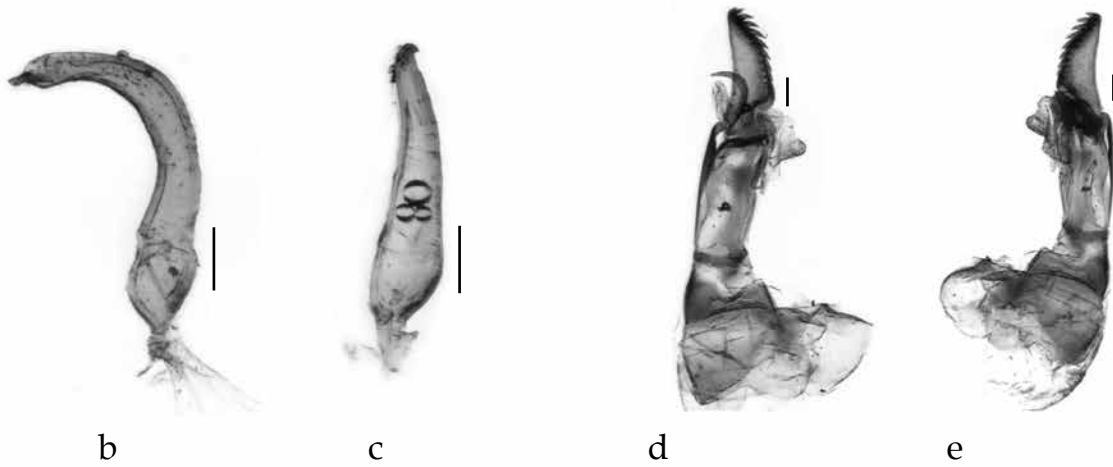


7. *Adelphocoris ponghvarensis*. b. Left paramere; c. right paramere; d, e. vesica. Scale bars: b-e=0.1 mm; 8. *Adelphocoris quadripunctatus*. a. Left paramere; b. right paramere; c. vesica; Scale bars: a-c=0.1 mm; 9. *Adelphocoris reicheli*. b. Left paramere; c. right paramere; d, e. vesica. Scale bars: b, c=0.1 mm, d, e=0.5 mm.

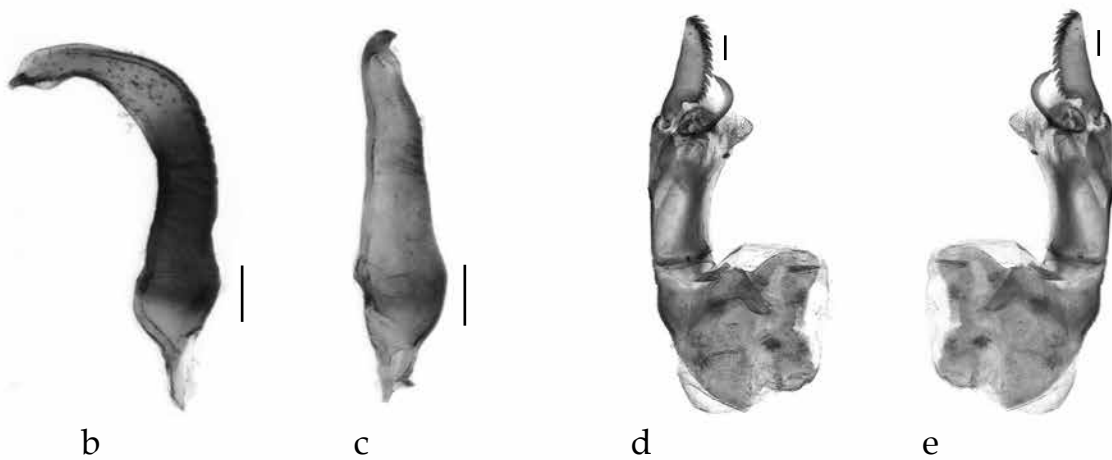
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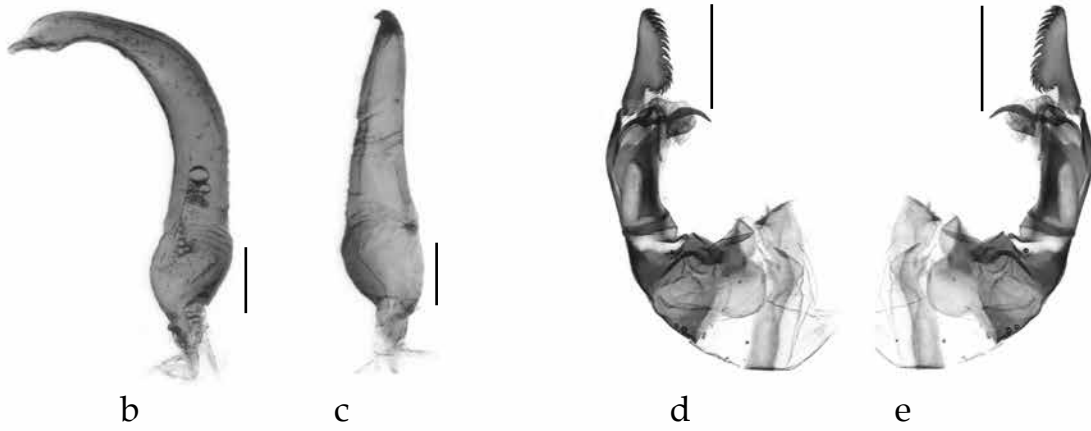


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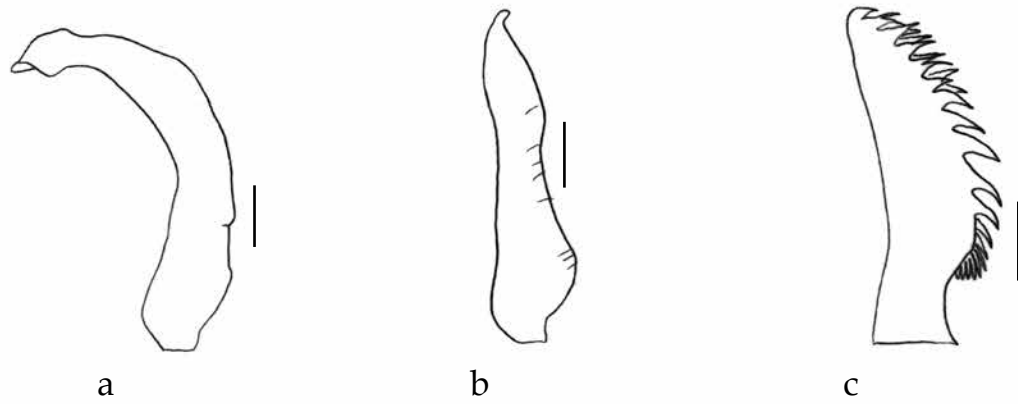


10. *Adelfhocoris rufescens*. a. Left paramere; b. right paramere; c. vesica. Scale bars: a-c=0.1 mm;
 11. *Adelfhocoris suturalis*. b. Left paramere; c. right paramere; d, e. vesica. Scale bars: b-e=0.1 mm;
 12. *Adelfhocoris tenebrosus*. b. Left paramere; c. right paramere; d, e. vesica; Scale bars: b-e=0.1 mm.

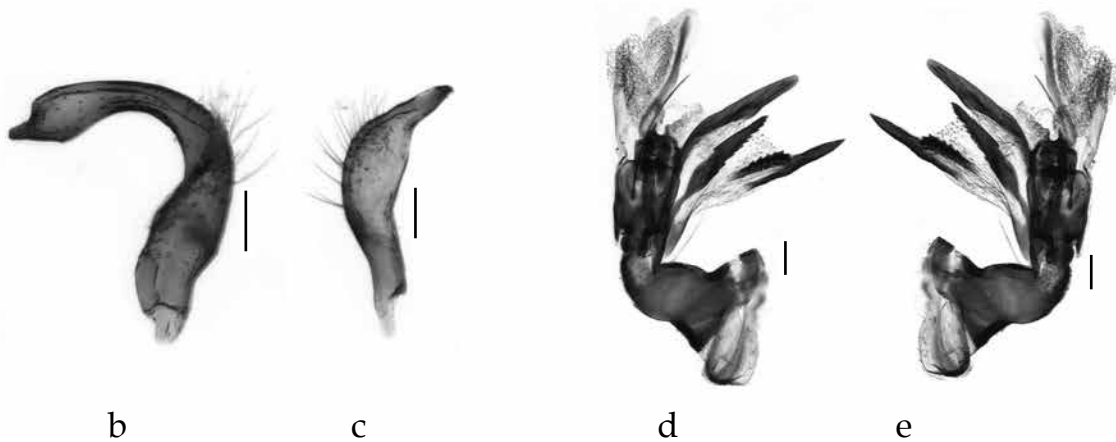
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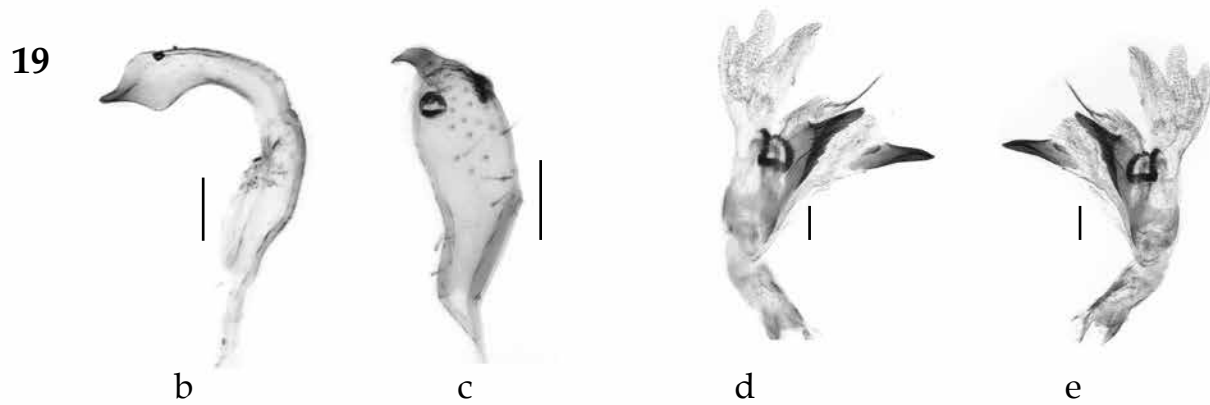
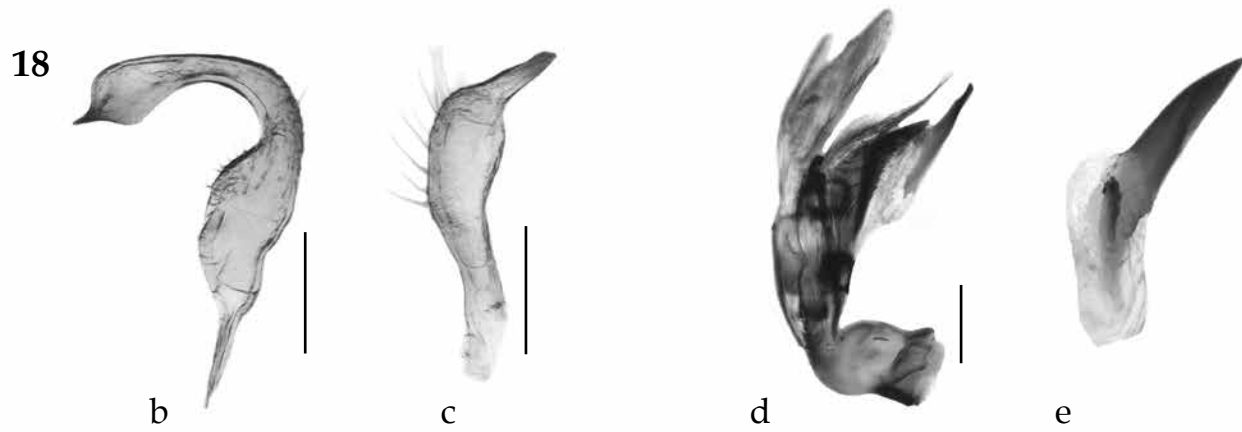
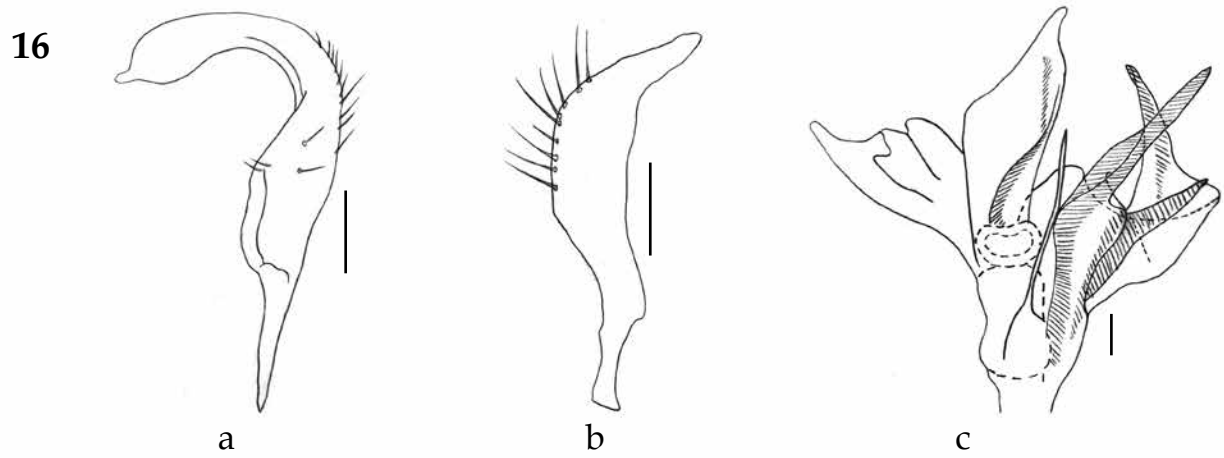
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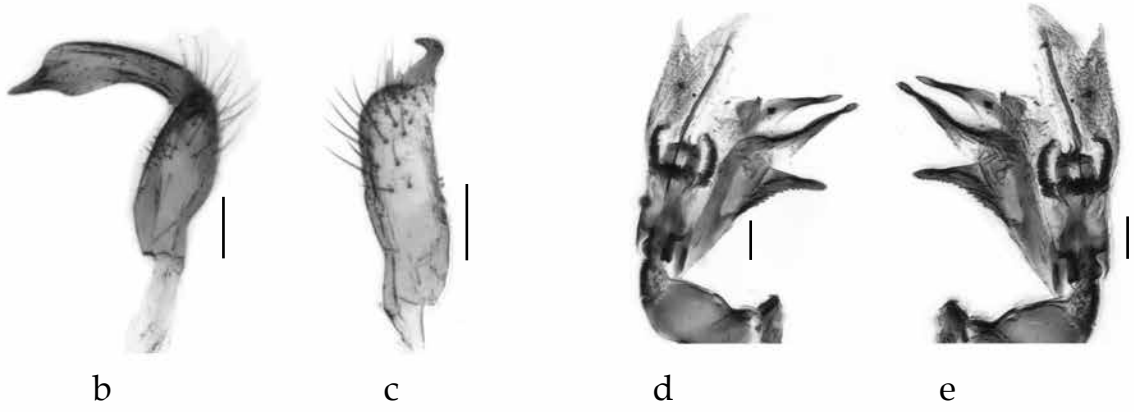


13. *Adelphocoris triannulatus*. b. Left paramere; c. right paramere; d, e. vesica. Scale bars: b, c=0.1 mm, d, e=0.5 mm; 14. *Adelphocoris variabilis*. a. Left paramere; b. right paramere; c. vesica. Scale bars: a-c=0.1 mm; 15. *Apolygus hilaris*. b. Left paramere; c. right paramere; d, e. vesica; Scale bars: b-e=0.1 mm.

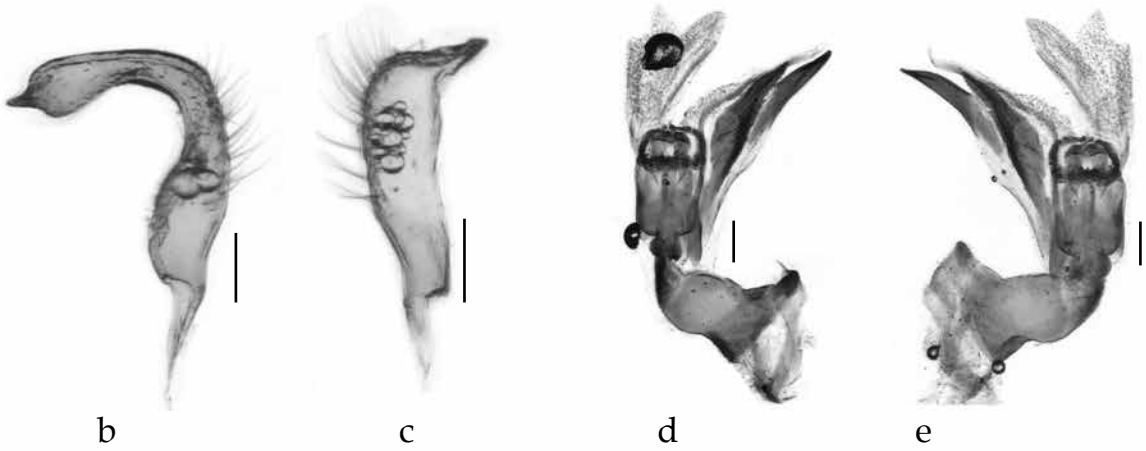


16. *Apolygus infamis*. a. Left paramere; b. right paramere; c. vesica. Scale bars: a-c=0.1 mm; 18. *Apolygus lucorum*. b. Left paramere; c. right paramere; d. vesica; e. lateral sclerite and sublateral sclerite. Scale bars: b-d=0.1 mm; 19. *Apolygus nigrovirens*. b. Left paramere; c. right paramere; d, e. vesica. Scale bars: b-e=0.1 mm.

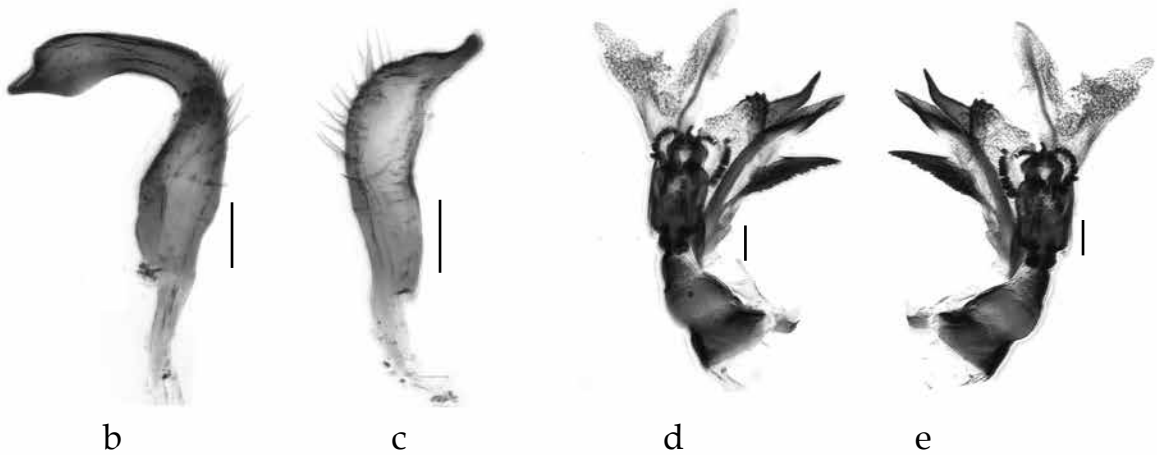
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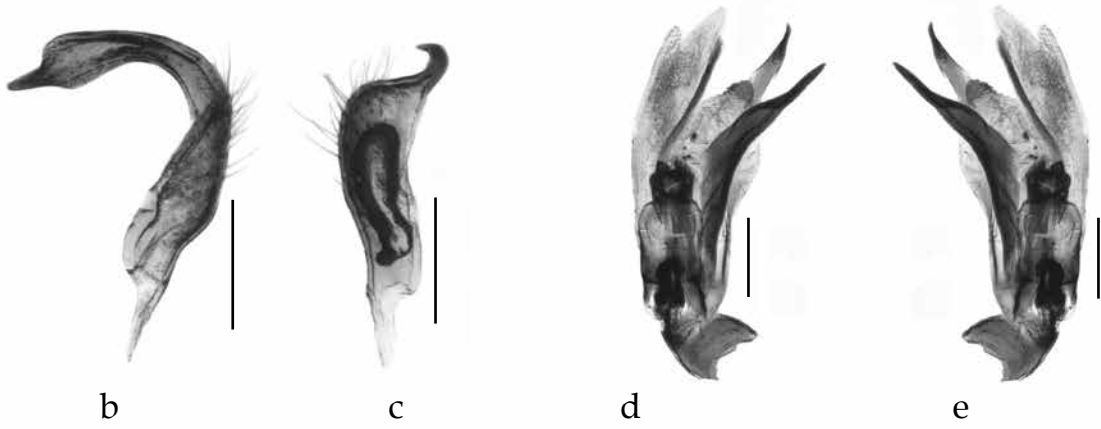


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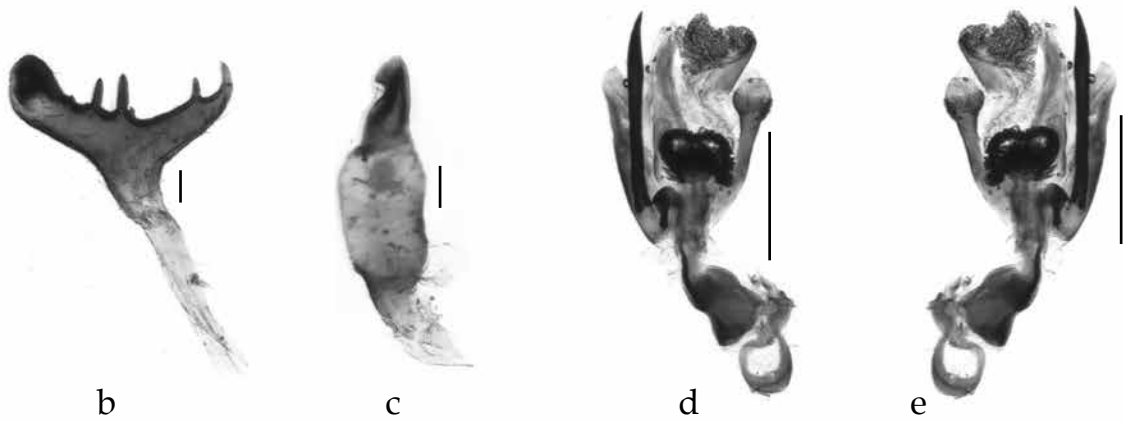


20. *Apolygus pulchellus*. b. Left paramere; c. right paramere; d, e. vesica. Scale bars: b-e=0.1 mm; 21. *Apolygus spinolae*. b. Left paramere; c. right paramere; d, e. vesica. Scale bars: b-e=0.1 mm; 22. *Apolygus subhilaris*. b. Left paramere; c. right paramere; d, e. vesica; Scale bars: b-e=0.1 mm.

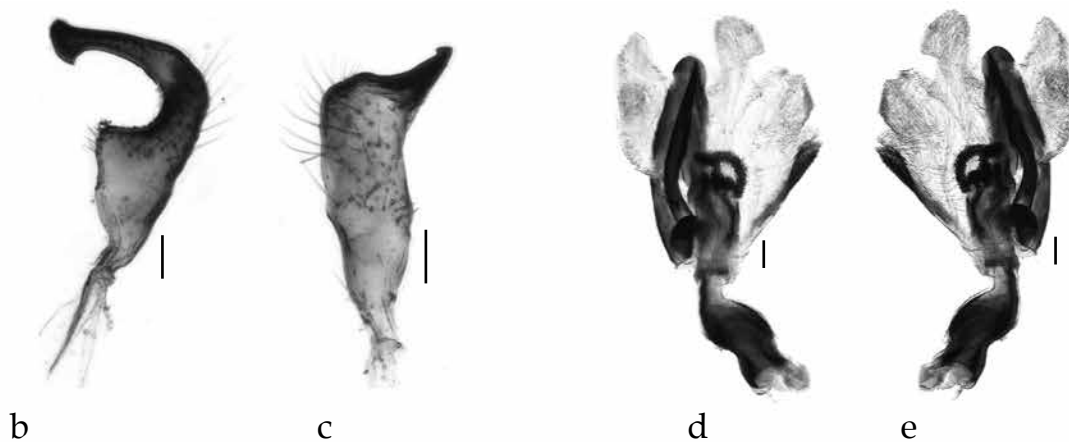
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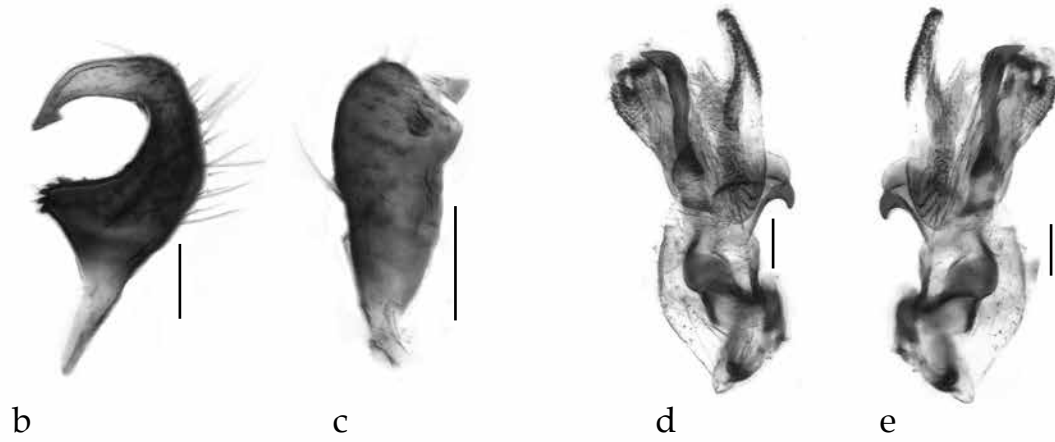


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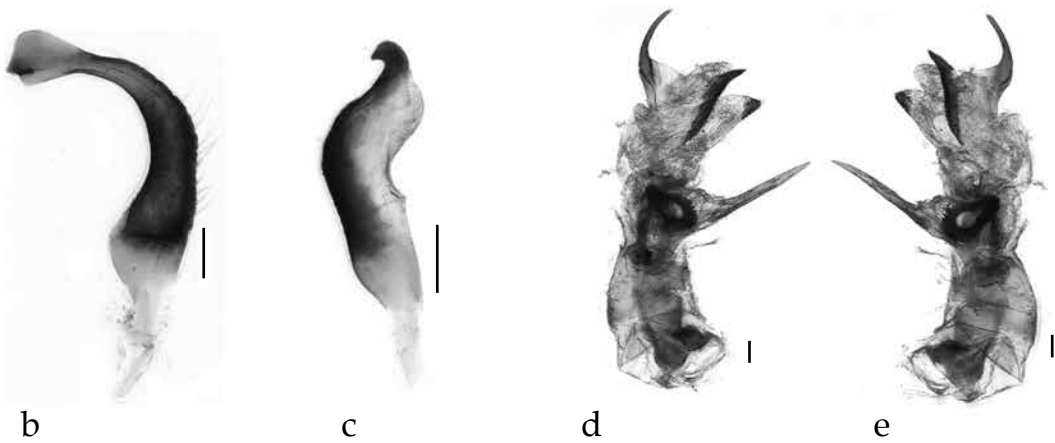


23. *Apolygus subpulchellus*. b. Left paramere; c. right paramere; d, e. vesica. Scale bars: b-e=0.1 mm; 24. *Castanopsides kerzhneri*. b. Left paramere; c. right paramere; d, e. vesica. Scale bars: b, c=0.1 mm, d, e=0.5 mm; 25. *Castanopsides potanini*. b. Left paramere; c. right paramere; d, e. vesica. Scale bars: b-e=0.1 mm.

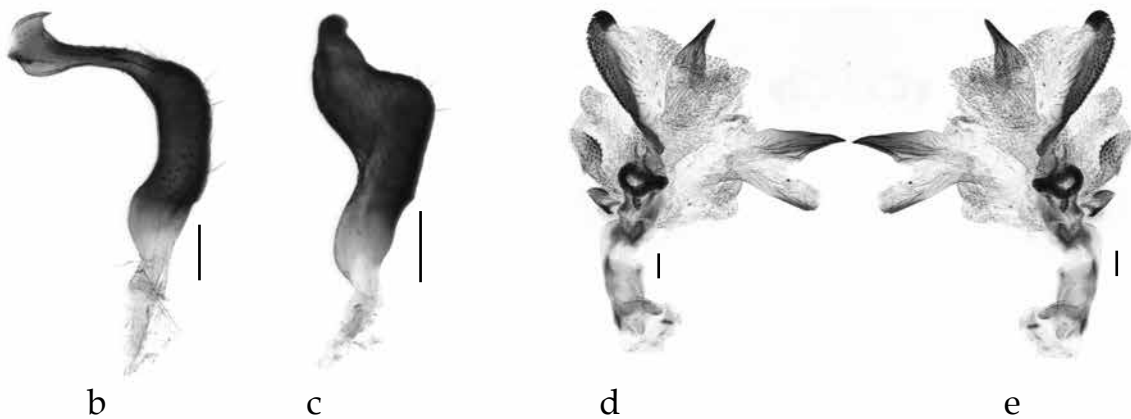
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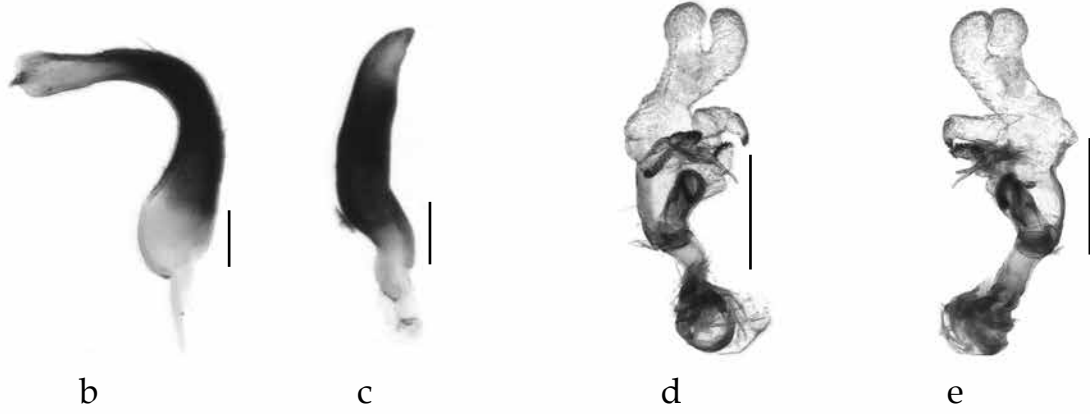


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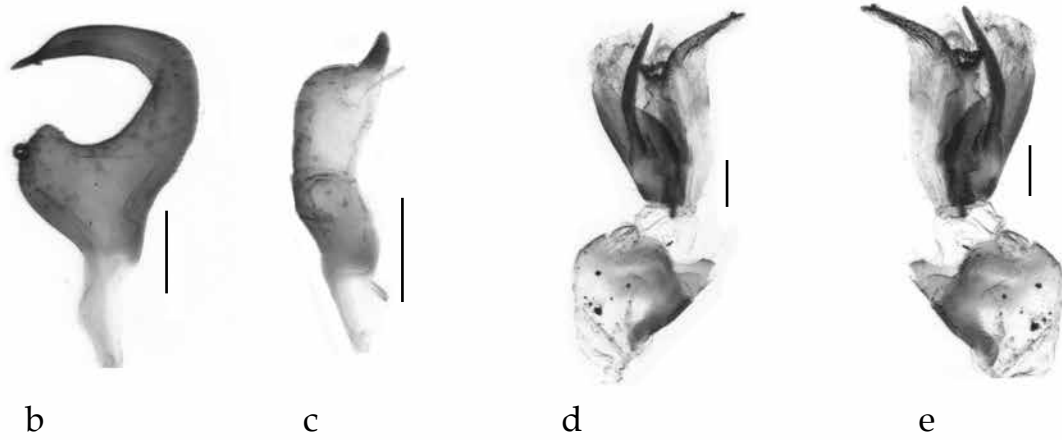


26. *Cyphodemidea saundersi*. b. Left paramere; c. right paramere; d, e. vesica. Scale bars: b-e=0.1 mm; 27. *Eurystylus coelestialium*. b. Left paramere; c. right paramere; d, e. vesica; Scale bars: b-e=0.1 mm; 28. *Eurystylus leteus*. b. Left paramere; c. right paramere; d, e. vesica. Scale bars: b-e=0.1 mm.

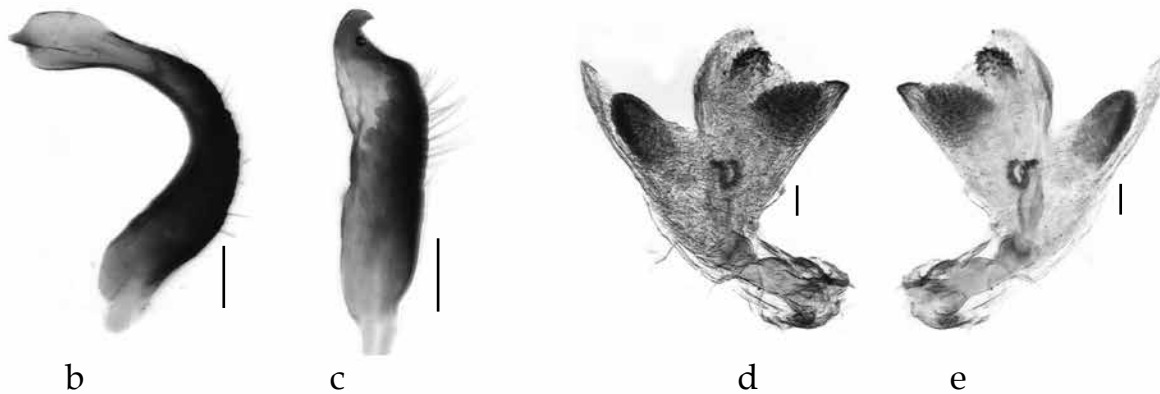
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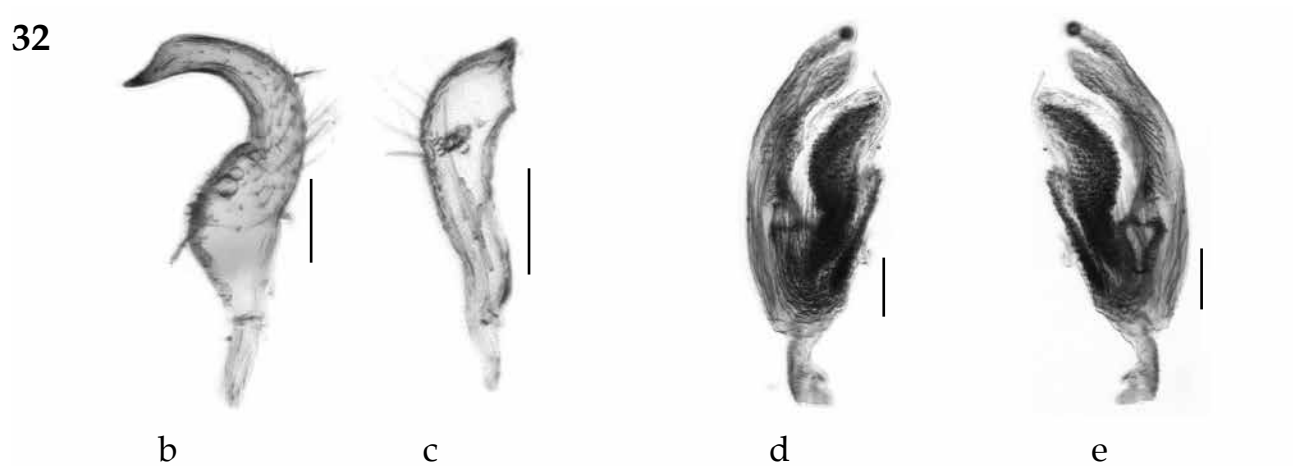


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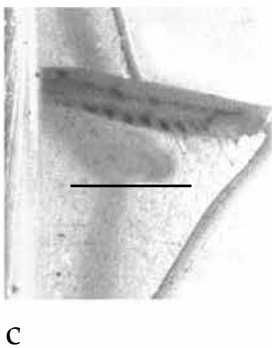
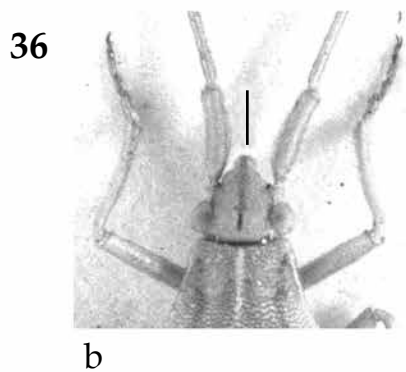
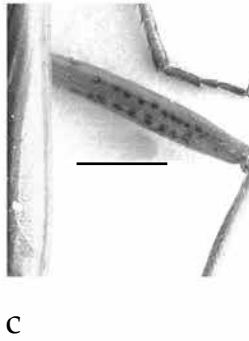
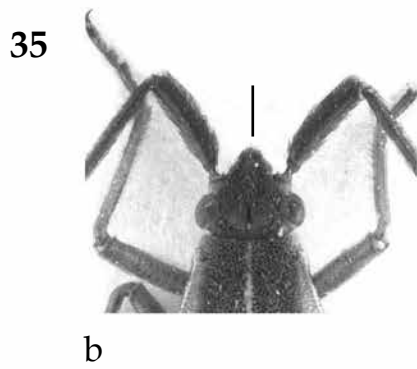
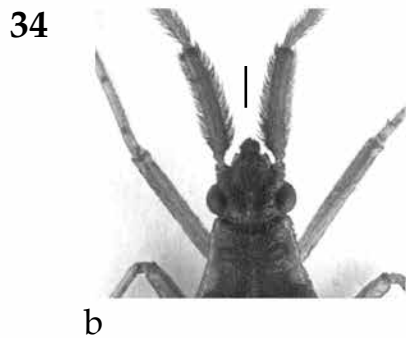
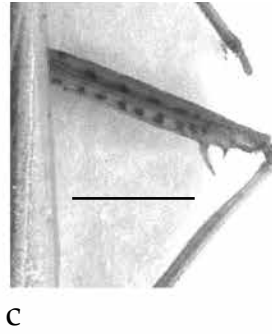
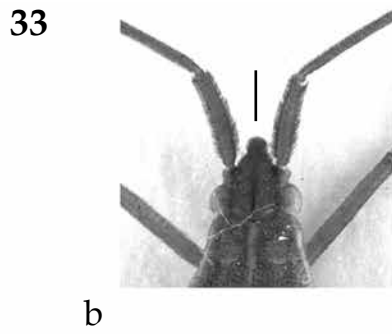


29. *Loristes decoratus*. b. Left paramere; c. right paramere; d, e. vesica. Scale bars: b, c=0.1 mm, d, e=0.5 mm; 30. *Orthops scutellatus*. b. Left paramere; c. right paramere; d, e. vesica. Scale bars: b-e=0.1 mm; 31. *Polymerias opacipennis*. b. Left paramere; c. right paramere; d, e. vesica. Scale bars: b-e=0.1 mm.

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