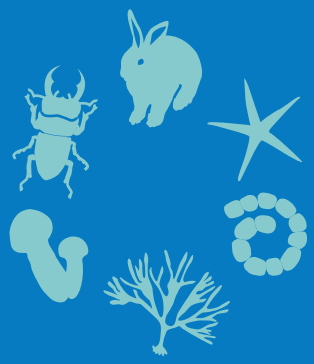
Insect Fauna of Korea

Volume 9, Number 3

Arthropoda: Insecta: Hemiptera: Nabidae, Anthocoridae

Damsel bugs, Flower bugs



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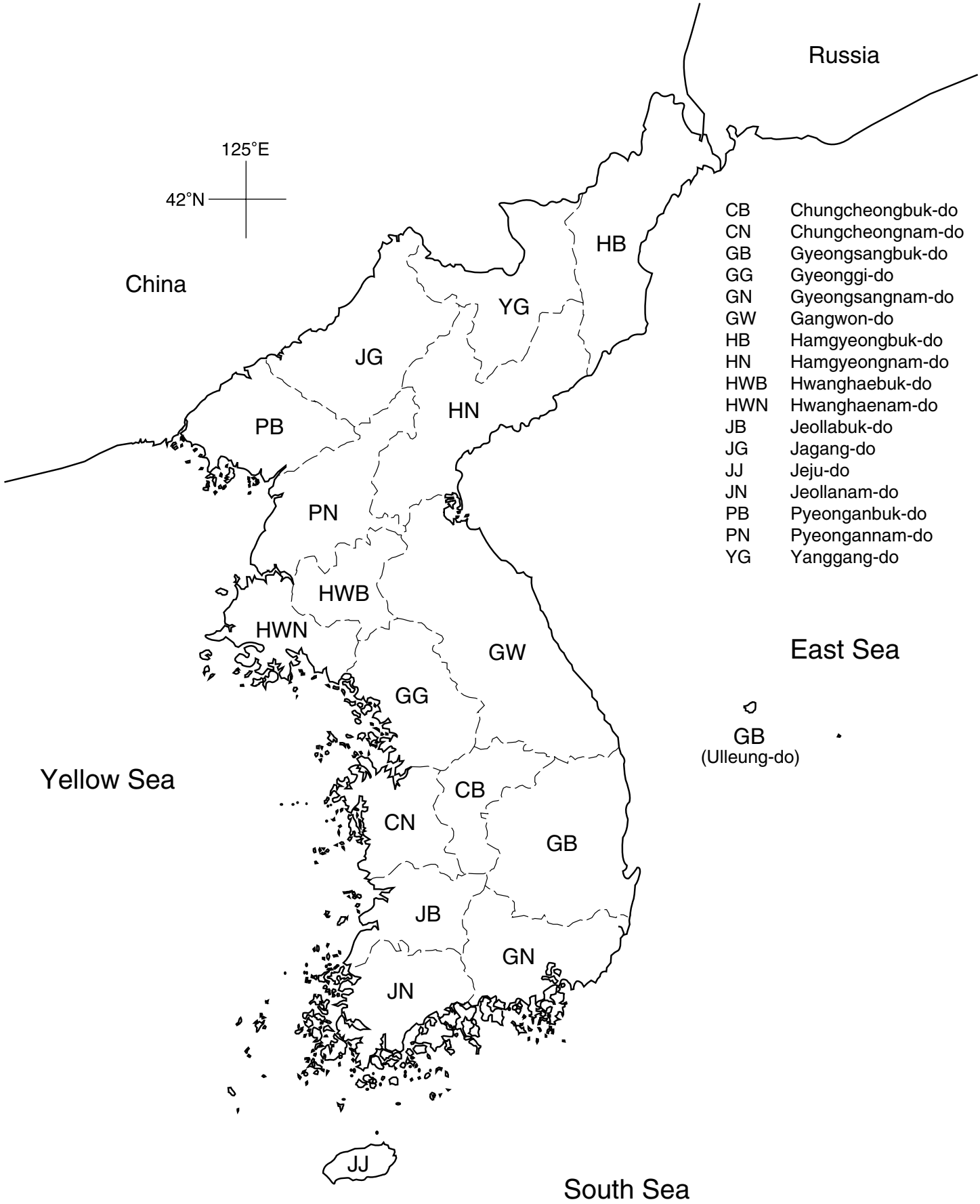
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Yellow Sea
South Sea
CB Chungcheongbuk-do
CN Chungcheongnam-do
GB Gyeongsangbuk-do
GG Gyeonggi-do
GN Gyeongsangnam-do
GW Gangwon-do
HB Hamgyeongbuk-do
HN Hamgyeongnam-do
HWB Hwanghaebuk-do
HWN Hwanghaenam-do
JB Jeollabuk-do
JG Jagang-do
JJ Jeju-do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

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Sunghoon Jung and Hodan Lee

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 firmed competition of the nation because they will be used as fundamental sources to make highly valued products such as new lines or varieties of biological organisms, 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). To cope with a new international paradigm on all kinds of issues related to biological resources, the Ministry of Environment of Korea enacted a new law called 'An act on access and benefit sharing of genetic resources' on January 17th, 2017.

Each nation in the world 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 (NIBR) of the Ministry of Environment has published 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 13,478 species for the past eight years to publish 163 volumes in both Korean and English versions, and two volumes of World Monograph covering 216 species of invertebrates. This year, 11 volumes of the Flora and Fauna of Korea in both Korean and English versions including 858 species of invertebrates, insects, vascular plants, algae and fungi are additionally published. Flora and Fauna of Korea are 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.

The NIBR will continue to publish flora and fauna of Korea that will contribute conservation and application of biological resources for successful implementation of the ABS protocol. Finally, I would like to express my sincere appreciation to authors who spared no effort to publish *the Flora and Fauna of Korea*.

Woonsuk Baek
President
of National Institute of Biological Resources

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Xylocoris hiurai Kerzhner and Elov, 1976
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Lasiochilus japonicus Hiura, 1967
Genus *Lyctocoris* Hahn, 1835
Lyctocoris beneficus (Hiura, 1957)

Introduction

Family Nabidae

The family Nabidae belongs to infraorder Cimicomorpha (Hemiptera: Heteroptera) and includes 21 genera and about 500 species, and distributed worldwide from about 70° N up to 56° S. All representatives are predators of insects and other small arthropods including their eggs and larvae. Most species are polyphagous, but Prostemmatinae are specialized predators of Lygaeidae (Hemiptera: Heteroptera). All Prostemmatinae and some Nabinae are ground-inhabiting (in litter, under stones, etc.), and most Nabinae are herbicolous and some arboricolous. They overwinter as imago (most species) or eggs.

Most species of Nabinae (e.g. *Nabis ferus*, *Nabis pseudoferus*, *Nabis punctatus*, *Nabis palifer*, *Nabis capsiformis*, *Himacerus apterus*) are more or less important in control against agricultural and forest pests (Kerzhner, 1996). Therefore, some species are used as biological control agents and most of them are potentially useful in eco-friendly agricultural system. This study aims to provide clear taxonomical information of Nabidae in the Korean Peninsula.

Family Anthocoridae

Bugs in the family Anthocoridae (Hemiptera: Heteroptera: Cimicomorpha: Cimicoidea) are small in size (1.4−4.5 mm). This family contains approximately 400−600 species that are distributed worldwide (Péricart, 1972; Schuh and Štys, 1991; Péricart, 1996). Most species of Anthocoridae are predaceous as nymphs and adults (Anderson, 1962; Péricart, 1972; Lattin and Stanton, 1992), thus some species, such as *Orius laevigatus*, *O. strigicollis* and *O. insidiosus* are used as biological control agents and are commercially produced and traded (Kim et al., 2008). This study aims to provide clear information of Anthocoridae in Korea such as taxonomic study and morphological characters of each species.

Materials and Methods

Nabidae

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.

To observe 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 2 hour until segment moderately 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 Cornelis (2013) and Weirauch (2008).

Anthocoridae

Most specimens were collected and preserved in 80% ethyl alcohol, then dried and pinned on cardboards for the dried specimens. Examination and illustration of the male genitalia and female ovipositor were made from specimens macerated in 5% hot KOH solution for 3−5 min. They were dissected with micro-pins in glycerin on a well-glass slide under binocular microscope, then dehydrated in a series of ethyl alcohol and mounted with Canada Balsam for preserving in permanent preparations following the production method of macerated slide specimen by the below preparation method. For the very tiny species (about 2 mm in length; e.g., the genera *Orius* and *Lasiochilus*), the whole body of the specimens were macerated and mounted on slides to examine and illustrate the detailed characters. The whole body part was placed in a 10% solution of KOH and boiled at 70°C for about 1−5 hours until the body organs became transparent. After being washed with distilled water, the material was placed in glacial acetic acid for 20 minutes, and then moved to the clove oil for 60 minutes. Then the whole body was placed on slide glass with Canada balsam adding xylene if necessary. All measurements are given in millimeters (mm). Terminology used in this study follows Carayon (1972) and Yasunaga (1997). Abbreviations on the morphological terminology of the Anthocoridae are IOS: inter ocellar seta; FS: frontal seta.

The new record site of each species is indicated by an asterisk (*). Abbreviations for depositories of each specimens and specimen collection sites are as follows:

Depository

BMNH: Museum of Natural History, London, Great Britain, DEIC: Deutsches Entomologisches Institut, Eberswalde, Germany, ELHU: Entomological Institute, Hokkaido University, Sapporo, Japan, HNHM: Hungarian Natural History Museum, Budapest, Hungary, IZAS: Institute of Zoology, Academia Sinica, Beijing, P.R. China, KUEC: Kyushu University, Entomological Collection, Fukuoka, Japan, KUEC: Kyushu University, Entomological Collection, Fukuoka, Japan, LIBSNU: Laboratory of Insect Biosystematics, Seoul National University, Seoul, Korea, MNHN: Museum National d'Histoire Naturelle, Paris, France, MZHF: Zoological Museum, University of Helsinki, Finland, NHRS: Naturhistoriska Riksmuseet, Stockholm, Sweden, NIAES: National Institute of Agro-Environmental Sciences, Ibaraki, Japan, NIAST: National Institute of Agricultural of Science and Tech-

nology, NKUM: Nankai University, Department of Biology, Tianjin, P.R. China, OMNH: Osaka Museum of Natural History, Osaka, Japan, OPUO: Osaka Prefecture University, Osaka, Japan, USNM: United States National Museum of Natural History, Washington, D.C., U.S.A, ZMAS: Zoological Institute, Russian Academy of Sciences, St. Petersburg, Russia, ZMHB: Zoologisches Museum, Humboldt Universität, Berlin, Germany; Abbreviations for type - TD: Type depository, TL: Type locality.

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, HHB Hwanghaebuk-do, HHN Hwanghaenam-do, HGB Hamgyeongbuk-do, HGN Hamgyeongnam-do.

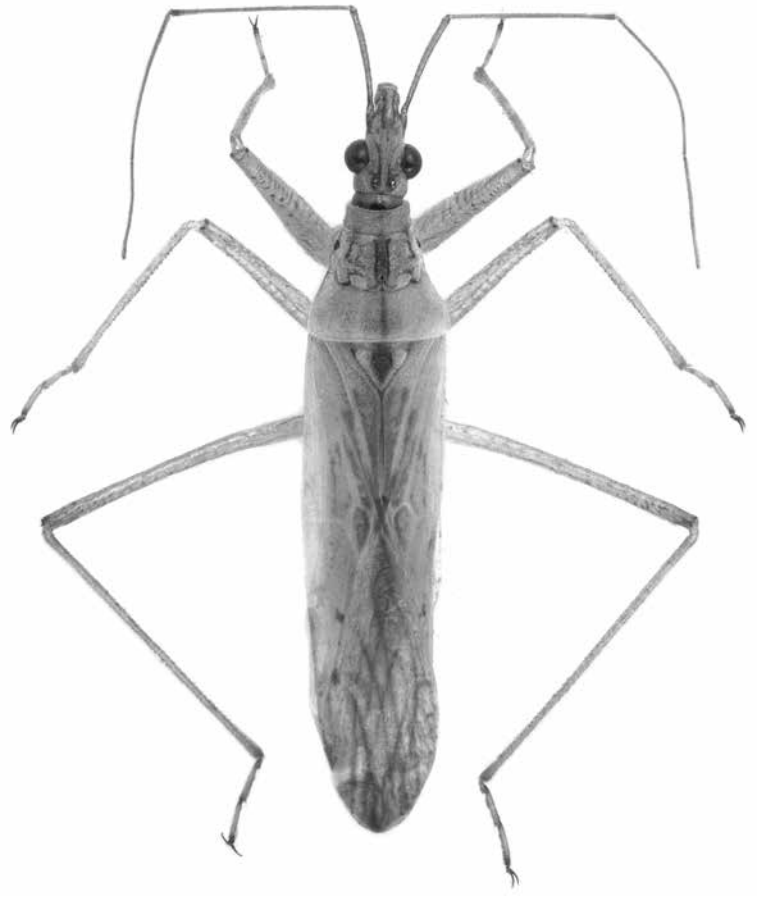

Fig. 1. Habitus of Family Nabidae.

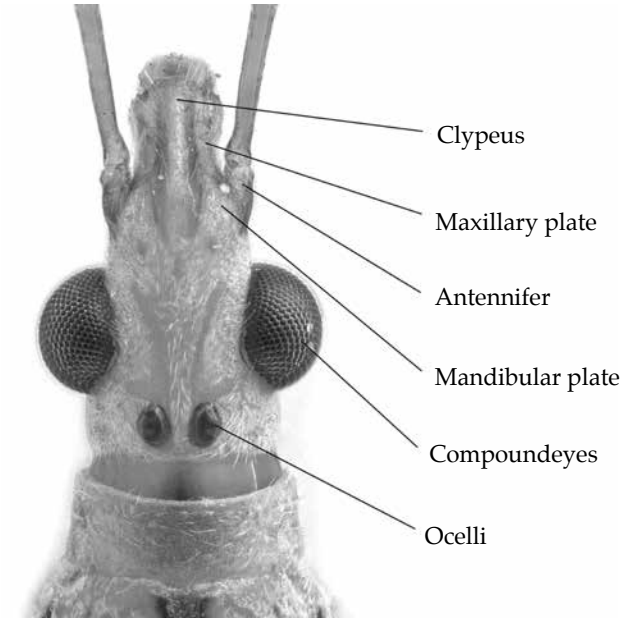

Fig. 2. Morphological terminology of dorsal head.

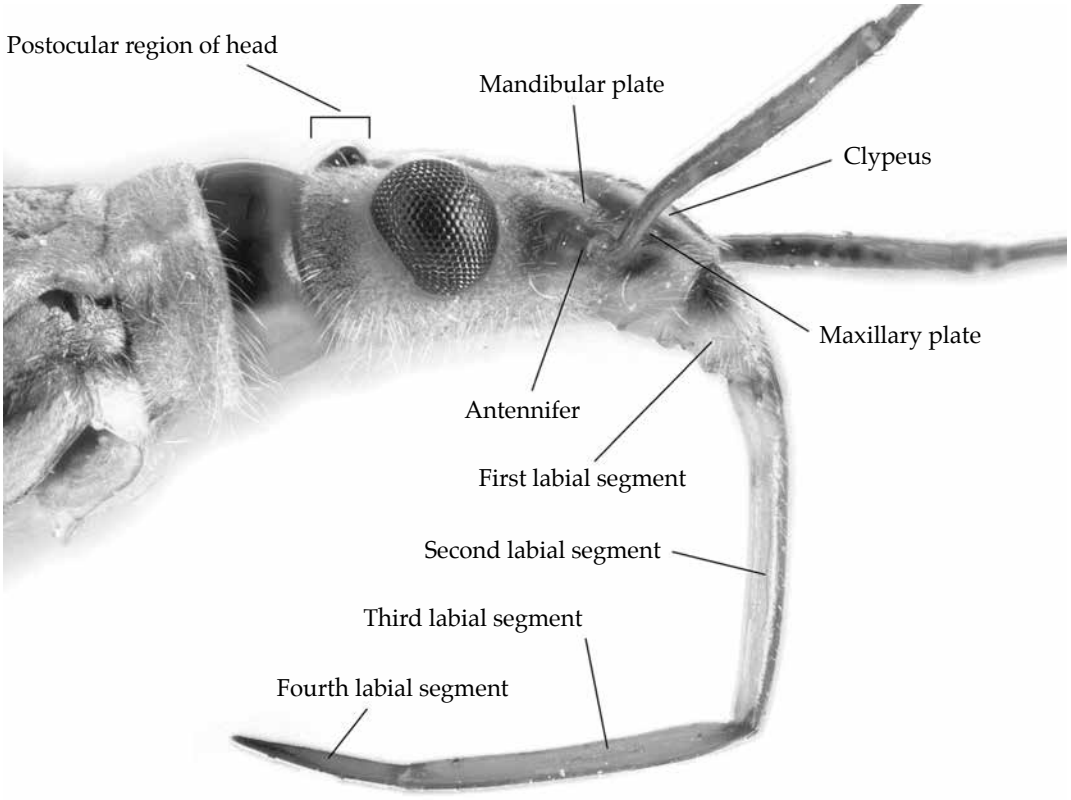

Fig. 3. Morphological terminology of lateral head.

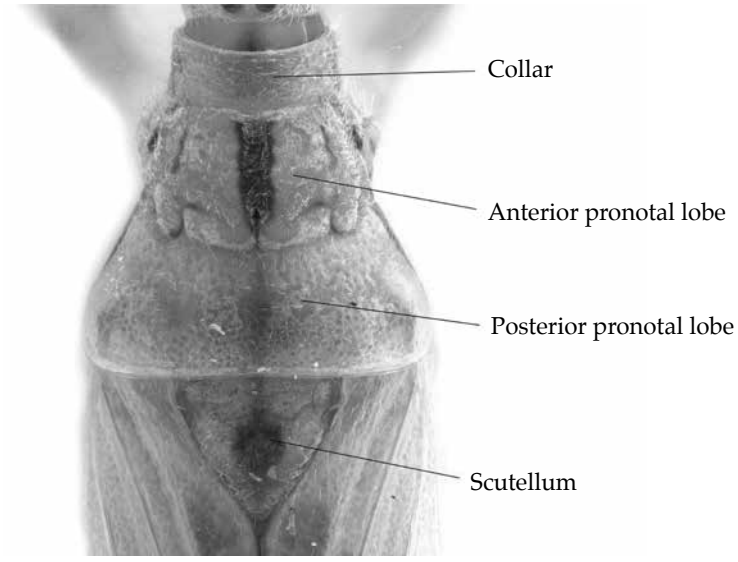

Fig. 4. Morphological terminology of pronotum.

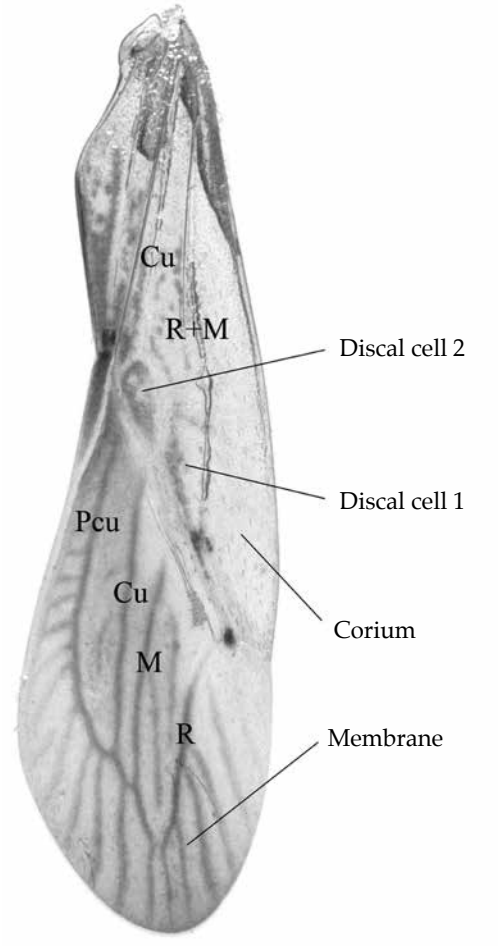

Fig. 5. Veins of wing.

Fig. 6. Foreleg of Nabidae.

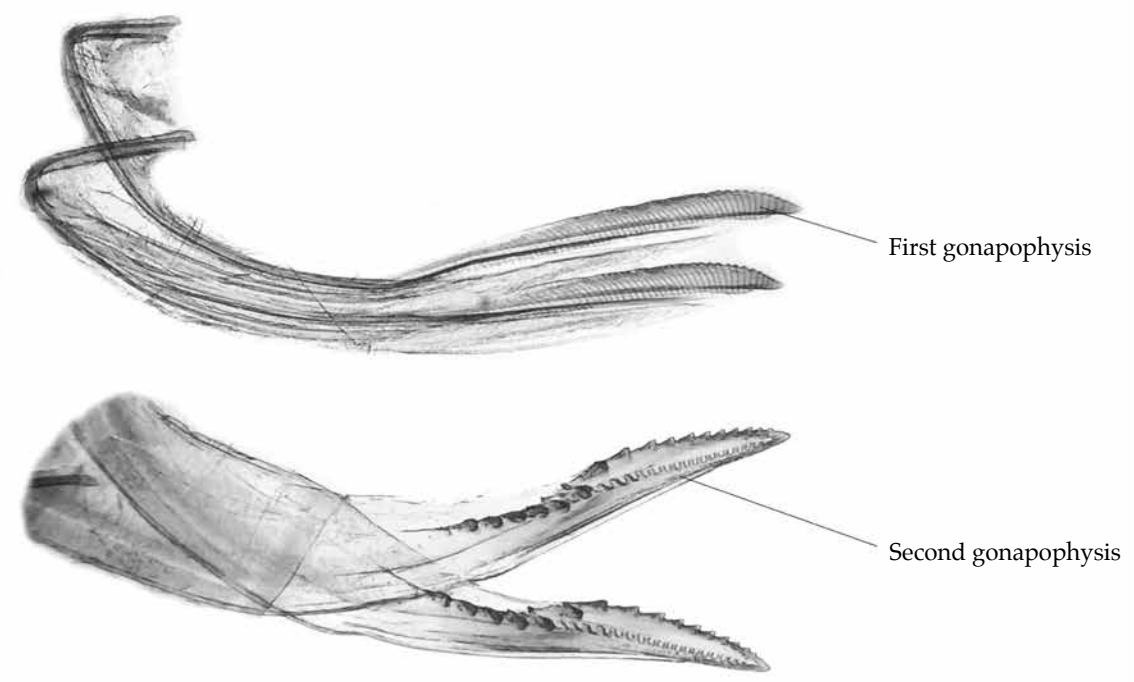

Fig. 7. Ovipositor of female.

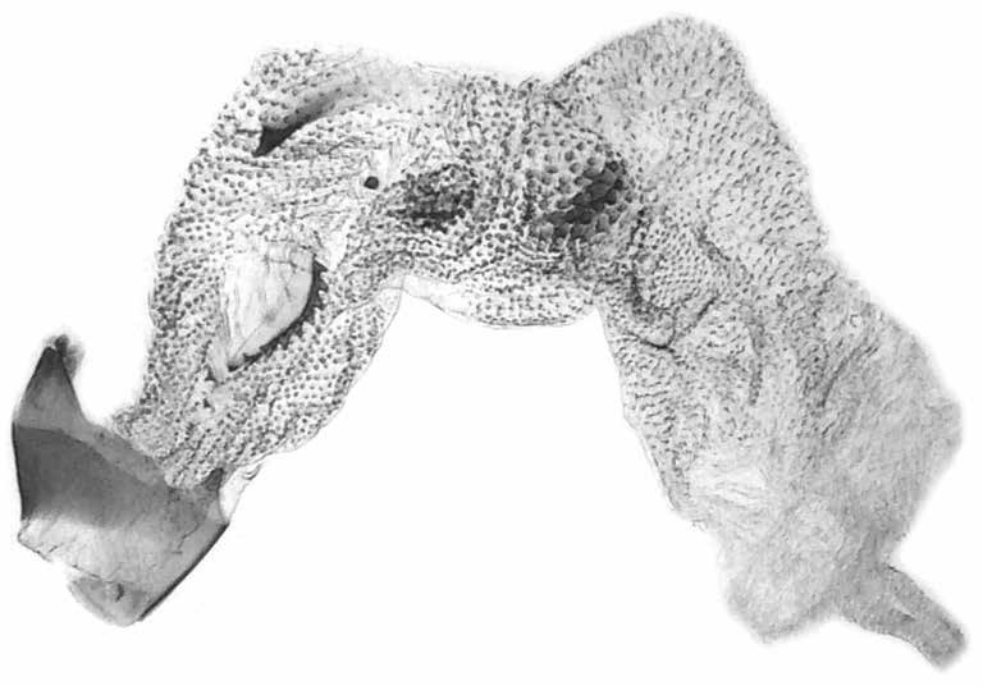

Fig. 8. Male aedeagus of Nabidae.

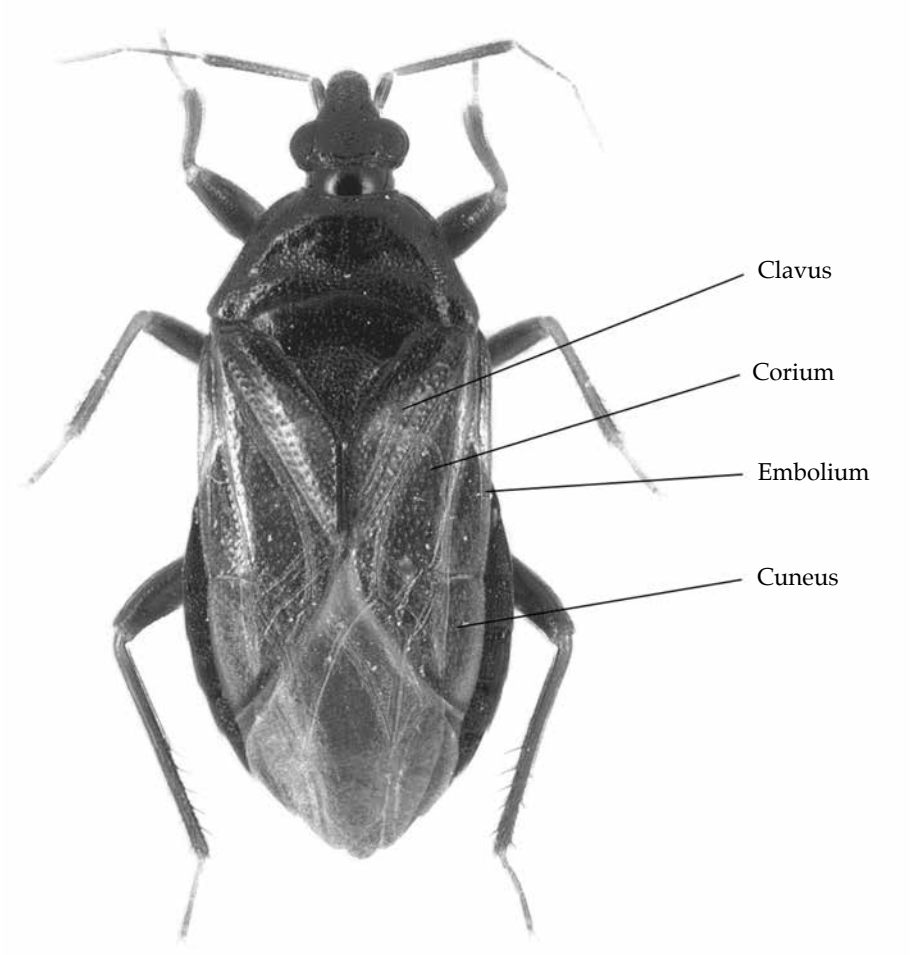

Fig. 9. Habitus of Family Anthocoridae.

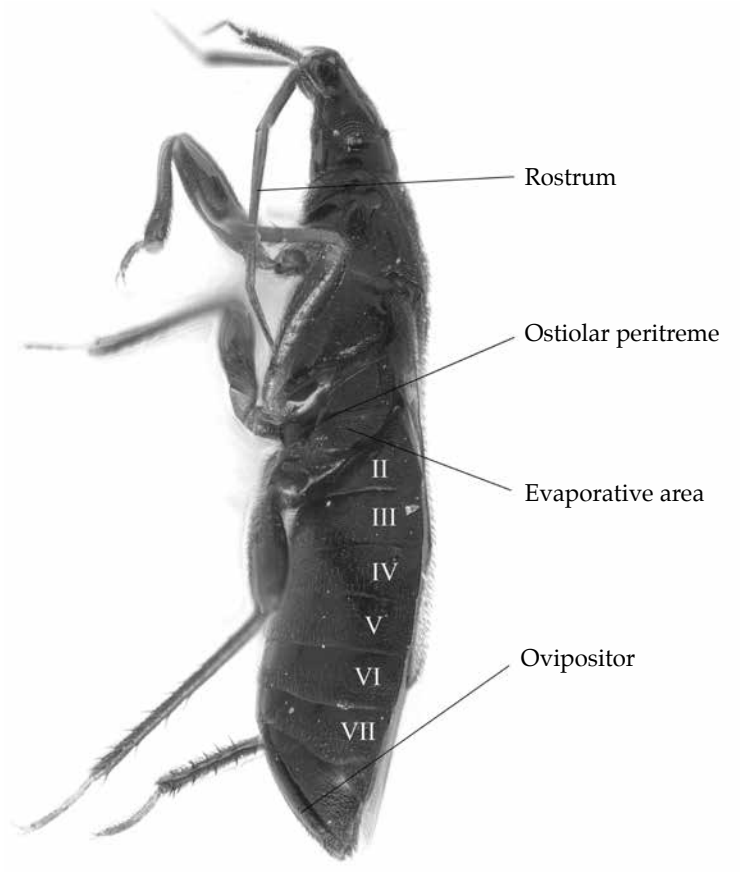

Fig. 10. Morphological terminology of lateral body.

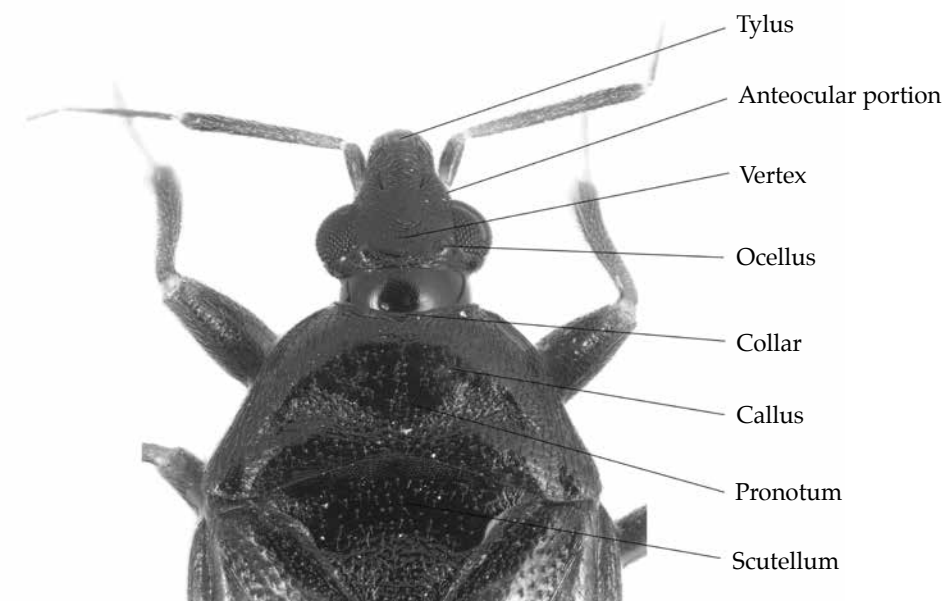

Fig. 11. Morphological terminology of dorsal head and pronotum.

Fig. 12. Foreleg of Anthocoridae.

Fig. 13. Male genitalia of Anthocoridae.

Taxonomic Notes

Class Insecta

Order Hemiptera

Family Nabidae

Type: *Nabis* Latreille, 1802.

Species: over 500 (18 in Korea).
Distribution: Worldwide.
Korea: GW, GG, CB, CN, GB, GN, JB, JN, JJ.

Key to the genera of the family Nabidae in the Korean Peninsula

1. Collar of pronotum indistinct. Fore femur very thick, with dark brown spinules on ventral side ..... *Prostemma*
− Collar of pronotum distinct. Fore femur spindle-shaped, comparatively thickened, without dark brown spinules on ventral side 2
2. Fore coxae rod shaped. Fore tibiae markedly incurved, with fossa spongiosa vestigial, practically invisible ..... *Gorpis*
− Fore coxae conical, not more than twice as long as wide. Fore tibiae straight or weakly curved ··· 3
3. Boby somewhat thin and weak. Ocellus convergent. Length of first antennal segment longer than length of pronotum ..... *Arbela*
− Boby moderately thick or thick. Ocellus not convergent, prominent. Length of first antennal segment not longer than length of pronotum 4
4. Connexivum separated ventrally from the rest of abdomen by distinct depression or groove. Apex of femur pale ..... *Nabis*
− Connexivum not separated ventrally by depression. Femora, at least hind ones, with wide dark brown or brown ring at apex 5
5. Posterior lobe and collar of pronotum with distinct punctuation ..... *Stenonabis*
− Pronotum without punctation or with very indistinct one ..... *Himacerus*

Genus *Prostemma* Laporte, 1832

Prostemma Laporte, 1832: 12.
Poecilta Stål, 1873: 108 (as subgenus of *Nabis*).

1. *Prostemma hilgendorfii* Stein, 1878 (Pl. 1, 1−5)

Prostemma hilgendorfii Stein, 1878: 378. Type: ?; TL: Japan, Yedo [=Tokyo]; TD: ZMHB
Prostemma hilgendorfii: Kerzhner, 1988: 768 (Korean record).

Diagnosis: Hemelytra comparatively short; posterior lobe of pronotum reddish brown.

Description: Body generally dark brown, glossy, elongated oval; hemelytral membrane reaching to sixth abdominal segment. Body length 6.05−6.44 mm, width 2.24−2.51 mm.

Head. Head generally dark brown, glossy, densely covered with short dark brown setae and sparsely covered with long dark brown setae; ocellus dark brown, not prominent; antennae generally reddish brown, apex of second antennal segment dark brown, generally long and thin with short setae; rostrum generally dark brown, fourth rostral segment paler toward apex, apex of rostrum reaching to forecoxa.

Thorax. Pronotum generally dark brown, glossy, densely covered with short dark brown setae and sparsely covered with long dark brown setae, anterior pronotal lobe dark brown, glossy, posterior pronotal lobe reddish brown with sparse small punctuation; scutellum dark brown, posterior apex of scutellum reddish brown; hemelytra generally yellowish brown with dark brown and yellowish brown pattern, membrane generally dark brown, apex of membrane yellowish brown; legs generally reddish brown, fore femur very thick with dark brown spinules on ventral, apex of middle and hind tibia dark brown.

Abdomen. Abdomen generally dark brown, densely covered with short brown setae and sparsely covered with long brown setae; parameres symmetry with strongly curved, apex blunt; aedeagus membranous, tube shaped with large and small spinules along with midline.

Female: Same with male.

Specimens examined: 2♂2♀, Chungnam National University, Gung-dong, Yuseong-gu, Daejeon, 30.vii.2015, H.D. Lee; 1♂, Chungnam National University, Gung-dong, Yuseong-gu, Daejeon, 22.iii.2014, J.G. Kim.

Biology: This species is a ground-inhabiting species (in litter layer, under stones), and is a specialized predator of true bugs primarily belonging to the family Lygaeidae. It feeds on *Pyrrhocoris sinuaticollis* Reuter, 1885 and *Horridipamera lateralis* (Scott, 1874).

Distribution: Korea, China, Japan, Russia.

Region: Palaearctic.

Korea: GG, CN*, GB, JN, JJ.

2. *Prostemma kiborti* Jakovlev, 1889 (Pl. 1, 6−10)

Prostemma kiborti Jakovlev, 1889a: 80. Type: male; TL: Russia, Torgashino, nr Krasnoyarsk; TD: ZMAS.
Prostemma bivittata Jakovlev, 1889a: 81 (syn. Kerzhner, 1968: 848).
Prostemma lugubris Jakovlev, 1889b: 338 (syn. Kerzhner, 1968: 848).
Nabis longicollis Reuter and Poppius, 1909: 9, 14 (syn. Kerzhner, 1968: 848).
Prostemma flavipennis Fukui, 1927: 82 (syn. Kerzhner, 1968: 848).
Prostemma fulvipennis Lindberg, 1934: 32 (syn. Kerzhner, 1968: 848).
Prostemma quelpartense Miyamoto and Lee, 1966: 369 (syn. Kerzhner, 1968: 848).
Prostemma flavipennis: Zool. Soc. Kor., 1968: 25 (Korean record).

Diagnosis: Hemelytra very short, outer part with pale yellowish brown pattern.

Description: Body generally dark brown, glossy, elongated oval; hemelytral membrane reaching to second abdominal segment. Body length 8.94−10.18 mm, width 3.06−3.57 mm.

Head. Head generally dark brown, glossy, densely covered with short dark brown setae and sparsely covered with long dark brown setae; ocellus dark brown, not prominent; antennae generally dark brown, first and second antennal segment dark brown, third and fourth antennal segment pale brown, each basal part of antennal segment dark brown, long and thin with short setae; rostrum generally dark brown, fourth rostral segment paler toward apex, apex of rostrum reaching to forecoxa.

Thorax. Pronotum generally dark brown, glossy, densely covered with short dark brown setae and sparsely covered with long dark brown setae, anterior pronotal lobe dark brown, glossy, posterior pronotal lobe dark brown, glossy, dense small punctuation; scutellum generally dark brown; hemelytra dark brown, outer part with pale yellowish brown pattern, very short, membrane absent; legs generally dark brown, fore femur dark brown with dark brown spinules on ventral, apex yellowish brown, generally very thick, fore tibia yellowish brown, thicker toward apex, middle and hind femur dark brown, 1/2 basal part yellowish brown, middle and hind tibia generally brown, apex dark brown, sparse short dark brown spines.

Abdomen. Abdomen generally dark brown, densely covered with short brown setae and sparsely covered with long brown setae; parameres symmetry, triangle shaped, apex blunt; aedeagus membranous, tube shaped with three triangular sclerite.

Female: Same with male.

Specimens examined: 1♂, Chungnam National University, Gung-dong, Yuseong-gu, Daejeon, 14.vii.2014, J.G. Kim; 1♂, Gajwa-dong, Jinju-si, Gyeongsangnam-do, 26.iv.2014, S.M. Oh; 1♂, Wolpyeong-dong, Seo-gu, Daejeon, 12.viii.2015, H.D. Lee; 2♀, Wolpyeong-dong, Seo-gu, Daejeon, 5.vii.2015, H.D. Lee; 1♂, Wolpyeong-dong, Seo-gu, Daejeon, 5.vii.2015, H.D. Lee; 1♀, Wondang-ri, Jangnam-myeon, Yeoncheon-gun, Gyeonggi-do, 4.vii.2014, D.H. Kim; 1♀, Yul-ri, Yongsan-myeon, Yeongdong-gun, Chungcheongbuk-do, 18.vi.2015, H.D. Lee; 1♂, Gyorae-ri, Jocheon-eup, Jeju-si, Jeju-do, 5.ix.2015, H.D. Lee.

Biology: This species is found in the litter layer near river banks. It is a specialized predator of true bugs, primarily belonging to the family Lygaeidae. It has been observed to feed on *Horridipamera lateralis* (Scott, 1874).

Distribution: Korea, China, Japan, Mongolia, Russia, Kazakhstan.

Region: Palaearctic.

Korea: GW, GG, CB*, CN*, GB, GN*, JJ, YG, HHB.

Genus *Gorpis* Stål, 1859

Gorpis Stål, 1859: 377.
Dodonaeus Distant, 1904: 398 (syn. H.M. Harris, 1930: 422).

3. *Gorpis japonicus* Kerzhner, 1968 (Pl. 1, 11−15)

Gorpis japonicus Kerzhner, 1968: 849. Type: male; TL: Honshu, Shinano Prov., Ohya, nr Ueda; TD: KUEC.
Gorpis cribraticollis: Zool. Soc. Kor., 1968: 25 (Korean record).

Diagnosis: Fore coxa rod shaped, fore tibia in curved; hemelytra pale yellowish brown with reddish brown pattern.

Description: Body generally pale yellowish brown, elongated. Body length 11.98−13.30 mm, width 2.23−2.80 mm.

Head. Head generally pale brown, covered with dense long pale yellow setae; ocellus reddish brown, prominent; compound eye dark brown, prominent; antennae generally pale yellowish brown, basal part of first antennal segment reddish brown, generally long and thin with short setae; rostrum generally pale brown, fourth rostral segment darker toward apex, apex of rostrum reaching to between fore coxa and middle coxa.

Thorax. Pronotum generally pale yellowish brown, covered with short pale yellow setae, anterior pronotal lobe pale yellowish brown without punctuation, posterior pronotal lobe yellowish brown with dense small punctuation; scutellum pale brown, posterior apex of scutellum elongated; hemelytra generally pale yellowish brown with reddish pattern, membrane elongated, exceed apex of abdomen; legs generally pale yellowish brown, fore coxa rod shaped, fore tibia in curved, apex of middle and hind femur with reddish brown ring, legs generally long and thin with short setae.

Abdomen. Abdomen generally pale yellowish brown, covered with short pale yellow setae; parameres symmetry, apex strongly curved with a long and thin process; aedeagus membranous, tube shaped, basal part of aedeagus with three hook shaped sclerite, middle part of aedeagus with small spinules with one large spinule, apex of aedeagus with dense small spinules.

Female: As in male except for abdomen somewhat longer and wider than male.

Specimens examined: 1♂, Daeseong-san (Mt), Pyeongyang, North Korea (in label: Korea, Tesong-san bei Phjongjang), 5.viii.1977, M. Josifov; 1♀, Yongak-san (Mt), Pyeongyang, North Korea (in label: Korea, Rjongaksan 12 km W Phjongjang), 10.vii.1974, M. Josifov; 1♀, Geumgang arboretum, Donam-ri, Geumnam-myeon, Sejong, 28.vii.2014, J.G. Kim.

Biology: Unknown.

Distribution: Korea, China, Japan.

Region: Palaearctic.

Korea: GW, GG, CN, GB, GN, PN*.

4. *Gorpis brevilineatus* (Scott, 1874) (Pl. 2, 16–20)

Nabis brevilineatus Scott, 1874: 445. Type: male, female; TL: Japan; TD: BMNH.
Gorpis suzukii Matsumura, 1913: 179 (syn. Esaki, 1929: 224).
Oronabis gorpiformis Hsiao, 1964: 79, 85 (downgraded to subspecies by Kerzhner, 1968: 850; syn. Hsiao and Ren, 1981: 550).
Gorpis brevilineatus: Kim et al., 1978: 79 (Korean record).

Diagnosis: Fore coxa rod shaped, fore tibia in curved; hemelytra orange brown.

Description: Body generally orange brown, elongated. Body length 9.42–10.05 mm, width 2.31–2.83 mm.

Head. Head generally orange brown, densely covered with short pale yellow setae; ocellus reddish brown, prominent; compound eye dark brown, prominent; antennae generally pale orange brown, apex of second antennal segment dark brown, generally long and thin with short setae; rostrum generally pale brown, fourth rostral segment dark brown, apex of rostrum reaching to between fore coxa and middle coxa.

Thorax. Pronotum generally orange brown, covered with short pale yellow setae, anterior pronotal lobe pale orange brown with somewhat uneven, posterior pronotal lobe pale orange brown with dense small punctuation; scutellum pale brown, posterior apex of scutellum elongated; hemelytra generally orange brown, membrane elongated, exceed apex of abdomen; legs generally pale yellowish brown, fore coxa yellowish brown, rod shaped, fore femur orange brown with two brown ring, legs generally long and thin with short setae.

Abdomen. Abdomen generally pale yellowish brown, covered with short pale yellow setae, part of connexivum exposed; parameres symmetry, apex strongly curved with a short and thick process; aedeagus membranous, tube shaped, basal part of aedeagus with one hook shaped sclerite and one rod shaped sclerite, middle part of aedeagus with small spinules, apex of aedeagus with two long sclerites.

Female: As in male except for abdomen somewhat longer and wider than male.

Specimens examined: 7♂4♀, Geumgang arboretum, Donam-ri, Geumnam-myeon, Sejong, 5.vii.2015, H.D. Lee; 3♂3♀, Geumgang arboretum, Donam-ri, Geumnam-myeon, Sejong, 3.vi.2015, H.D. Lee; 1♂, Oncheon-ri, Banpo-myeon, Gongju-si, Chungcheongnam-do, 13.v.2015, S.H. Jung; 2♂1♀, Myeongdal-ri, Seojong-myeon, Yangpyeong-gun, Gyeonggi-do, 16.v.2015, H.D. Lee; 1♀, Jichon-ri, Cheongcheon-myeon, Goesan-gun, Chungcheongbuk-do, 18.vi.2015, H.D. Lee.

Biology: This species is a common species in the Korean Peninsula, and is found on grasses and shrubs.

Distribution: Korea, China, Japan, Russia.

Region: Palaearctic.

Korea: GW, GG, CB*, CN*, GB, GN, JJ.

Genus *Arbela* Stål, 1866

Arbela Stål, 1866: 38, 42.
Lorichius Distant, 1904: 402 (syn. Breddin, 1905: 145).
Arbelopsis Poppius, 1915: 5 (syn. H.M. Harris, 1938: 563).

5. *Arbela tabida* (Uhler, 1896) (Pl. 2, 21−25)

Metatropiphorus tabidus Uhler, 1896: 268. Type: female; TL: Japan; TD: USNM.
Arbela szechuana Hsiao, 1964: 80, 86 (syn. Kerzhner, 1970: 299).
Arbela tabida: Kerzhner, 1996: 92 (Korean record).

Diagnosis: Fore femur greenish, long and thin, sparse thick dark brown spines; basal part of hind tibia swollen.

Description: Body generally pale greenish brown, very thin and elongated; legs greenish. Body length 5.45−5.64 mm, width 0.90−0.91 mm.

Head. Head generally dark brown, glossy, sparsely covered with silky, white setae; ocellus dark brown, prominent; around ocellus reddish dark brown, glossy; compound eye dark brown, large and prominent; antennae generally brown, basal part of first antennal segment pale brown, generally long and thin with short setae; rostrum generally greenish, first rostral segment and fourth rostral segment dark brown, apex of rostrum reaching to middle coxa.

Thorax. Pronotum generally yellowish brown, covered with short pale yellow setae, collar dark brown, glossy, anterior pronotal lobe dark brown, glossy, posterior pronotal lobe pale brown with dense somewhat large punctuation; scutellum generally brown, posterior apex of scutellum pale brown; hemelytra generally pale brown, membrane elongated, exceed apex of abdomen; legs generally greenish, fore femur greenish, long and thin, sparse thick dark brown spines, basal part of hind tibia swollen, densely covered with short pale yellowish setae, legs generally long and thin with short setae.

Abdomen. Abdomen generally greenish, apex of abdomen brown; parameres symmetry, apex slightly curved with one somewhat short and thin process; aedeagus membranous, tube shaped, basal part of aedeagus with seventeen short ros shaped sclerite, middle part of aedeagus with one crenate sclerite, apex of aedeagus with two crenate sclerites.

Female: As in male except for abdomen somewhat longer and wider than male, basal part of hind tibia not swollen.

Specimens examined: 1♂, Geumgang arboretum, Donam-ri, Geumnam-myeon, Sejong, 28.vii. 2014, H.D. Lee; 3♂3♀, Maebang-san (Mt), Geumtan-dong, Yuseong-gu, Daejeon, 12.viii.2014, H.D. Lee; 1♂, Samhoe-ri, Cheongpyeong-myeon, Gapyeong-gun, Gyeonggi-do, 3.viii.2015, H.D. Lee; 1♀, Wondang-ri, Jangnam-myeon, Yeoncheon-gun, Gyeonggi-do, 11.viii.2015, H.D. Lee; 1♂, Chungnam National University, Gung-dong, Yuseong-gu, Daejeon, 17.viii.2015, H.D. Lee.

Biology: This species inhabits grasses and shrubs in moist, shady areas, and may be attracted to light traps.

Distribution: Korea, China, Japan.

Region: Palaearctic.

Korea: GG*, CN*, GB.

Genus *Himacerus* Wolff, 1811

Himacerus Wolff, 1811: 5.

6. *Himacerus nodipes* Hsiao, 1964

Himacerus nodipes Hsiao, 1964: 81, 87. Type: male; TL: China, Sichuan, Mt. Emei, Jiulaodong; TD: IZAS.
Himacerus nodipes: Kwon et al., 2001: 70 (Korean record).

Diagnosis: Pronotum with indistinct punctuation, postetior margin of seventh abdominal segment rounded.

Description: Body generally brown, hemelytra comparatively short, abdomen exposed, second antennal segment longer than length of pronotum. Body length 8.10 mm, width 2.80 mm.

Head. Head generally brown, between eye and antenna and posterior ocular area dark brown in lateral view, densely covered with silky, white setae; ocellus reddish brown, prominent; compound eye dark brown, prominent; antennae generally brown, apex of second antennal segment dark brown, generally long and thin with short setae; rostrum generally brown, first rostral segment dank brown, fourth rostral segment darker toward apex, apex of rostrum reaching to between fore coxa and middle coxa.

Thorax. Pronotum generally brown, covered with short pale yellow setae, anterior pronotal lobe dark brown, somewhat uneven, posterior pronotal lobe brown with indistinct punctuation; scutellum generally brown with one longitudinal dark brown stripe; hemelytra generally brown, membrane comparatively short; legs generally pale brown to brown with dark brown pattern, legs generally long and thin with short setae.

Abdomen. Abdomen generally brown, covered with short pale yellow setae, abdomen exposed; outer margin of connexivum with reddish brown pattern, posterior margin of seventh abdominal segment rounded; parameres symmetry, branched two part, apex strongly curved; aedeagus membranous, tube shaped, basal part of aedeagus with dense spine shaped sclerite, middle part of aedeagus with dense larger sclerite, apex of aedeagus with two crenate sclerites.

Female: As in male except for abdomen somewhat longer and wider than male.

Specimens examined: Kwon et al. (2001) recorded this species in Korea. However, we could not examine this species due to the lack of specimens.

Biology: Unknown.

Distribution: Korea, China, Vietnam.

Region: Palaearctic, Oriental region.

Korea: GB.

7. *Himacerus apterus* (Fabricius, 1798) (Pl. 2, 26−30)

Reduvius apterus Fabricius, 1798: 546. Type: ?; TL: France; TD: Lost.
Nabis subapterus Latreille, 1804: 256.
Nabis brevipennis Hahn, 1836: 32 (syn. Amyot and Serville, 1843: 331).
Nabis dis China, 1925: 467 (syn. Kerzhner, 1993: 97).
Nabis apterus: Esaki, 1950: 254 (Korean record).

Diagnosis: Pronotum with indistinct punctuation, postetior margin of seventh abdominal segment rounded.

Description: Body generally brown, hemelytra comparatively short, abdomen exposed, second antennal segment longer than length of pronotum. Body length 9.33−11.51 mm, width 2.64−3.81 mm.

Head. Head generally brown, between eye and antenna and posterior ocular area dark brown in lateral view, densely covered with silky, white setae; ocellus reddish brown, prominent; compound eye dark brown, prominent; antennae generally brown, apex of second antennal segment dark brown, generally long and thin with short setae; rostrum generally brown, first rostral segment dank brown, fourth rostral segment darker toward apex, apex of rostrum reaching to between fore coxa and middle coxa.

Thorax. Pronotum generally brown, covered with short pale yellow setae, anterior pronotal lobe dark brown, somewhat uneven, posterior pronotal lobe brown with indistinct punctuation; scutellum generally brown with one longitudinal dark brown stripe; hemelytra generally brown, membrane comparatively short; legs generally pale brown to brown with dark brown pattern, legs generally long and thin with short setae.

Abdomen. Abdomen generally brown, covered with short pale yellow setae, abdomen exposed; outer margin of connexivum with reddish brown pattern, posterior margin of seventh abdominal segment rounded; parameres symmetry, branched two part, apex strongly curved; aedeagus membranous, tube shaped, basal part of aedeagus with dense spine shaped sclerite, middle part of aedeagus with dense larger sclerite, apex of aedeagus with two crenate sclerites.

Female: As in male except for abdomen somewhat longer and wider than male.

Specimens examined: 1♂, 300 m (Alt), Suyang-san (Mt), Haeju, Hwanghaenam-do, North Korea (in label: korea, Sujang-san bei Hedzu, 300 m), 16.ix.1989, M. Josifov; 2♂2♀, Gaojak-ri, Nammyeon, Yanggu-gun, Gangwon-do, 10.vii.2014, H.D. Lee; 3♂3♀, Jeoksang-san (Mt), Bukchang-ri, Jeoksang-myeon, Muju-gun, Jeollabuk-do, 6.viii.2014, H.D. Lee; 1♂, Jichon-ri, Yanggang-myeon, Yeongdong-gun, Chungcheongbuk-do, 24.vi.2014, H.D. Lee; 1♂, Maebang-san (Mt), Geumtan-dong, Yuseong-gu, Daejeon, 12.viii.2014, S.M. Oh; 1♂, Boksu-dong, Seo-gu, Daejeon, 12.vi.2014, H.D. Lee; 1♂, Wondang-ri, Jangnam-myeon, Yeoncheon-gun, Gyeonggi-do, 4.vii.2014, H.D. Lee; 1♂, Jeoksang-san (Mt), Bukchang-ri, Jeoksang-myeon, Muju-gun, Jeollabuk-do, 6.viii.2014, H.D. Lee.

Biology: This species is the most common species among congeners in South Korea, and is found on grasses and shrubs. It is an important species utilized in the control of agricultural and forest pests (Kerzhner, 1996).

Distribution: Korea, China, Japan, Georgia, Russia, Europe, Kazakhstan, Canada.

Region: Palaearctic, Nearctic.

Korea: GW, GG, CB, CN*, JB*, GB, JJ, HGB, YG, PB, PN, HHN.

Genus *Nabis* Latreille, 1802

Nabis Latreille, 1802: 248.

8. *Nabis limbatus* Dahlbom, 1851 (Pl. 3, 31−35)

Nabis limbatus Dahlbom, 1851: 227. Type: male, female; TL: Sweden, Kalmar Prov., between Ruda and Berga; TD: not located.
Gorpis limbatus: Lee and Kwon, 1991: 11 (Korean record).

Diagnosis: Hemelytra very short; abdomen generally yellowish brown with three longitudinal dark brown stripe.

Description: Body generally brown, elongated; hemelytra very short; abdomen exposed. Body length 7.03−7.35 mm, width 1.68−1.69 mm.

Head. Head generally pale brown, between eye and antenna and posterior ocular area dark brown in lateral view, covered with silky, white setae; two long setae between compound eye; ocellus reddish brown, somewhat prominent; compound eye dark brown, prominent; antennae generally pale brown, apex of second antennal segment dark brown, generally long and thin with short setae; rostrum generally pale brown, fourth rostral segment darker toward apex, apex of rostrum reaching to middle coxa.

Thorax. Pronotum generally dark brown with one longitudinal dark brown stripe, covered with silky, short white setae, anterior pronotal lobe dark brown, somewhat uneven, posterior pronotal lobe brown with dense small punctuation; scutellum pale brown with one longitudinal dark brown stripe, both side of scutellum with depressions; hemelytra generally dark brown, membrane very short; legs generally pale brown, femur with dark brown pattern, legs generally long and thin with short setae.

Abdomen. Abdomen generally yellowish brown with three longitudinal dark brown stripe, abdomen exposed; parameres symmetry, semicircle shaped, apex of paramere sharp; aedeagus membranous, tube shaped, basal part of aedeagus with one rod shaped sclerite, apex of aedeagus with dense small spinules.

Female: As in male except for abdomen somewhat longer and wider than male and connexivum with longitudinal reddish brown stripe.

Specimens examined: 2♂, 1400 m (Alt), Samjiyeon-gun, Yanggang-do, North Korea (in label: Korea, Jangkang-do, Samdzijon, 1400 m), 28.viii.1977, M. Josifov; 1♀, 1000 m (Alt), Boseo-ri, Samjiyeon-gun, Yanggang-do, North Korea (in label: Korea, Jangkang-do, Bothe-ri, 1000 m), 29.viii.1977, M. Josifov.

Biology: Unknown.

Distribution: Korea, China, Japan, Mongolia, Russia, Europe, Canada.

Region: Palaearctic, Nearctic.

Korea: YG*.

9. *Nabis sinicus* (Hsiao, 1964) (Pl. 3, 36−40)

Halonabis sinicus Hsiao, 1964: 82, 87. Type: male; TL: China, Tianjin; TD: NKUM.
Nabis sinicus: Lee and Kwon, 1994: 63 (Korean record).

Diagnosis: Posterior pronotal lobe comparatively wide; hemelytra and membrane elongated, exceed apex of abdomen.

Description: Body generally pale brown, oval; femuer comparatively thick. Body length 6.98–7.21 mm, width 2.25–2.81 mm.

Head. Head generally pale brown, between eye and antenna and posterior ocular area dark brown in lateral view, head dark brown in ventral view, generally covered with short pale yellowish setae and densely covered in ventral view; two long setae between compound eye; ocellus reddish brown, somewhat prominent; compound eye dark brown, prominent; antennae generally pale brown, long and thin with short setae; rostrum generally pale brown, fourth rostral segment darker toward apex, apex of rostrum reaching to between fore coxa and middle coxa.

Thorax. Pronotum generally pale brown, covered with silky, white setae; anterior pronotal lobe pale brown with one longitudinal dark brown stripe, somewhat uneven, posterior pronotal lobe markedly wider than anterior pronotal lobe, arched upward, without one longitudinal dark brown stripe; scutellum pale brown with one longitudinal dark brown stripe; hemelytra generally brown, membrane elongated, exceed apex of abdomen; legs generally pale brown, femur with brown pattern, fore and middle femuer comparatively thick.

Abdomen. Abdomen generally pale brown, covered with short pale yellowish setae; outer margin of connexivum with reddish brown pattern, slightly exposed; parameres symmetry, rod shaped, middle of paramere with one small spinule, apex of paramere curved; aedeagus membranous, tube shaped, basal part of aedeagus with four hook shaped sclerite.

Female: As in male except for abdomen somewhat longer and wider than male.

Specimens examined: 2♂, Nampo, Pyeongannam-do, North Korea (in label: Korea, Nampho), 2.viii.1974, M. Josifov; 1♀, Nampo, Pyeongannam-do, North Korea (in label: Korea, Nampho), 21.viii.1977, M. Josifov; 1♀, Gojeong-ri, Songsan-myeon, Hwaseong-si, Gyeonggi-do, 9.vii.2015, J.G. Kim.

Biology: This species is found in moist, grassy areas, such as salt marshes. It may be attracted to light traps.

Distribution: Korea, China, Mongolia, Russia.

Region: Palaearctic.

Korea: GG*, PN*.

10. *Nabis sauteri* (Poppius, 1915) (Pl. 3, 41–45)

Reduviolus sauteri Poppins, 1915: 4. Type: male; TL: Taiwan, Anping; TD: DEIC.
Nabis sauteri: Kerzhner, 1988: 765 (Korean record).

Diagnosis: Hemelytra and membrane comparatively short; pronotum without one longitudinal dark brown stripe.

Description: Body yellowish dark brown, elongated; hemelytra and membrane comparatively short, abdomen slightly exposed. Body length 6.30–6.99 mm, width 1.67–1.89 mm.

Head. Head yellowish dark brown, covered with short silky, white setae, two long setae between compound eye between eye; ocellus reddish brown, prominent; compound eye dark brown, prominent; antennae generally pale brown, long and thin with short setae; rostrum generally dark

brown, second rostral segment dark brown in dorsal view, fourth rostral segment darker toward apex, apex of rostrum reaching to fore coxa.

Thorax. Pronotum generally yellowish dark brown without one longitudinal dark brown stripe, comparatively flat, covered with silky, white setae; anterior pronotal lobe yellowish dark brown, uneven, posterior pronotal lobe yellowish dark brown sparsely covered with short setae; scutellum yellowish dark brown without one longitudinal dark brown stripe or paler; hemelytra generally yellowish dark brown, membrane comparatively short; legs generally yellowish dark brown, legs generally long and thin with short setae.

Abdomen. Abdomen generally yellowish dark brown, covered with short silky, white setae; connexivum yellowish dark brown, outer margin of connexivum with reddish brown pattern, part of abdomen and connexivum exposed, abdomen yellowish brown, outer margin of abdomen with longitudinal reddish brown stripe in ventral view, parameres symmetry, generally blunt, apex of paramere sharp; aedeagus membranous, tube shaped, basal part of aedeagus with one rod shaped sclerite, middle part of aedeagus with two hook shaped sclerites and dense small spinules.

Female: As in male except for abdomen somewhat longer and wider than male.

Specimens examined: 2♂, Nampo, Pyeongannam-do, North Korea (in label: Korea, Nampho), 2.viii.1974, M. Josifov; 1♀, Haeju, Hwanghaenam-do, North Korea (in label: Korea, Hedzu), 16.ix. 1989, M. Josifov.

Biology: Unknown.

Distribution: Korea, Japan, Russia.

Region: Palaearctic.

Korea: PN*, HHN*.

11. *Nabis apicalis* Matsumura, 1913 (Pl. 4, 46–50)

Nabis apicalis Matsumura, 1913: 177. Type: female; TL: Honshu, Nagoya; TD: EIHU.
Nabis apicalis: Lee and Kwon, 1991: 12 (Korean record).

Diagnosis: Hemelytra very short; apex of hind femur with dark brown ring.

Description: Body somewhat dark brown, gutta shaped, hemelytra very short, abdomen exposed. Body length 5.41–5.67 mm, width 1.72–2.40 mm.

Head. Head somewhat dark brown, dark brown in ventral view, generally covered with short silky, white setae and densely covered in ventral view; ocellus reddish brown, prominent; compound eye dark brown, prominent; antennae generally brown, apex of second antennal segment dark brown, generally long and thin with short setae; rostrum generally pale brown, fourth rostral segment darker toward apex, apex of rostrum reaching to between fore coxa and middle coxa.

Thorax. Pronotum somewhat dark brown without one longitudinal dark brown stripe, covered with short silky, white setae, anterior pronotal lobe somewhat dark brown, uneven, posterior pronotal lobe somewhat dark brown, sparsely covered with short setae; scutellum somewhat dark brown, with one longitudinal dark brown stripe; hemelytra somewhat dark brown, very short, membrane very short; membrane reaching to third abdominal segment; legs generally brown with dark brown pattern, apex of hind femur with dark brown ring, legs generally long and thin with short setae.

Abdomen. Abdomen somewhat dark brown, covered with short silky, white setae, abdomen exposed; connexivum brown with dark brown pattern, abdomen dark brown in ventral view; parameres symmetry, basal part of paramere with a somewhat large spinule, apex of paramere large and wide; aedeagus membranous, tube shaped, middle part of aedeagus with dense small sclerites, apex of aedeagus with one crenate sclerite.

Female: As in male except for abdomen somewhat longer and wider than male.

Specimens examined: 2♂ Dongchon-ri, Hwacheon-eup, Hwacheon-gun, Gangwon-do, 16.vii. 2015, H.D. Lee; 1♂, Gyesan-ri, Gadeok-myeon, Sangdang-gu, Cheongju-si, Chungcheongbuk-do, 11.vii.2014, H.D. Lee; 1♂, Seong-yeon-ri, Cheongso-myeon, Boryeong-si, Chungcheongnam-do, 28. viii.2015, H.D. Lee; 1♀, Gyorae-ri, Jocheon-eup, Jeju-si, Jeju-do, 5.ix.2015, H.D. Lee; 1♂1♀, Donggok-ri, Ongnyong-myeon, Gwangyang-si, Jeollanam-do, 2.v.2015, H.D. Lee.

Biology: This species is a common species among congeners in South Korea. It is found on grasses and shrubs where it preys upon small invertebrates, chiefly ground-dwelling arthropods.

Distribution: Korea, China, Japan.

Region: Palaearctic.

Korea: GW, GG, CB*, CN*, GB, GN, JN, JJ.

12. *Nabis reuteri* Jakovlev, 1876 (Pl. 4, 51−55)

Nabis reuteri Jakovlev, 1876: 230. Type: female; TL: Russia, Amur Riv., Albazin; TD: ZMAS.
Nabis reuteri: Zool. Soc. Kor., 1968: 25 (Korean record).

Diagnosis: Scutellum dark brown, both side of scutellum with pale brown spot; hemelytral membrane elongated, exceed apex of abdomen.

Description: Body generally brown, gutta shaped; hemelytral membrane exceed apex of abdomen. Body length 5.92−6.32 mm, width 1.92−1.93 mm.

Head. Head generally brown, between eye and antenna and posterior ocular area dark brown in lateral view, head dark brown in ventral view, generally covered with short silky, white setae and densely covered in ventral view; ocellus reddish brown, prominent; compound eye dark brown, prominent; antennae generally pale brown, generally long and thin with short setae; rostrum generally dark brown, fourth rostral segment darker toward apex, apex of rostrum reaching to between fore coxa and middle coxa.

Thorax. Pronotum generally brown with one longitudinal dark brown stripe, comparatively flat, covered with silky, white setae, anterior pronotal lobe brown with one longitudinal dark brown stripe, uneven, posterior pronotal lobe brown, sparsely covered with short setae; scutellum dark brown, both side of scutellum with pale brown spot, sometimes individual variation in size; hemelytra generally brown, membrane exceed apex of abdomen; legs generally brown, apex of hind femur with dark brown ring, legs generally long and thin with short setae.

Abdomen. Abdomen generally brown, covered with yellowish plae brown setae; connexivum brown, outer margin of connexivum with reddish brown pattern, part of connexivum exposed, abdomen dark brown, outer margin of abdomen with reddish brown pattern in ventral view; parameres symmetry, basal part of paramere with a spinule, apex of paramere large and wide; aedeagus membranous, tube shaped, apex of aedeagus with two crenate sclerites.

Female: As in male except for abdomen somewhat longer and wider than male.

Specimens examined: 1♂, 200 m (Alt), Geumgang-san (Mt), North Korea (in label: Korea, Kymgang-san, 200 m); 1♂1♀, Hoenggye-ri, Daegwanryeong-myeon, Pyeongchang-gun, Gangwon-do, 8.x.2015, H.D. Lee; 1♀, Duta-san (Mt), Yongjeong-ri, Chopyeong-myeon, Jincheon-gun, Chungcheongbuk-do, 29.v.2014, J.G. Kim.
Biology: This species is found on low herbaceous plants near forest trails.
Distribution: Korea, China, Japan, Russia.
Region: Palaearctic.
Korea: GW, GG, CB*, GB, GN, JB, JJ, YG, HGB.

13. *Nabis flavomarginatus* Scholtz, 1847 (Pl. 4, 56−60)

Nabis flavomarginatus Scholtz, 1847: 114. Type: male, female; TL: Poland, Silesia; TD: not located.
Nabis dorsatus Dahlbom, 1851: 227 (syn. Baerensprung, 1860: 22).
Nabis nervosus Boheman, 1852: 77 (syn. Flor, 1860: 696).
Nabis lhesgicus Kolenati, 1857: 471 (syn. Fieber, 1861: 387).
Nabis flavomarginatus: Lee and Kwon, 1991: 12 (Korean record).

Diagnosis: Anterior pronotal lobe brown with three longitudinal dark brown stripe; abdomen generally dark brown with one longitudinal yellowish brown stripe, connexivum yellowish brown; hemelytral membrane not reaching to apex of abdomen.
Description: Body generally yellowish brown, elongated; scutellum generally dark brown, both side of cutellum with yellowish brown spot; hemelytral membrane reaching to fourth abdominal segment. Body length 9.06−9.28 mm, width 2.60−3.33 mm.
Head. Head generally dark brown with glossy, longitudinal dark brown stripe. between eye and antenna and posterior ocular area dark brown, glossy in lateral view, generally covered with short silky, white setae and densely covered in ventral view; ocellus reddish brown, somewhat prominent; compound eye dark brown, prominent; antennae generally brown, generally long and thin with short setae; rostrum generally reddish brown, apex of fourth rostral segment dark, apex of rostrum reaching to between fore coxa and middle coxa.
Thorax. Pronotum generally pale brown with three longitudinal dark brown stripe, generally covered with short silky, white setae, anterior pronotal lobe pale brown with three longitudinal dark brown stripe, somewhat uneven, posterior pronotal lobe pale brown with one longitudinal dark brown stripe, sparsely covered with short setae; scutellum generally dark brown, both side of scutellum with pale brown spot, apex with depressions; hemelytra generally brown, membrane reaching to fourth abdominal segment; legs generally reddish dark brown, legs generally long and thin with short setae.
Abdomen. Abdomen generally dark brown with one longitudinal yellowish brown stripe, gengerally covered with yellowish plae brown setae, connexivum yellowish brown, parameres symmetry, basal part of paramere with a spine shaped small process, apex of paramere sharp; aedeagus membranous, tube shaped, basal part of aedeagus with a rod shaped sclerites, middle part of aedeagus with small spinules.
Female: As in male except for abdomen somewhat longer and wider than male.

Specimens examined: 3♂3♀, Hoenggye-ri, Daegwallyeong-myeon, Pyeongchang-gun, Gangwon-do, 30.vi.2016, H.D. Lee; 1♀, Samjiyeon-gun, Yanggang-do, North Korea (in label: Korea, Samdzijon, Jangkang-do), 5.ix.1989, M. Josifov; 1♀, 1900 m (Alt), Baekdu-san (Mt), Samjiyeon-gun, Yanggang-do, North Korea (in label: Korea, Jangkang-do, Samdzijon-Pektusan, 1900 m), 26.viii.1977, M. Josifov.

Biology: This species inhabits high altitude areas.

Distribution: Korea, China, Japan, Russia, Georgia, Turkey, Mongolia, Kyrgyzstan, Armenia, Kazakhstan, Europe, Canada, Greenland, Alaska.

Region: Palaearctic, Nearctic.

Korea: GW*, YG.

14. *Nabis intermedius* Kerzhner, 1963 (Pl. 5, 61−65)

Nabis intermedius Kerzhner, 1963: 29. Type: male; TL: Russia, Amur Prov. Simonovo; TD: ZMAS.
Nabis intermedius: Kerzhner, 1988: 767 (Korean record).

Diagnosis: Head generally brown, between eye and antenna and posterior ocular area dark brown in lateral view; hemelytral membrane comparatively short, reaching to apex of abdomen.

Description: Body generally brown, gutta shaped; scutellum dark brown, both side of scutellum with pale brown spot. Body length 5.79−5.88 mm, width 1.70−1.81 mm.

Head. Head generally brown with longitudinal dark brown stripe, between eye and antenna and posterior ocular area dark brown in lateral view, generally covered with short silky, white setae and densely covered in ventral view; ocellus reddish brown, prominent; compound eye dark brown, prominent; antennae generally pale brown, third and fourth antennal segment dark brown, generally long and thin with short setae; rostrum generally brown, fourth rostral segment darker toward apex, apex of rostrum reaching to between fore coxa and middle coxa.

Thorax. Pronotum generally brown with three longitudinal dark brown stripe, covered with silky, white setae, anterior pronotal lobe brown with three longitudinal dark brown stripe, uneven, posterior pronotal lobe brown with one longitudinal dark brown stripe, sparsely covered with short setae; scutellum dark brown, both side of scutellum with pale brown spot, sometimes individual variation in size; hemelytra generally brown, membrane comparatively short, reaching to apex of abdomen; legs generally brown with dark brown pattern, legs generally long and thin, fore and middle femuer comparatively thick.

Abdomen. Abdomen generally brown, longitudinal dark brown stripe in ventral view, covered with yellowish plae brown setae; connexivum brown; parameres symmetry, basal part of paramere without distinct process, apex of paramere semicircle shaped; aedeagus membranous, tube shaped, basal part of aedeagus with two large and small hook shaped sclerites.

Female: As in male except for hemelytral membrane not exceed apex of abdomen and part of connexivum exposed.

Specimens examined: 1♂, 1000 m (Alt), Boseo-ri, Samjiyeon-gun, Yanggang-do, North Korea (in label: Korea, Jangkang-do, Bothe-ri, 1000 m), 29.viii.1977, M. Josifov; 1♂, 1200 m (Alt), Daehongdan-gun, Yanggang-do, North Korea (in label: Korea, Jangkang-do, Dehongdan, 1200 m), 28.viii.1977, M. Josifov; 1♀, Samjiyeon-gun, Yanggang-do, North Korea (in label: Korea, Jangkang-do, Samdzijon), 19.vii.1974, M. Josifov.

Biology: Unknown.
Distribution: Korea, China, Mongolia, Russia.
Region: Palaearctic.
Korea: YG.

15. *Nabis punctatus mimoferus* Hsiao, 1964 (Pl. 5, 66−70)

Nabis mimoferus Hsiao, 1964: 234, 239 (downgraded by Kerzhner, 1968: 861). Type: male; TL: China, Beijing, Mt Xishan; NKUM.
Nabis feroides lindbergi Remane, 1964: 289 (syn. Kerzhner, 1968: 861).
Nabis punctatus: Kerzhner, 1988: 767 (Korean record).

Diagnosis: Body generally grayish brown; hemelytra generally grayish brown with large and small spots, vein markedly visible.

Description: Body generally grayish brown, elongated; hemelytra parallel-sided; generally covered with short silky, white setae. Body length 6.90−7.34 mm, width 1.65−1.67 mm.

Head. Head generally grayish brown, between eye and antenna and posterior ocular area brown in lateral view, generally covered with short silky, white setae; ocellus reddish brown, prominent; compound eye dark brown, prominent; antennae pale brown, generally long and thin with short setae; rostrum generally reddish brown, second rostral segment dark brown in dorsal view, fourth rostral segment darker toward apex, apex of rostrum reaching to between fore coxa and middle coxa.

Thorax. Pronotum generally grayish brown with one longitudinal brown stripe, covered with silky, white setae, anterior pronotal lobe grayish brown, uneven, posterior pronotal lobe grayish brown with one longitudinal brown stripe, markedly wider than anterior pronotal lobe; scutellum grayish brown with one longitudinal brown stripe; hemelytra generally grayish brown with large and small spots, hemelytra parallel-sided, Cu and R + M markedly visible, Discal cell distinct, membrane elongated, exceed apex of abdomen; legs generally brown, femur with dark brown pattern, legs generally long and thin, fore and middle femuer comparatively thick.

Abdomen. Abdomen generally pale brown, longitudinal dark brown stripe in ventral view; connexivum brown; parameres symmetry, basal part of paramere without distinct process, apex of paramere semicircle shaped; aedeagus membranous, tube shaped, basal part of aedeagus with two same size hook shaped sclerites.

Female: As in male except for abdomen somewhat longer and wider than male.

Specimens examined: 2♂, Daeseong-san (Mt), Pyeongyang, North Korea (in label: Korea, Tesong-san bei Phjongjang), 22.viii.1970, M. Josifov; 1♂, Wondang-ri, Jangnam-myeon, Yeoncheon-gun, Gyeonggi-do, 11.viii.2015, H.D. Lee; 1♂, Pansu-ri, Cheongsan-myeon, Okcheon-gun, Chungcheong-buk-do, 2.vii.2014, H.D. Lee; 3♂2♀, Chungnam National University, Gung-dong, Yuseong-gu, Daejeon, 16.ix.2014, H.D. Lee.

Biology: This species is a common species in the Korean Peninsula, found on low herbaceous plants. *Nabis punctatus punctatus* A. Costa, 1847 is an important species utilized in the control of agricultural and forest pests (Kerzhner, 1996); therefore, the related subspecies *Nabis punctatus mimoferus* Hsiao, 1964 also has the potential to control pests.

Distribution: Korea, China, Mongolia, Russia, Afghanistan, Kazakhstan, Kyrgyzstan, Pakistan, India.

Region: Palaearctic, Oriental.

Korea: GW, GG*, CB*, CN*, HGN, YG, PB, PN, HHN.

16. *Nabis stenoferus* Hsiao, 1964 (Pl. 5, 71−75)

Nabis palliferus Hsiao, 1964: 237, 239 (syn. Kerzhner, 1968: 861). Type: male; TL: China, Tianjin; TD: NKUM.

Nabis mandschuricus Remane, 1964: 263 (syn. Kerzhner, 1968: 861).

Nabis ferus: Zool. Soc. Kor., 1968: 25 (Korean record).

Diagnosis: Body generally pale brown; hemelytra generally pale brown with indistinct spots, vein indistinct.

Description: Body generally pale brown, elongated; hemelytra parallel-sided; generally covered with short silky, white setae. Body length 6.86−8.50 mm, width 1.38−1.77 mm.

Head. Head generally pale brown, between eye and antenna and posterior ocular area brown in lateral view, generally covered with short silky, white setae; ocellus reddish brown, prominent; compound eye dark brown, prominent; antennae pale brown, generally long and thin with short setae; rostrum generally pale brown, second rostral segment dark brown in dorsal view, fourth rostral segment darker toward apex, apex of rostrum reaching to between fore coxa and middle coxa.

Thorax. Pronotum pale brown with one longitudinal brown stripe, covered with silky, white setae, anterior pronotal lobe brown, uneven, posterior pronotal lobe pale brown with dense small punctuation; scutellum pale brown with one longitudinal dark brown stripe; hemelytra generally pale brown with indistinct spots, parallel-sided, vein indistinct, membrane elongated, exceed apex of abdomen; legs pale brown, legs generally long and thin.

Abdomen. Abdomen generally brown, longitudinal dark brown stripe in ventral view, sometimes individual variation in longitudinal dark brown stripe; connexivum pale brown; parameres symmetry, basal part of paramere without distinct process, apex of paramere sharp; aedeagus membranous, tube shaped, basal part of aedeagus with two same size hook shaped sclerites.

Female: As in male except for abdomen somewhat longer and wider than male.

Specimens examined: 2♂1♀, Geumsu-san (Mt), Pyeongyang, North Korea (in label: Korea, Phjongjang, Moranbong), 28.viii.1970, M. Josifov; 2♂2♀, Owol-ri, Seo-myeon, Chuncheon-si, Gangwon-do, 10.vii.2014, H.D. Lee; 3♂2♀, Wondang-ri, Jangnam-myeon, Yeoncheon-gun, Gyeonggi-do, 3.vii.2014, H.D. Lee; 1♂2♀, Pansu-ri, Cheongsan-myeon, Okcheon-gun, Chungcheongbuk-do, 2.vii.2014, H.D. Lee; 5♂5♀, Chungnam National University, Gung-dong, Yuseong-gu, Daejeon, 8.viii.2014, H.D. Lee; 2♂, Gyorae-ri, Jocheon-eup, Jeju-si, Jeju-do, 21.ix.2014, H.D. Lee.

Biology: This species is the most common species among congeners in South Korea. It is found on low herbaceous plants, and may be attracted to light traps. It shares the same habitat with *Nabis punctatus mimoferus* Hsiao, 1964.

Distribution: Korea, China, Japan, Russia.

Region: Palaearctic.

Korea: GW, GG*, CB, CN, GB, GN, JN, JJ, HGB, HGN, PB, PN.

17. *Nabis capsiformis* Germar, 1838 (Pl. 6, 76−80)

Nabis angustus Spinola, 1837: 107 (syn. Distant, 1904: 400).
Nabis capsiformis Germar, 1838: 132. Type: female; TL: South Africa, Cape of Good Hope; TD: ZMHB.
Nabis angusta Brullé, 1839: 79 (syn. Reuter, 1908: 114).
Nabis longipennis A. Costa, 1847: 14 (syn. Reuter, 1875: 565).
Nabis caffra Stål, 1855: 39 (syn. Reuter, 1872: 88).
Nabis siticus Walker, 1870: 2380 (syn. Kerzhner, 1963: 37).
Nabis elongatus Meyer-Dur, 1870: 178 (syn. Reuter, 1908: 114).
Nabis innotatus White, 1877: 112 (syn. Reuter, 1908: 114).
Nabis capsiformis: Kwon et al., 2001: 78 (Korean record).

Diagnosis: Body generally pale yellowish brown; hemelytra generally pale yellowish brown with somewhat dark brown spots, hemelytral membrane markedly elongated; collar to scutellum with longitudinal dark brown stripe.

Description: Body generally pale yellowish brown, thin and elongated; hemelytra parallel-sided; generally covered with short silky, white setae. Body length 6.21−7.70 mm, width 0.85−1.55 mm.

Head. Head generally pale yellowish brown, between eye and antenna and posterior ocular area brown in lateral view, generally covered with short silky, white setae; ocellus reddish brown, prominent; compound eye dark brown, prominent; antennae pale brown, apex of first antennal segment dark brown, generally long and thin with short setae; rostrum generally pale brown, fourth rostral segment darker toward apex, apex of rostrum reaching to fore coxa.

Thorax. Pronotum generally pale yellowish brown with one longitudinal dark brown stripe, covered with silky, white setae, collar with one longitudinal dark brown stripe, anterior pronotal lobe pale yellowish brown with one longitudinal dark brown stripe, somewhat uneven, posterior pronotal lobe pale yellowish brown with one longitudinal dark brown stripe with dense small punctuation; scutellum pale yellowish brown with one longitudinal dark brown stripe; hemelytra generally pale yellowish brown with somewhat dark brown spots, parallel-sided, vein indistinct, membrane markedly elongated, exceed apex of abdomen; legs pale brown, legs generally long and thin.

Abdomen. Abdomen generally pale brown, longitudinal dark brown stripe in ventral view, sometimes individual variation in longitudinal dark brown stripe; connexivum pale yellowish brown; parameres symmetry, basal part of paramere without distinct process, apex of paramere semicircle shaped; aedeagus membranous, tube shaped, basal part of aedeagus with one small hook shaped sclerite, middle part of aedeagus with larger hook shaped sclerite.

Female: As in male except for abdomen somewhat longer and wider than male.

Specimens examined: 1♂, Daemun-ri, Gunoe-myeon, Wando-gun, Jeollanam-do, 25.vii.2016, H.D. Lee; 2♂2♀, Omoto (Mt), Ishigaki-shi, Okinawa-ken, Japan, 24.iii.2015, S.H. Jung, J.G. Kim, H.D. Lee.

Biology: This species is found in the southern part of the Korean Peninsula. It may be attracted to light traps. It is an important species utilized in the control of agricultural and forest pests Kerzhner (1996).

Distribution: Korea, China, Japan, Russia, Afghanistan, Kazakhstan, Turkey, Cyprus, Iran, Israel, Syria, Taiwan, Turkmenistan, Uzbekistan, Yemen, Europe, North Africa.

Region: Nearctic, Neotropical, Ethiopian, Palaearctic, Oriental.

Korea: GB, JN*.

Genus *Stenonabis* Reuter, 1890

Stenonabis Reuter, 1890: 294, 306 (as subgenus of *Nabis*; upgraded by Kerzhner, 1963: 6).
Stomatacanthus Reuter, 1908: 109 (as subgenus of *Reduviolus*; syn. Kerzhner, 1963: 457).

18. *Stenonabis uhleri* Miyamoto, 1964 (Pl. 6, 81−85)

Stenonabis uhleri Miyamoto, 1964: 276. Type: male; TL: Japan, Osaka, Juso; TD: KUEC.
Stenonabis uhleri: Lee, 2016: 457 (Korean record).

Diagnosis: Body generally brown; hemelytral membrane elongated, reaching to apex of abdomen; apex of hind femur with somewhat dark brown ring.

Description: Body generally brown, elongated; hemelytra parallel-sided, generally covered with short pale yellow setae. Body length 6.45−6.77 mm, width 1.60−1.77 mm.

Head. Head generally brown, ventral part of head somewhat darker than dorsal part, densely covered with short silvery setae; area under antennae with long silvery setae; ocellus reddish brown, somewhat prominent; compound eye dark brown, prominent; antennae generally brown, first and second antennal segments with dark brown pattern, apex of second antennal segment dark brown, third and fourth segment dark brown, generally long and thin with short setae; rostrum generally yellowish pale brown, first rostral segment pale brown, second and third rostral segment yellowish brown, fourth rostral segment reddish brown, reaching to fore coxa.

Thorax. Pronotum generally brown, covered with short pale yellowish seta, collar brown with longitudinal dark brown stripe with distinct punctuation, anterior pronotal lobe brown with longitudinal dark brown stripe with somewhat uneven, posterior pronotal lobe brown with longitudinal dark brown stripe with distinct punctuation; scutellum brown with longitudinal dark brown stripe, posterior apex of scutellum dark brown; hemelytra generally brown, membrane elongated, reaching to apex of abdomen; leg generally yellowish brown with dark brown pattern apex of hind femur with somewhat dark brown ring, generally long and thin.

Abdomen. Abdomen somewhat dark brown, densely covered with short pale yellow setae; parameres symmetry, strongly curved, two branched processes on basal part of paramere, one small process on apical part of paramere; aedeagus membranous, tube shaped with about ten pieces of triangular sclerite.

Female: As in male except for abdomen somewhat longer and wider than male.

Specimens examined: 3♂3♀, Pansu-ri, Cheongsan-myeon, Okcheon-gun, Chungcheongbuk-do, 2.vii.2014, H.D. Lee.

Biology: This species inhabits moist areas near river banks, and may be attracted to light traps.

Distribution: Korea, Russia.

Region: Palaearctic.

Korea: GW*, GG*, CB*, CN*, GB, GN, JJ.

19. *Stenonabis yasumatsui* Miyamoto and Lee, 1966 (Pl. 6, 86−90)

Stenonabis yasumatsui Miyamoto and Lee, 1966: 373. Type: male; TL: Korea, Kyongpook, Phagae Temple; KUEC.

Diagnosis: Body generally yellowish gray; middle and hind femur generally yellowish gray, apex of femur with dark brown ring.

Description: Body generally yellowish gray, elongated; hemelytra comparatively short; abdomen exposed. Body length 5.40−8.42 mm, width 1.31−2.63 mm.

Head. Head generally yellowish gray, gray in ventral view, covered with short silky, white setae, two long setae on ventral side; ocellus reddish brown, somewhat prominent; compound eye dark brown, prominent; antennae generally brown, first and second antennal segment with brown pattern, apex of second antennal segment dark brown, generally long and thin with short setae; rostrum generally yellowish pale brown, first rostral segment yellowish pale brown, basal part of second rostral segment dark brown, fourth rostral segment reddish brown, apex of rostrum reaching to between fore coxa and middle coxa.

Thorax. Pronotum generally yellowish gray, covered with pale yellow setae, anterior pronotal lobe brown, somewhat uneven, posterior pronotal lobe yellowish gray with dense indistinct punctuation; scutellum brown with one longitudinal dark brown stripe; hemelytra generally yellowish gray, membrane very short, apex of membrane reaching to third abdominal segment; legs generally yellowish gray, apex of middle and hind femur with dark brown ring, legs generally long and thin with short setae.

Abdomen. Abdomen generally yellowish gray, covered with short pale yellow setae except for midline, intersection of connexivum with dark brown pattern; parameres symmetry, branched three part, apex strongly curved, C shaped; aedeagus membranous, tube shaped, basal part of aedeagus with dense small spinules, middle part of aedeagus with dense larger spinules.

Female: As in male except for abdomen somewhat longer and wider than male.

Specimens examined: 1♂, Dongchon-ri, Hwacheon-eup, Hwacheon-gun, Gangwon-do, 16.vii.2015, H.D. Lee; 3♂3♀, Haoan-ri, Hongcheon-eup, Hongcheon-gun, Gangwon-do, 17.vii.2015, H.D. Lee; 1♀, Myeongdal-ri, Seojong-myeon, Yangpyeong-gun, Gyeonggi-do, 4.viii.2015, H.D. Lee; 2♂1♀, Yul-ri, Yongsan-myeon, Yeongdong-gun, Chungcheongbuk-do, 19.vi.2015, H.D. Lee; 1♀, Wolpyeong-dong, Seo-gu, Daejeon, 5.vii.2015, H.D. Lee.

Biology: This species is found on low herbaceous plants near forest trails.

Distribution: Korea, Russia.

Region: Palaearctic.

Korea: GW*, GG*, CB*, CN*, GB, GN, JJ.

Family Anthocoridae

Type: *Anthocoris* Fallén, 1814.

Species: over 600 (24 in Korea).
Distribution: Worldwide.
Korea: GW, GG, CB, CN, GB, GN, JB, JN, JJ.

Key to the genera of the family Anthocoridae in the Korean Peninsula

1. 3rd and 4th antennal segments as thick as 1st and 2nd antennal segments. Pronotum with 2 pairs of long hairs, or not. Female with one copulatory tube ····· 6
− 3rd and 4th antennal segments narrower than 1st and 2nd antennal segments. Pronotum with 3 pairs of long setae. Female without copulatory tube ····· 2
2. Scent gland peritreme bending cephalad. Male fore tibiae strongly expanding apicad, apex 2−3 times wider than base, apically with conspicuous hair brush ····· (tribe Xylocorini) *Xylocoris*
− Scent gland peritreme bending cephalad or caudad. Male fore tibiae not expanding apicad, apical width not more than twice of basal width, apical hair brush little developed or absent ····· 3
3. Apex of scent gland peritreme not attenuated into a ridge, not attaining anterior margion of metapleuron. Scutellum simple. 4th and/or 5th sternite with an aperture (uradenia) of ventral abdominal gland in males ····· (tribe Scolopini) *Scoloposcelis*
− Apex of scent gland peritreme attenuated into a narrow ridge, reaching anterior margin of metapleuron. Scutellum usually with a pair of small round fovea ··· 4 Cardiastethini (=Dufouriellini)
4. Ostiolar peritreme directing caudad ····· 5
− Ostiolar peritreme bending cephalad; pronotum and hemelytron covered with long setae and a distinct collar; posterior margin of pronotum curved inwardly ····· *Cardiastethus*
5. Fore femora conspicuously thickened, inner side with rows of spines; rostrum shorter than or as long as head ····· *Physopleurella*
− Fore femora thin, unarmed; rostrum longer than head, reaching fore coxae ····· *Amphiareus*
6. Pulvillus absent. Inner side of male fore tibia without teeth. Left paramere sickle-shaped ····· 7 (tribe Anthocorini)
− Pulvillus present. Inner side of male fore tibia with teeth. Left paramere spiral in shape ····· 8 (tribe Oriini)
7. Membrane with whitish spots or pattern ····· *Anthocoris*
− Membrane transparent or dark brown ····· *Tetraphleps*
8. Body punctuate, Preocular portion of head shorter than eye diameter. Membrane of fore wing without broad longitudinal dark stripe. Scent gland peritreme semicircularly curving cephalad, reaching anterior margin of metapleuron in a ridge ····· 9
− Head, pronotum and hemelytra not punctuate. Preocular portion of head longer than eye diameter. Membrane of fore wing with broad longitudinal dark stripe. Scent gland peritreme angulately bending, area at the bending remarkably expanding backward, peritreme apex not reaching anterior margin of metapleuron ····· *Montandoniola*
9. Body elongated, oval. Head horizontal. Exocorium shorter than twice of cuneus ····· *Orius*
− Body short, subcircular. Head declivent. Exocorium longer than 2.5 times of cuneus ····· *Bilia*

Genus *Anthocoris* Fallén, 1814

Anthocoris Fallén, 1814: 9.

20. *Anthocoris chibi* Hiura, 1959 (Pl. 7, 91−92)

Anthocoris chibi Hiura, 1959: 5. Type: male; TL: Japan, Tokyo, Yodobashi-Jyosuijyo; TD: OMNH.
Anthocoris chibi: Kwon et al., 1996: 109 (Korean record).

Diagnosis: Easily recognized by the small size (about 3 mm); fourth antennal segment dark brown at apical half.

Description: **Female**: Body generally dark brown, oblong-oval; dorsal surface covered with densely short pubescences. Body length 3.15−3.28 mm, width 1.11−1.16 mm.

Head. Head dark brown, as long as width across eyes; anteocular portion shorter than length of eye; tylus blackish brown; vertex width about twice as wide as eyes; eyes dark brown, not touching anterior margin of pronotum; ocelli reddish brown. Antennae generally pale brown, first antennal segment brown, nearly reaching apex of head, with sparse short setae; apex of second and third antennal segments pale brown, a little shorter than head width across eyes, clothe with suberect setae; fourth antennal segment dark brown at apical half; proportion of each antennal segments (♀) 0.13 : 0.40 : 0.24 : 0.27. Rostrum dark brown, somewhat long, reaching apical 1/3 of mesosternum, sparsely covered with short setae; proportion of second−fourth rostral segments 0.5 : 0.30 : 0.17.

Thorax. Pronotum almost dark brown, sub-trapezoidal, little depressed posteromedially, with one suberect seta near each corner; anterior margin slightly shorter than mesal length; lateral margin nearly straight, weakly rounded; posterior margin curved inwardly, more than twice as long as anterior margin; collar almost dark brown, broad; callus weakly swollen, with pair of suberect setae near anterior angles and depression in anterior part. Scutellum almost dark brown, with two deep, circular foveae in middle; anterior half swollen, posterior half flattened and rugose.

Hemelytra dark brown; corium yellowish brown, shiny; cuneus more darkened except for apex; embolial margin length about 1.5 times as long as lateral cuneal margin; membrane almost dark brown with whitish reverse V-shaped mark. Ostiolar peritreme and evaporative area dark brown; ostiolar peritreme somewhat long, slightly curved backwards.

Legs slender, covered with short, recumbent pubenscence, pale yellow.

Abdomen. Abdomen almost dark brown; scissures on abdominal tergite reaching end of posterior margin of segment III.

Male: We didn't identify this species in this study.

Specimens examined: 1♀, Boseong-gun, Jeollanam-do, 11.v.2008, on *Pinus densiflora* (Pinaceae), S. Jung.

Biology: This species inhabits tree species of the genus *Pinus* (Pinaceae), where they may prey on aphids (Hiura, 1959).

Distribution: Korea, China, Japan, Russia (Far eastern).

Region: Palaearctic.

Korea: GB, JN.

21. *Anthocoris confusus* Reuter, 1884 (Pl. 7, 93−94)

Anthocoris confusus Reuter, 1884: 194. Type: male; TL: France, Vosges; TD: MNHN.
Anthocoris confusus: Jung et al., 2013: 423 (Korean record).

Diagnosis: Recognized by the three whitish spots at each angle on membrane; entirely dark brown antennae.

Description: Body mostly dark brown, oblong-oval; dorsal surface covered with densely short pubescences. Body length 4.25−4.88 mm, width 1.18−1.26 mm.

Head. Head almost dark brown, as long as width across eyes; anteocular portion shorter than length of eye; tylus blackish brown; vertex about twice as wide as eys; eyes dark brown, not touching anterior margin of pronotum; ocelli dark brown. Antennae dark brown, first antennal segment dark brown, nearly reaching apex of head, with sparse short setae; second and third antennal segments dark brown, a little shorter than head width across eyes, covered with suberect setae; fourth antennal segment dark brown; proportion of each segment (♂/♀) 0.14−0.15/0.15−0.17 : 0.51−0.54/0.53−0.59 : 0.32−0.35/0.33−0.36 : 0.31−0.32/0.27−0.36. Rostrum dark brown, long, reaching apical 1/3 of mesosternum, covered with sparsely short setae; proportion of second−fourth rostral segments (♂/♀) 0.08−0.09/0.08−0.09 : 0.33−0.35/0.31−0.36 : 0.29−0.31/0.29−0.33.

Thorax. Pronotum dark brown, sub-trapezoidal, little depressed posteromedially, with one suberect seta near each corner; anterior margin slightly shorter than mesal length; lateral margin nearly straight, weakly rounded; posterior margin curved inwardly, more than twice as long as anterior margin; collar dark brown, broad; callus weakly swollen, with pair of suberect setae near anterior angles and depression in anterior part. Scutellum somewhat dark brown, with two deep, circular foveae in middle; anterior half swollen, posterior half flattened and rugose.

Hemelytra almost dark brown; corium almost brown; cuneus more darkened except apex; embolial margin about 1.5 times as long as lateral cuneal margin; membrane dark brown with whitish three spots at each angle. Ostiolar peritreme and evaporative area dark brown; ostiolar peritreme long, slightly curved backwards.

Legs slender, covered with short, recumbent pubenscence, somewhat dark brown.

Abdomen. Dark brown; scissures on abdominal tergite reaching end of posterior margin of segment III.

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

Specimens examined: 2♂2♀, Gung-dong, Yuseong-gu, Daejeon, 5.ii.2008, W. Kim.
Biology: This species is found on Korean aspen, *Populus davidiana* Dode (Salicaceae) (Hiura, 1959).
Distribution: Korea, China, Europe, Japan, Russia (Far eastern).
Region: Palaearctic.
Korea: CN.

22. *Anthocoris japonicus* Poppius, 1909 (Pl. 7, 95−96)

Anthocoris japonicus Poppius, 1909: 33. Type: female; TL: Japan, Honshu, Kanagawa; TD: HNHM.
Anthocoris japonicus: Kerzhner, 1988: 772 (Korean record).

Diagnosis: Recognized by the reverse V-shaped whitish line on membrane; reddish brown coloration on apex of second antennal segment.

Description: Body generally brown, oblong-oval; dorsal surface covered with densely short pubescence. Body length 4.15−4.88 mm, width 1.11−1.36 mm.

Head. Head almost dark brown, as long as width across eyes; anteocular portion shorter than length of eyes; tylus reddish brown; vertex about twice as wide as eys; eyes dark brown, not touching anterior margin of pronotum; ocelli reddish brown. Antennae dark brown, first antennal segment dark brown, nearly reaching apex of head, with sparse short setae; apex of second antennal segment reddish brown, remainder dark brown; third antennal segment dark brown, a little shorter than head width across eyes, covered with suberect setae; fourth antennal segment dark brown; proportion of each antennal segment (♂/♀) 0.17−0.18/0.14−0.19 : 0.58−0.59/0.56−0.59 : 0.31−0.34/0.33−0.39 : 0.31−0.37/0.33−0.39. Rostrum dark brown, long, reaching apical 1/3 of mesosternum, sparsely covered with short setae; proportion of second−fourth rostral segments (♂/♀) 0.05−0.08/0.06−0.09 : 0.35−0.37/0.35−0.38 : 0.31−0.33/0.32−0.35.

Thorax. Pronotum brown, sub-trapezoidal, little depressed posteromedially, with one suberect seta near each corner; anterior margin slightly shorter than mesal length; lateral margin nearly straight, weakly rounded; posterior margin curved inwardly, more than twice as long as anterior margin; collar dark brown, somewhat broad; callus weakly swollen, with pair of suberect setae near anterior angles and depression in anterior part. Scutellum entirely brown, with two deep, circular foveae in middle; anterior half swollen, posterior half flattened and rugose.

Hemelytra brown; corium brown; cuneus more darkened except apex; embolial margin about 1.5 times as long as lateral cuneal margin; membrane dark brown with whitish reverse V-shaped mark. Ostiolar peritreme and evaporative area dark brown; ostiolar peritreme long, slightly curved backwards. Legs slender, covered with short, recumbent pubenscence, somewhat brown.

Abdomen. Brown; scissures on abdominal tergite reaching end of posterior margin of segment III. Male genitalia (paramere) sickle shaped, sharp at apex.

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

Specimens examined: More than 300 specimens collected from all parts including Jeju island of the South Korea from 1999 to 2009 were examined.

Biology: This species is a common species among congeners in South Korea. It is found on Japanese zelkova, *Zelkova serrata* (Ulmaceae), where it preys upon gall-making aphids. Adults overwinter under the bark of the tree.

Distribution: Korea, China, Japan, Russia (Far eastern).

Region: Palaearctic.

Korea: GW, GG, CB, CN, GB, GN, JB, JN, JJ.

23. *Anthocoris miyamotoi* Hiura, 1959 (Pl. 8, 97−98)

Anthocoris miyamotoi Hiura, 1959: 3. Type: male; TL: Japan, Tokara Is., Nakanoshima, Kagoshima Pref.; TD: OMNH.

Anthocoris miyamotoi: Lee and Kwon, 1991: 13 (Korean record).

Diagnosis: Recognized by the whitish spots on clavus and corium; three small transparent spots

on membrane.

Description: Body generally brown, somewhat shiny, oblong-oval; dorsal surface densely covered with short pubescence. Body length 3.35−3.88 mm, width 0.89−1.22 mm.

Head. Head dark brown, as long as width across eyes; anteocular portion shorter than length of eye; tylus tinged with reddish brown; vertex about twice as wide as eys; eyes dark brown, not touching anterior margin of pronotum; ocelli reddish brown. Antennae dark brown, first antennal segment dark brown, nearly reaching apex of head, with sparse short setae; second antennal segment dark brown; basal part of third antennal segment pale brown, remainder dark brown, a little shorter than head width across eyes, covered with suberect setae; fourth antennal segment dark brown; proportion of each segment (♂/♀) 0.17−0.21/0.15−0.19 : 0.48−0.49/0.46−0.49 : 0.25−0.31/0.29−0.35 : 0.27−0.32/0.31−0.34. Rostrum brown, long, reaching apical 1/3 of mesosternum, covered with sparsely short setae; proportion of second−fourth rostral segments (♂/♀) 0.07−0.08/0.07−0.09 : 0.31−0.37/0.33−0.36 : 0.31−0.34/0.34−0.38.

Thorax. Pronotum dark brown, sub-trapezoidal, little depressed posteromedially, with one suberect seta near each corner; anterior margin slightly shorter than mesal length; lateral margin nearly straight, weakly rounded; posterior margin curved inwardly, more than twice as long as anterior margin; collar dark reddish brown, narrow; callus weakly swollen, with pair of suberect setae near anterior angles and depression in anterior part. Scutellum somewhat dark brown, with two deep, circular foveae in middle; anterior half swollen, posterior half flattened and rugose.

Hemelytra brown with four whitish spots; corium brown with two whitish spots; clavus brown with two whitish spots; cuneus more darkened than hemelytra; embolial margin about 1.5 times as long as lateral cuneal margin; membrane dark brown with whitish three spots. Ostiolar peritreme and evaporative area reddish brown; ostiolar peritreme long, slightly curved backwards. Legs slender, covered with short, recumbent pubenscence, reddish brown.

Abdomen. Abdomen brown; scissures on abdominal tergite reaching end of posterior margin of segment III. Male genitalia (paramere) sickle shape, thin.

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

Specimens examined: 1♂2♀, Irun-myeon, Geoje-si, Gyeongsangnam-do, 11.viii.2008, S. Jung; 3♂2♀, Aewol-eup, Bukjeju-gun, Jeju-do, 31.v.2006, S. Jung.

Biology: This species is found in the southern Korean Peninsula, including Jeju Island. Host plants are unknown.

Distribution: Korea, China, Japan.

Region: Palaearctic.

Korea: GG, GB, GN, JJ.

24. *Anthocoris ussuriensis* Lindberg, 1927

Anthocoris ussuriensis Lindberg, 1927: 21. Type: female; TL: Russia, Ussuri, Spasskaja [=Primorsk Terr., Spassk-Dalniy]; TD: MZHF.

Anthocoris ussuriensis: Kerzhner, 1988: 774 (Korean record).

Specimens examined: This species was recorded in North Korea (Josifov et Kerzhner, 1972). However, we could not examine this species due to the lack of specimens. Kwon et al. (2001) also

recorded this species in southern part of Korea.
Biology: Unknown.
Distribution: Korea (North), China, Mongolia, Russia (Far eastern).
Region: Palaearctic.
Korea: PB.

Genus *Tetraphleps* Fieber, 1860

Tetraphleps Fieber, 1860: 262.

25. *Tetraphleps aterrima* (J. Sahlberg, 1878)

Anthocoris aterrimus J. Sahlberg, 1878: 31. Type: female; TL: Russia, Yenisei valley, lmbatsk; TD: MZHF.
Tetraphleps ezoensis Hiura, 1959: 2.
Tetraphleps aterrima: Kwon et al., 2001: 81 (Korean record).

Specimens examined: Kwon et al. (2001) recorded this species in North Korea. However, we could not examine this species due to the lack of specimens.
Biology: Unknown.
Distribution: Korea (North), Mongolia, Finland, Russia, Japan.
Region: Palaearctic.
Korea: North Korea.

Genus *Amphiareus* Distant, 1904

Amphiareus Distant, 1904: 220.

26. *Amphiareus constrictus* (Stål, 1860) (Pl. 8, 99–100)

Xylocoris constrictus Stål, 1860: 44. Type: male; TL: Brazil, Prov. Rio de Janeiro; TD: NHRS.
Xylocoris fulvescens Walker, 1873: 160 (syn. Herring, 1965: 202).
Lasiochilus sladeni Distant, 1913: 185 (syn. Carayon, 1972: 335).
Cardiastethus macilentus Hiura, 1958: 39 (syn. Hiura, 1960: 46).
Amphiareus constrictus: Jung and Lee, 2011: 337 (Korean record).

Diagnosis: Distinguished from other congeners by shining pale brown body, dark brown apex

of second antennal segment, long sparse pubescence on pronotum, broadly somewhat fuscous apical margin of corium and inner half of cuneus, narrow base of costal margins, and relatively long paramere.

Description: Body shiny, pale brown. Body length 2.45−2.88 mm, width 0.66−0.81 mm.

Head. Head pale brown, sparsely covered with long pubescence; ocelli brown; compound eyes dark brown. Antennae pale brown; segment I with short pubescence; apical quarter of second antennal segment dark brown, slightly thickened toward apex; third and fourth antennal segments sometimes fuscous, coarsely covered with long pubescence; fourth antennal segment weakly flattened; proportion of each antennal segment 2.3 : 8.4 : 6.2 : 6.3. Rostrum with sparse short pubescence, slightly exceeding beyond fore coxae; second rostral segment faintly dark brown with long erect setae; proportion of last three segments 2.1 : 6.5 : 3.8.

Thorax. Pronotum pale brown, polished, sparsely punctate, bearing distinct long setae at anterior third of lateral margins and posterior corners; lateral margins weakly sinuate; posterior margin approximately wider than twice anterior margin; callus extremely swollen and shining, coarsely punctate along posterior margin, not foveolate behind anterior angle setae. Scutellum sparsely covered with long pubescence, with two indistinct foveae at middle, swollen in anterior half, depressed in posterior half.

Hemelytra pale brown; apical margin of corium and inner half of cuneus broadly dark brown; clavus coarsely punctate; base of costal margins narrow; membrane smoky dark yellow, basally dark brown, with three veins; outer vein distinct and middle and inner ones indistinct.

Legs yellow to pale brown. Ostiole nearly straight, blunt apically and not connected to fine carina.

Abdomen. Male genital segment with strongly curved parameres; basal portion of paramere slightly bifid.

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

Specimens examined: 5♂3♀, in the rice-stubbles, Yeongok-myeon, Gangneung-si, Gangwon-do, 20.vii.2006, S. Jung.

Biology: This species is found in rice paddy stubble.

Distribution: Korea, Japan, China, Europe, Africa, Australia, Oceania.

Region: Palaearctic, Nearctic, Neotropical, North Africa.

Korea: GW.

27. *Amphiareus morimotoi* (Hiura, 1958) (Pl. 8, 101−102)

Cardiastethus morimotoi Hiura, 1958: 38. Type:?; TL: Japan, Shikoku, Jinzenji, Koehl-City; TD: OMNH.

Amphiareus morimotoi: Kwon et al., 1996: 109 (Korean record).

Diagnosis: Recognized by a relatively short body, dark brown apical half of second antennal segment, broader frons, fuscous second rostral segment, sparse punctures on callus, and strongly curved paramere.

Description: Body oblong-oval and shiny pale brown; male slightly shorter and more slender than female. Body length 2.13−2.38 mm, width 0.66−0.72 mm.

Head. Head pale brown, sparsely covered with long pubescence; ocelli dark brown; compound eyes small, broadly separated from each other. Antennae pale brown; first antennal segment with short pubescence; apical half of second antennal segment dark brown and slightly thickened toward apex; third and fourth antennal segments sparsely covered with long pubescence; fourth antennal segment weakly flattened; proportion of each antennal segment 2 : 7 : 5 : 5. Rostrum pale brown with short pubescence, slightly exceeding beyond level of fore coxae; second rostral segment fuscous with long sparse erect setae; proportion of last three segments 2 : 6 : 3.5.

Thorax. Pronotum pale brown, polished and sparsely covered with long pubescences, with dense distinct punctures on posterior half; long erect seta present at approximately anterior quarter of lateral margins and posterior corners; lateral margins weakly sinuate; callus strongly swollen, shining, sparsely punctate on callus, coarsely punctate along posterior margin. Scutellum covered with long, silky pubescence; anterior half swollen and levigate; posterior half depressed and transversely strigose. Hemelytra pale brown; apical margin of corium narrowly dark brown; clavus coarsely punctate; costal margins rounded; membrane smoky dark yellow, somewhat dark brown basally, relatively narrow, with only one distinct and slightly curved vein. Legs almost pale brown. Ostiole with slightly rounded posterior margin, apically connected to fine carina.

Abdomen. Male genital segment with relatively short and strongly curved paramere at middle; apical part of paramere strongly curved in posterolateral view, with a posteriorly pointed process at basal portion.

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

Specimens examined: 2♂2♀, in the dead leaf clusters, Tap-dong, Suwon-si, Gyeonggi-do, 21.v.2007, S. Jung.

Biology: This species is found in leaf litter beneath an unidentified hardwood tree.

Distribution: Korea (Middle part), Japan, Northern China.

Region: Palaearctic.

Korea: GG.

28. *Amphiareus obscuriceps* (Poppius, 1909) (Pl. 9, 103−104)

Cardiastethus obscuriceps Poppius, 1909: 19. Type:?; TL: Japan, Yokohama, Kanagawa, Rokkakubashi; TD: HNHM, MZHF.

Amphiareus obscuriceps: Kerzhner, 1988: 772 (Korean record).

Diagnosis: Easily recognized by somewhat blackish brown head and pronotum.

Description: Body brown to blackish brown. Body length 2.33−2.93 mm, width 0.75−0.91 mm.

Head. Head blackish brown, sometimes brown, weakly shining; ocelli palek brown to darke brown; compound eyes large. Antennae pale brown to brown; first antennal segment dark brown, with short sparse pubescences; apical third of second antennal segment dark brown, slightly thickened toward apex; third and fourth antennal segments sometimes dark brown; fourth antennal segment flattened; proportion of each antennal segment 2.5 : 9 : 6 : 6. Rostrum pale brown and slightly exceeding beyond level of fore coxae; second rostral segment faintly fuscous; proportion of last three segments 2 : 7 : 3.5.

Thorax. Pronotum entirely dark brown, covered with dense pubescences and punctures, posterior half with shallow longitudinal groove; long erect seta present at anterior third of lateral margins and posterior corners; callus strongly swollen, with sparse pubescence and punctures, coarsely punctate and weakly strigose along posterior margin, weakly foveolate behind anterior angle setae. Scutellum somewhat brown or dark brown, sometimes pale brown; anterior half swollen; posterior half depressed and transversely strigose.

Hemelytra pale brown to dark brown; apical margin of corium almost dark brown; cuneus broadly blackish brown; clavus coarsely punctuate and pubescent; costal margins moderately rounded; membrane blackish brown, dark brown basally, usually with one distinct vein, sometimes three veins present: outer vein distinct and middle and inner ones indistinct. Legs dark brown. Ostiole connected apically to fine carina.

Abdomen. Male genital segment with weakly curved paramere at apex; basal portion of paramere weakly twisted or rolled posteriorly.

Female: As in male.

Specimens examined: More than 500 specimens collected between 2006−2009 from the following localities in Korea: [CB] Cheongwon-gun, Cheongju-si; [CN] Cheondong-ri, Nonsan-si; Sinyang-myeon, Yesan-gun; [GB] Songcheon-dong, Andong-si; [GG] Gisan-ri, Yangju-si; Majang-ri, Gapyeong-gun; Tap-dong, Suwon-si; Osan-ri, Yeoju-gun; [GN] Irun-myeon, Geoje-si; [GW] Munmak-ri, Wonju-si; Hongcheon-eup, Hongcheon-gun; Yeongnang-dong, Sokcho-si.

Biology: This species is one of the more common species among congeners in the Korean Peninsula. It is found in leaf litter.

Distribution: Korea, Japan, China, Taiwan, Nepal, Hungary.

Region: Palaearctic.

Korea: GW, GG, CB, CN, GB, GN.

29. *Amphiareus ruficollaris* Yamada and Hirowatari, 2003 (Pl. 9, 105−106)

Amphiareus ruficollaris Yamada and Hirowatari, 2003: 298. Type: male; TL: Japan, Honshu, Nara Prefecture, Kawakami Vill., Kitamata Riv.; TD: OPUO.
Amphiareus ruficollaris: Jung and Lee, 2011: 337 (Korean record).

Diagnosis: Easily recognized by dark brown parts behind compound eyes and anterior half of the pronotum, angular posterior margin of callus and weakly curved paramere.

Description: Body oblong, with densely pubescent. Body length 2.35−3.25 mm, width 0.71−0.94 mm.

Head. Head somewhat blackish brown to black; tylus dark brown; posterior portion of compound eyes dark brown, sometimes brown, somewhat polished, with sparse pubescence and punctures; ocelli dark brown; compound eyes large. Antennae brown, densely pubescent; first antennal segment dark brown; apical half of second antennal segment dark brown, slightly thickened toward apex, densely covered with short pubescence; third and fourth antennal segments fuscous, with long coarse pubescence; fourth antennal segment flattened; proportion of each antennal segment 2.5 : 8.5 : 6 : 5.5. Rostrum generally brown, slightly exceeding fore coxae; second rostral seg-

ment with sparse long erect setae; proportion of last three segments 2 : 6 : 3.5.

Thorax. Pronotum shortly pubescent, densely punctate, weakly polished; collar and callus reddish brown, sometimes brown; posterior half of pronotum dark brown and separated into two swollen parts by longitudinal groove with punctures; long erect seta present at apical quarter of lateral margins and posterior corners; lateral margin of pronotum nearly straight; posterior margin much broader than twice anterior margin; callus extremely swollen, longitudinally narrowed, foveolate behind anterior angle setae; posterior margin of callus weakly angulate, with distinct transverse depression; coarsely punctated and strongly strigose along the posterior margin of callus. Scutellum entirely pale brown; posterior half depressed and transversely strigose. Hemelytra almost brown; apical edge of clavus and apical margin of corium narrowly dark brown; cuneus wide, broadly darkened; clavus coarsely punctuate and densely pubescent; membrane smoky blackish brown, relatively wide, with three veins: outer vein distinct and slightly curved, middle and inner ones indistinct. Legs brown, tinged with fuscous. Ostiole curved apically and connected to fine carina.

Abdomen. Male genital segment with slender and weakly curved paramere; basal portion of paramere stout, strongly curved and bifurcate at apex.

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

Specimens examined: 3♂2♀, Aewol-eup, Bukjeju-gun, Jeju-do, 31.v.2006, S. Jung.
Biology: This species is found in leaf litter beneath an unidentified hardwood tree.
Distribution: Korea (southern part), Japan, Malaysia.
Region: Palaearctic, Oriental.
Korea: JJ.

Genus *Cardiastethus* Fieber, 1860

Cardiastethus Fieber, 1860.
Dasypterus Rueter, 1871: 564.

30. *Cardiastethus exiguus* Poppius, 1913 (Pl. 9, 107−108)

Cardiastethus exiguus Poppius, 1913: 253. Type: female; TL: Ceylon [=Sri Lanka], Paradenyia; TD: MZHF.
Cardiastethus pygmaeus Poppius, 1914 (syn. Carayon, 1976: 467).
Triphleps cocciphagus Hesse, 1947: 42 (syn. Carayon, 1976: 467).
Cardiastethus exiguus: Jung and Lee, 2011: 337 (Korean record).

Diagnosis: Easily recognized by Body brown, partly blackish brown, small (1.8 mm), oval, anteocular portion shorter than length of eye; legs pale yellow; pygophore asymmetrical, with process of paramere with well-developed and paramere strongly curved.

Description: Body generally brown, somewhat oblong-oval; dorsal surface densely covered with long and silky pubescence. Body length 1.80−1.90 mm, width 0.66−0.69 mm.

Head. Head dark brown, slightly shorter than width across eyes; anteocular portion shorter than length of eye; tylus tinged with dark brown; vertex about twice as wide as eye; eyes almost dark brown, not touching anterior margin of pronotum; ocelli reddish brown. Antennae pale brown; segment I nearly reaching apex of head, with sparse short setae; segment II dark brown on apical III to half, a little shorter than head width across eyes, clothe with suberect setae; segment III dark brown, about half as long as segment II; segment IV dark brown, weakly flattened; lengths of segments I–IV (♂/♀) 0.09/0.09, 0.31/0.32, 0.15/0.15, 0.16/0.17, respectively. Rostrum somewhat long, reaching to fore coxae, sparsely covered with short setae; segments I to IV pale yellow; segment III about 2.5 times as long as segment II, slightly longer than segment IV; lengths of segments II–IV (♂/♀) 0.08/0.08, 0.21/0.22, 0.17/0.18, respectively.

Thorax. Pronotum trapezoidal, strongly depressed posteromedially, with one suberect seta near each corner; anterior margin slightly shorter than mesal length; lateral margin nearly straight, weakly round; posterior margin curved inwardly, more than twice as wide as anterior margin; collar somewhat narrow; callus weakly swollen, with pair of suberect setae near anterior angles and deep depression in anterior part. Scutellum brown, with two deep, circular foveae in middle; 1/2 anterior part swollen, posterior half flattened and rugose. Hemelytra almost brown; cuneus more darkened except apex; embolial margin about 1.5 times as long as lateral cuneal margin; membrane almost dark grey, with three clear veins. Ostiolar peritreme and evaporative area brown; ostiolar peritreme long, slightly curved backwards. Legs somewhat slender, covered with short, recumbent pubenscence, pale yellow.

Abdomen. Pale brown; scissures on abdominal tergite reaching end of posterior margin of segment III.

Pygophore turbinate, bearing plate on anterior part of left edge, covered with long setae posteroventrally; paramere extending laterally, curved at middle, with suberect seta near apex.

Female: As in male except for genitalia with almost reduced ovipositor.

Specimens examined: 1♂, Baekhak-myeon, Yeoncheon-gun, Gyeonggi-do, near DMZ area inside the CCL, on *Chenopodium album* var. *centrorubrum* (goosefoot, Chenopodiaceae), 17.vii.2008, S. Jung; 1♀, Gyeongho-dong, Yeosu-si, Jeollanam-do, under the bark of *Zelkova serrata* during winter hibernation, 14.i.2009, S. Kim.

Biology: This species is widely distributed in the tropical regions of Africa and Thailand (Yamada and Hirowatari, 2007). Collection records indicate the Korean Demilitarized Zone (DMZ) demarcates the northernmost range of this species.

Distribution: Korea, China, India, Japan, Taiwan, Thailand.

Region: Palaearctic, Oriental, Ethiopian.

Korea: GG, JN.

Genus *Physopleurella* Reuter, 1884

Physopleurella Reuter, 1884: 124.

31. *Physopleurella armata* Poppius, 1909 (Pl. 10, 109−110)

Physopleurella armata Poppius, 1909: 12−13. Type: male; TL: Japan, Bukenji; TD: HNHM.
Physopleurella obscura Poppius, 1909: 13 (syn. Esaki, 1926: 170).
Scoloposcelis japonicus Esaki, 1931: 263−264.
Physopleurella armata: Jung and Lee, 2011: 337 (Korean record).

Diagnosis: Easily recognized by antenna pale brown, with apex of segment I dark brown; antennal segment II longer than head width across eyes; rostrum somewhat dark brown; pronotum pale brown; scutellum reddish brown; hemelytra pale brown with innermost portion of corium narrowly darkened; cuneus broadly darkened. Pygophore with a nearly straight paramere and slightly bent anteriorly at apex.

Description: Body generally brown. Body length 3.25−3.88 mm, width 0.98−1.16 mm.

Head. Head dark brown, slightly shorter than its width across eyes; dorsal surface sparsely covered with long, silky, erect setae; tylus dark brown; vertex about 1.5 times as wide as eye; eyes black, not touching anterior margin of pronotum; ocelli reddish brown. Antennae pale brown; segment I nearly reaching apex of head, with sparse short setae; segment I dark brown at apex, segment II dark brown an one thirds of apical part, a little longer than head width across eyes, clothed with suberect setae; segment III about one thirds as long as segment II, and as long as segment IV, but slightly shorter than segment IV; segment IV weakly flattened; lengths of segments I−IV (♂/♀) 0.14−0.15/0.15−0.17, 0.53−0.58/0.55−0.57, 0.33−0.35/0.31−0.36, and 0.30−0.31/0.28−0.33, respectively. Rostrum stout, short, reaching to collar, sparsely covered with short setae; segments I to IV somewhat dark except for apex of IV; segment III as long as segment IV, slightly longer; lengths of segments II−IV (♂/♀) 0.08−0.09/0.08−0.09, 0.23−0.25/0.21−0.26, and 0.19−0.21/0.19−0.23, respectively.

Thorax. Pronotum brown, tinged with posteromedially with dark brown, covered with long, silky, reclining setae; collar narrow, with short setae; lateral margin sinuate, carinated on anterior 2/3; posterior margin about three times as wide as anterior margin. Scutellum darker than color of pronotum, weakly shiny, with two distinct foveae at middle. Hemelytra light brown, covered with yellow, reclining setae; cuneus widely darkened; apical part of corium almost three times as wide as embolium; membrane grey, with several veins. Osiolar peritrem and evaporative area brown; ostiolar peritreme short, slightly curved backwards.

Legs pale yellow, densely covered with yellow, short setae; fore femorae ventrally with two series of spines composed of long and short spines.

Abdomen. Pygophore with a nearly straight paramere extending lateral and slightly bent anteriorly apex.

Female: As in male except for genitalia with almost reduced ovipositor.

Specimens examined: 1♂, Irun-myeon, Geoje-si, Gyeongsangnam-do, on dead leaf clusters of *Pinus densiflora* (Japanese red pine, Pinaceae), 11.viii.2008, S. Jung.

Biology: This species inhabits island and coastal areas in South Korea.

Distribution: Korea, Australia, China, Japan, New Guinea, Hawaii, Philippines, Thailand, Vietnam.

Region: Palaearctic, Australasian, Oriental.

Korea: GG, CN, GN.

Genus *Orius* Wolff, 1811

Orius Wolff, 1811: 4.

32. *Orius* (*Heterorius*) *minutus* (Linnaeus, 1758) (Pl. 10, 111−112)

Cimex minutus Linnaeus, 1758: 446. Type: male; TL: France, nr Montereau, Marolles, bord de la Seine; TD: MNHN.
Anthocoris fruticum Fallén, 1829: 68 (syn. Hahn, 1833: 233).
Triphleps luteolus Fieber, 1860: 271 (syn. Reuter, 1884: 106).
Triphleps latus Fieber, 1861: 140 (syn. Reuter, 1884: 106).
Orius (*Heterorius*) *minutus*: Lee and Kwon, 1991: 13 (Korean record).

Diagnosis: Easily recognized by dorsum of body with dense pubescence with distinct pronotal callus, usually pale hemelytra, and long flagellum and distinct denticule of paramere. Color and size are very variable.

Description: Body oval, sometimes oblong in males, 2−3 mm long from tylus to end of abdomen. Body length 2.33−2.99 mm, width 0.75−0.89 mm.

Head. Head sparsely pubescent on vertex and frons, with 4−5 IOS, 5−14 FS, no longer than 0.05 mm of all setae in head part; antennae 4-segmented, proportion of each segment of male and female 0.12 : 0.21 : 0.18 : 0.19 and 0.11 : 0.23 : 0.20 : 0.20; rostrum, reaching behind hind coxae; clypeus with 4 setae; proportion of segments II−IV of rostrum in male and female, 0.11 : 0.27 : 0.19 and 0.09 : 0.32 : 0.17; ocs, tcs, ivs short, proportion of length of ocs, tcs, ivs 0.04 : 0.06 : 0.05 in males, 0.05 : 0.08 : 0.05 in females.

Thorax. Pronotum trapezoidal with one pair of long setae at anterior angle, anterior pronotal width almost 2 times as long as basal pronotal width, 0.30 : 0.67 in male proportion, 0.29 : 0.90 in female proportion; fore leg with strong teeth in male, without teeth in female; scutellum somewhat triangle shape, proportion of length/width of scutellum 0.32 : 0.45 in males, 0.44 : 0.67 in females; hemelytra with many short setae except membrane, proportion of length and width of hemelytra 1.45 : 0.59 in males, 1.72 : 0.63 in females.

Abdomen. Paramere with widened and apically tapered cone; denticule somewhat wide and long, located at the top of cone; flagellum long and thin, proportion of paramere/denticule/flagellum 0.16 : 0.05 : 0.22. Copulatory tube noticeably elongate, at least longer than 0.05 mm; basal segment broader than apical segment, not longer than apical segment; median junction exist.

Female: Fore leg with strong teeth in male, without teeth in female.

Specimens examined: 4♂, Jungsan-ri, Chungju-si, Chungcheongbuk-do, 12.vii.2001, on *Perilla frutescens*, S. Lee; 2♀, Suwon-si, Gyeonggi-do, 10.viii.1996, S. Lee; more than 50♂50♀, Namyangju, Gyeonggi-do, 19.x.1995, on *Chrysanthemum indicum*, H. Kim; 2♀, Tap-dong, Suwon, Gyeonggi-do, 31.vii.1995, S. Lee.

Biology: Unknown.

Distribution: Korea, Japan, Thailand, North Africa.

Region: Palaearctic, Oriental, Nearctic, Ethiopian.

Korea: GW, GG, CB, GB, GN, JN.

33. *Orius* (*Heterorius*) *laticollis laticollis* (Reuter, 1884)

Orius laticollis laticollis Reuter, 1884: 107. Type: female; TL: France, Pyrenees-Orientales, Lamalou-les-Bains; TD: MNHN.
Triphleps brevicollis Rey, 1888: 196 (syn. Péricart, 1971: 107).
Triphleps bernardi Ribaut, 1937: 250 (syn. Wagner, 1952: 47).
Orius (*Heterorius*) *ossiannilssoni* Wagner, 1952: 48 (syn. Péricart, 1971: 107).
Orius (*Heterorius*) *laticollis*: Lee and Kwon, 1991: 13 (Korean record).

Taxonomic remarks. I could not examine this species due to the lack of materials. Josifov and Kerzhner (1972) described 'the specimen collected near Pukčhŏng could be *O. laticollis* or *O. strigicollis*'. After personal discussion with the late Dr. Kerzhner, who originally recorded this species in the Korean Peninsula, he also agreed with the uncertainty of *O. laticollis* in the Korean Peninsula. Therefore, I strongly suspect that this species does not occur in the Korean Peninsula, at least, in South Korea. The other subspecies, *O. laticollis* discolor (Reuter, 1884), are distributed in Russia (Western), Spain, and Mongolia.

Specimens examined: Unavailable.
Biology: Unknown.
Distribution: Korea, China, Mongolia, Russia.
Region: Palaearctic.
Korea: Unknown.

34. *Orius* (*Heterorius*) *sauteri* (Poppius, 1909) (Pl. 10, 113–114)

Triphleps sauteri Poppius, 1909: 35. Type: female; TL: Japan, Hiranuma; TD: HNHM.
Triphleps proximus Poppius, 1909: 36 (syn. Josifov and Kerzhner, 1972: 152).
Anthocoris morivorella Matsumura, 1917: 427 (syn. Esaki and Hashimoto, 1936: 23).
Orius (*Heterorius*) *sauteri*: Kerzhner, 1988: 775 (Korean record).

Diagnosis: Easily recognized by darker body color, slender body shape, and relatively weak and hairy callus. Body size, coloration on hemelytra and structure of pronotum are very variable.
Description: Body oval, sometimes oblong in males, 2–3 mm from tylus to end of abdomen. Body length 2.33–2.99 mm, width 0.68–0.88 mm.
Head. Head sparsely pubescent on vertex and frons, 4–6 IOS, 4–11 FS, no longer than 0.05 mm of all setae in head part; antennae 4-segmented, proportion of each segment of male and female 0.12 : 0.27 : 0.22 : 0.26 and 0.10 : 0.21 : 0.18 : 0.19; rostrum reaching behind hind coxae; clypeus with 4 setae; proportion of segments II–IV of rostrum in male and female, 0.09 : 0.28 : 0.15 and 0.10 : 0.27 : 0.21; ocs, tcs, ivs very short, proportion of length of ocs, tcs, ivs 0.01 : 0.02 : 0.03 in males and females.
Thorax. Pronotum trapezoidal with one pair of short setae at anterior angle, anterior pronotal width almost 2 times as long as basal pronotal width, 0.32 : 0.71 in male proportion, longer than 2 times 0.32 : 0.78 in female proportion; fore leg with strong teeth in male, without teeth in female; scutellum somewhat triangle shape, proportion of length/width of scutellum 0.40 : 0.49 in males,

0.39 : 0.51 in females; hemelytra with many short setae except membrane, proportion of length and width of hemelytra 1.16 : 0.51 in males, 1.15 : 0.63 in females.

Abdomen. Paramere with narrowed and apically tapered cone; denticule short and thin, located at top of cone; flagellum long and thin, shorter than cone, proportion of paramere/denticule/flagellum 0.16 : 0.02 : 0.15. Copulatory tube very short, at least shorter than 0.03 mm; basal segment broader than apical segment, not longer than apical segment, sometimes apical segment invisible; median junction not exist.

Female: Fore leg with strong teeth in male, without teeth in female.

Specimens examined: 40♂39♀, Taean-gun, Chungcheongnam-do, 12.viii.2006, S. Jung; more than 1000♂1000♀, Yesan-gun, Chungcheongnam-do, 27.ix.2006, on *Fagopyrum esculentum*, S. Jung; 5♀, Yesan-gun, Chungcheongnam-do, 26.vi.2006, on *Fagopyrum esculentum*, S. Jung; 15♀, Gopado-ri, Dalbong-myeon, Seosan-si, Chungcheongnam-do, 16.viii.2006, S. Jung.

Biology: This species is a very common species on the Korean Peninsula from July to September. It primarily aggregates on flowers populated by thrips, which are a food source.

Distribution: Korea, Japan, China, Russia (Far eastern).

Region: Palaearctic.

Korea: GW, GG, CB, CN, GN, JB, JN, JJ.

35. *Orius* (*Heterorius*) *nagaii* Yasunaga, 1993 (Pl. 11, 115−116)

Orius (*Heterorius*) *nagaii* Yasunaga, 1993: 19. Type: male; TL: Japan, Honshu, Chiba Pref., nr Tateyama; TD: NIAES.

Orius (*Heterorius*) *nagaii*: Péricart, 1996: 124 (Korean record).

Diagnosis: Easily recognized by head shiny, pronotum tinged with red, pale tylus, sparse and suberect pubescence, with more flat and wide callus, hemelytra and legs with dense suberect pubescence, legs pale.

Description: Body oval, sometimes oblong in males, 2−3 mm from tylus to end of abdomen). Body length 2.04−2.99 mm, width 0.62−0.96 mm.

Head. Head sparsely pubescent on vertex and frons, 4−8 IOS, 2−7 FS, no longer than 0.1 mm of all setae in head part; antennae 4-segmented, proportion of each segment of male/female 0.12 : 0.20 : 0.18 : 0.19/0.11 : 0.23 : 0.20 : 0.09. Rostrum reaching behind hind coxae; clypeus with 4 long setae; proportion of segment II−IV of rostrum in male and female, 0.11 : 0.26 : 0.19 and 0.09 : 0.31 : 0.18; ocs, tcs, ivs not short, proportion of length of ocs, tcs, ivs 0.05 : 0.08 : 0.05 in males, 0.03 : 0.06 : 0.04 in females.

Thorax. Pronotum trapezoidal with one pair of middle setae at anterior angle, one pair of middle setae at the joint with head; anterior pronotal width almost 2 times as long as basal pronotal width, 0.29 : 0.67 in male proportion, 0.29 : 0.94 in female proportion; foreleg with strong teeth in male, without teeth in female; scutellum somewhat triangle shape, proportion of length/width of scutellum 0.32 : 0.45 in males, 0.44 : 0.67 in females; hemelytra with many short setae except membrane, proportion of length and width of hemelytra 1.45 : 0.58 in males, 1.72 : 0.62 in females.

Abdomen. Paramere with narrowed and apically tapered cone; denticule short and thin, located at the middle of cone; flagellum long and thin, shorter than cone, proportion of paramere/denticule/flagellum 0.13 : 0.03 : 0.15. Copulatory tube bent at the angle of 90 degree, basal segment broader

than apical segment, longer than apical segment; median junction not exist.

Female: Fore leg with strong teeth in male, without teeth in female.

Specimens examined: 4♂6♀, Yesan-gun, Chungcheongnam-do, 27.ix.2006, on *Fagopyrum esculentum*, S. Jung; more than 500♂500♀, Yesan-gun, Chungcheongnam-do, 27.ix.2006, on *Oryza sativa*, S. Jung; 11♂8♀, Yesan-gun, Chungcheongnam-do, 18.viii.2006, on *Oryza sativa*, S. Jung; 3♂5♀, Yesan-gun, Chungcheongnam-do, 27.ix.2006, on *Oryza sativa*, S. Jung.

Biology: The species is found in rice fields.

Distribution: Korea, Japan, Russia (Far eastern).

Region: Palaearctic.

Korea: GW, GG, CB, CN.

36. *Orius* (*Heterorius*) *strigicollis* (Poppius, 1915) (Pl. 11, 117–118)

Triphleps strigicollis Poppius, 1915: 9. Type: female; TL: Taiwan, Anping; TD: DEIC.
Orius strigicollis: Kim et al., 1997: 166 (Korean record).

Diagnosis: Easily recognized by cuneus with a broad dark part, in contrast to pale corium. Variable in body color. Description: Body oval, sometimes oblong in males, 2–3 mm from tylus to end of abdomen. Body length 2.22–2.66 mm, width 0.65–0.83 mm.

Head. Head sparsely pubescent on vertex and frons, 3–4 IOS, 4–8 FS, no longer than 0.05 mm of all setae in head part; antennae 4-segmented, proportion of each segment of male/female 0.11 : 0.24 : 0.18 : 0.19/0.10 : 0.23 : 0.19 : 0.20; rostrum reaching behind hind coxae; clypeus with 4 long setae; proportion of segments II–IV of male/female rostrum, 0.10 : 0.25 : 0.18/0.09 : 0.25 : 0.18; ocs, tcs, ivs short, proportion of length of ocs, tcs, ivs 0.02 : 0.04 : 0.04 in males, 0.02 : 0.03 : 0.04 in females.

Thorax. Pronotum trapezoidal with one pair of short setae at anterior angle, one pair of short setae at the joint with head; anterior pronotal width almost 2 times as long as basal pronotal width, 0.37 : 0.81 in male proportion, 0.29 : 0.72 in female proportion; foreleg with strong teeth in male, without teeth in female; scutellum somewhat triangle shape, proportion of length/width of scutellum 0.38 : 0.50 in males, 0.37 : 0.52 in females; hemelytra with many short setae except membrane, proportion of length and width of hemelytra 1.37 : 0.46 in males, 1.53 : 0.51 in females.

Abdomen. Paramere with wide apically tapered cone; denticule short and thin, located at the middle of cone; flagellum long and thin, longer than cone, proportion of paramere/denticule/flagellum 0.17 : 0.04 : 0.30 Female genitalia. Copulatory tube elongate, basal segment broader than apical segment, shorter than apical segment; median junction exist.

Female: Fore leg with strong teeth in male, without teeth in female.

Specimens examined: 4♀, Jungsan-ri, Suanbo-myeon, Chungju-si, Chungcheongbuk-do, 12.vii. 2001, S. Lee; 4♂, Anheung-myeon, Hoengseong-gun, Gangwon-do, 11.viii.1999, on *Pleuropterus multiflours*, G. Lee; 7♂11♀, Yesan-gun, Chungcheongnam-do, 27.ix.2006, on *Fagopyrum esculentum*, S. Jung; 4♂5♀, Yesan-gun, Chungcheongnam-do, 12.ix.2006, on *Fagopyrum esculentum*, S. Jung; 2♀, Tap-dong, Suwon, Gyeonggi-do, 5.vii.1995, S. Lee; more than 50♀, Yesan-gun, Chungcheongnam-do, under the bark of *Zelkova serrata* (hibernated), 1.ii.2009, S. Jung.

Biology: This species is commonly found on eggplant (Yasunaga, 1997). In South Korea, it has

been used as a biological agent to control pests in greenhouses.

Distribution: Korea, Taiwan, Southern part of China, Japan.

Region: Palaearctic, Oriental.

Korea: GW, JN.

37. *Orius* (*Orius*) *laevigatus laevigatus* Fieber, 1860 (Pl. 11, 119−120)

Triphleps laevigatus Fieber, 1860: 270. Type: ?; TL: Italy, Sicily; TD: not located.
Orius laevigatus cyprius Wagner, 1952: 35.
Orius laevigatus inaequalis Wagner, 1952: 35.
Orius (*Heterorius*) *luridus* Wagner, 1954: 225 (syn. Wagner and Péricart, 1968: 213).
Orius (*Orius*) *laevigatus laevigatus*: Jung et al., 2011: 69 (Korean record).

Diagnosis: Easily recognized by recognized by the long setae on the pronotum of each 4 angle.

Description: Body oval, sometimes oblong in males, 2−3 mm from tylus to end of abdomen. Body length 2.11−2.55 mm, width 0.66−0.95 mm.

Head. Head sparsely pubescent on vertex and frons, 3−6 IOS, 4−9 FS, no longer than 1.5 mm of all setae in head part; antennae 4-segmented, proportion of each segment of male/female 0.11 : 0.27 : 0.20 : 0.18/0.10 : 0.25 : 0.14 : 0.15; rostrum reaching behind hind coxae; clypeus with 4 very long setae; proportion of segments II−IV of male/female rostrum, 0.07 : 0.26 : 0.15/0.09 : 0.24 : 0.14; ocs, tcs, ivs long, proportion of length of ocs, tcs, ivs 0.07 : 0.10 : 0.06 in males, 0.04 : 0.08 : 0.05 in females.

Thorax. Pronotum trapezoidal with one pair of very long setae at anterior angle, one pair of very long setae at the joint with head; anterior pronotal width almost 2 times as long as basal pronotal width, 0.36 : 0.82 in male proportion, almost 2 times 0.37 : 0.70 in female proportion; foreleg with strong teeth in male, without teeth in female; scutellum somewhat triangle shape, proportion of length/width of scutellum 0.35 : 0.51 in males, 0.35 : 0.44 in females; hemelytra with many short setae except membrane, proportion of length and width of hemelytra 1.54 : 0.53 in males, 1.17 : 0.34 in females.

Abdomen. Paramere with narrowed and apically tapered cone; no denticule; flagellum long and thin divided two lines, proportion of two lines 0.09 : 0.11, shorter than cone, proportion of paramere/flagellum (I)/flagellum (II) 0.15 : 0.09 : 0.11. Copulatory tube short, basal segment broad; apical segment not exist; median junction not exist.

Female: Fore leg with strong teeth in male, without teeth in female.

Specimens examined: 5♂12♀, reared from the Koppert Co. Ltd, Holland (no record of the death date), NIAST, J. Kim; 30♂30♀, CNU, reared, 10.x.2014, S. Jung; 40♂40♀, NIAST, 13.x.2006, reared, S. Jung.

Biology: This species was introduced from Europe for use as a biological control agent in greenhouses.

Distribution: Korea, Europe, North Africa.

Region: Palaearctic, Ethiopian.

Korea: Unknown.

Genus *Bilia* Distant, 1904

Bilia Distant, 1904: 480.

38. *Bilia japonica* Carayon and Miyamoto, 1960 (Pl. 12, 121−122)

Bilia japonica Carayon and Miyamoto, 1960: 27. Type: male; TL: Japan, Kiu-Siu [=Kyushu], Satami-saki, Osumi; TD: KUEC.
Bilia japonica: Jung et al., 2013: 423 (Korean record).

Diagnosis: Easily recognized by Body dark brown (partly blackish brown), small (1.5 mm long), subcircular, anteocular portion longer than length of eye; antennae and legs pale yellow.

Description: Body generally dark brown, subcircular-oval; dorsal surface densely covered with long, silky pubescence. Body length 1.60 mm, width 1.00 mm.

Head. Head dark brown, much shorter than width across eyes; anteocular portion longer than length of eye; tylus tinged with dark brown; vertex about twice as wide as eye; eyes reddish brown, touching anterior margin of pronotum; ocelli reddish brown. Antennae dark brown to pale brown; segment I, dark brown, nearly reaching apex of head, with sparse short setae; segment II pale brown, clothe with suberect setae; segment III pale brown, basal half dark brown, about as long as segment II; segment IV pale brown, weakly flattened; lengths of segments I−IV (♀) 0.07, 032, 0.24, 0.17, respectively. Rostrum long, reaching to fore coxae, sparsely covered with short setae; segments I to IV pale yellow; segment III about 2.5 times as long as segment II, slightly longer than segment IV; lengths of segments II−IV (♀) 0.08, 0.22, 0.18, respectively.

Thorax. Pronotum trapezoidal, not depressed posteromedially, with one suberect seta near each corner; anterior margin slightly shorter than mesal length; lateral margin nearly straight, weakly round; posterior margin curved inwardly, more than twice as wide as anterior margin; collar narrow; callus strongly swollen, with pair of suberect setae near anterior angles and deep depression in anterior part. Scutellum dark brown, with two deep, circular foveae in middle; 1/2 anterior part swollen, posterior half flattened and rugose. Hemelytra dark brown; cuneus more light including apex; embolial margin about 1.5 times as long as lateral cuneal margin; membrane dark grey, with three clear veins. Ostiolar peritreme and evaporative area dark brown; ostiolar peritreme long, slightly curved backwards. Legs slender, covered with short, recumbent pubenscence, pale yellow.

Abdomen. Dark brown.

Female: As in male except for genitalia with almost reduced ovipositor.

Specimens examined: 1♀, Bonghwa-gun, Gyeongsangbuk-do, 24.v.2010, S. Jung.
Biology: Unknown.
Distribution: Korea, China, Japan, Russia (Far eastern).
Region: Palaearctic.
Korea: GB.

Genus *Montandoniola* Poppius, 1909

Montandoniola Poppius, 1909: 30.

39. *Montandoniola moraguesi* (Puton, 1896) (Pl. 12, 123−124)

Montandoniella moraguesi Puton, 1896: 233. Type: female; TL: Spain, Mallorca; TD: MNHN.
Montandoniola thripodes Bergroth, 1916: 233 (syn. Herring, 1966: 93).
Ectemnus pictipennis Esaki, 1931: 264.
Montandoniola moraguesi: Jung et al., 2013: 423 (Korean record).

Diagnosis: Easily recognized by antennae dark brown; segments III and IV pale yellow. Rostrum dark brown; all of segment III and basal segment of IV pale yellow.

Description: Body generally dark brown, oblong; dorsal surface densely covered with short pubescence. Body length 2.10−2.15 mm, width 0.68−0.69 mm.

Head. Head dark brown, almost twice as long as width across eyes; anteocular portion shorter than length of eye; tylus tinged with blackish brown; vertex about three times as wide as eye; eyes dark brown, not touching anterior margin of pronotum; ocelli dark brown. Antennae dark brown to pale, segment I dark brown, nearly reaching apex of head, with sparse short setae; segment II dark brown, a little shorter than head width across eyes, clothe with suberect setae; segment III pale yellow; segment IV pale yellow, basal part dark brown; lengths of segments I−IV (♀) 0.14, 0.26, 0.23, 0.19, respectively. Rostrum dark brown, short, not reaching mesosternum, sparsely covered with short setae; lengths of segments II−IV (♀) 0.09, 0.35, 0.29, respectively.

Thorax. Pronotum dark brown, sub-trapezoidal, little depressed posteromedially, with one suberect seta near each corner; anterior margin slightly short than mesal length; later margin nearly straight, weakly round; posterior margin curved inwardly, more than twice as long as anterior margin; collar dark brown, broad; callus weakly swollen, with pair of suberect setae near anterior angles and depression in anterior part. Scutellum dark brown, with two deep, circular foveae in middle; 1/2 anterior part swollen, posterior half flattened and rugose. Hemelytra dark brown with whitish transparent corium; cuneus more darkened including apex; embolial margin about 1.5 times as long as lateral cuneal margin; membrane dark brown with whitish transparent lines. Ostiolar peritreme and evaporative area dark brown; ostiolar peritreme long, slightly curved backwards. Legs moderate, covered with short, recumbent pubenscence; femur dark brown; tibia pale brown.

Abdomen. Dark brown.

Female: As in male except for genitalia with almost reduced ovipositor.

Specimens examined: 1♀, Baekhak-myeon, Yeoncheon-gun, Gyeonggi-do, near DMZ (the demilitarized zone between North and South Korea) area inside the CCL, on *Chenopodium album* var. *centrorubrum* (goosefoot, Chenopodiaceae), 17.vii.2008, S. Jung.

Biology: This species is a biological control agent of the Cuban laurel thrip, Gynaikothrips ficorum (Marchal, 1908).

Distribution: Korea, China, Japan, Entire Europe.

Region: Palaearctic, Oriental, Afrotropical.

Korea: GG.

Genus *Scoloposcelis* Fieber, 1864

Scoloposcelis Fieber, 1864: 66.
Ostorodias Distant, 1904: 220.
Scoloposcelidea Stichel, 1959: 38.

40. *Scoloposcelis koreanus* Jung and Yamada, 2011 (Pl. 12, 125−126)

Scoloposcelis koreanus Jung and Yamada, 2011: 64. Type: male; TL: Korea, Gangwon-do, Hoengseong-gun; TD: LIBSNU.

Diagnosis: Easily recognized by body elongate, parallel-sided, and shiny; outer half of clavus, basal half of endocorium and embolium light brown; membrane pale brown, almost transparent, remainder of hemelytra black to blackish brown; fore femur with row of spinules ventrally; mid- and hind femora without spinules; paramere blade-like, sharp at apex; copulatory tube membranous, swollen at apex.

Description: Body entirely black, elongate, shiny. Body length 2.20−2.90 mm, width 0.71−0.85 mm.

Head. Head black, smooth on dorsal surface, sparsely covered with short setae; two pairs of long, erect setae present on sides of tylus; vertex about twice as wide as eye in dorsal view; eyes blackish brown, prominent; ocelli reddish brown. Antennal segment I black, stout, reaching to apex of head, covered with short setae at apex; segment II black, shorter than width of head across eyes, thickened toward apex, covered with suberect setae; segments III and IV pale brown, shorter than segment II, covered with suberect setae of variable length; segment IV flattened, a little longer than segment III; lengths of antennal segments I−IV (♂/♀) 0.12−0.14/0.14−0.15, 0.33−0.36/0.35−0.38, 0.23−0.25/0.25−0.27, and 0.27−0.29/0.29−0.33. Labium reaching middle of mesosternum, with very short setae; segment I to basal half of segment III black; apical half of segments III and segment IV pale brown; lengths of labial segments II−IV (♂/♀) 0.21−0.22/0.21−0.22, 0.50/0.52, and 0.33−0.34/0.31−0.35.

Thorax. Pronotum black, trapezoidal, smooth on apical half of dorsal surface, weakly depressed on posterior half, bearing erect setae at anterior and posterior angles; collar dark brown, distinct, with short setae; posterior margin concave, almost twice as long as anterior margin. Scutellum black, smooth, shiny covered with setae. Hemelytra parallel-sided, sparsely covered with silky, white setae; outer half of clavus, basal half of endocorium and embolium light brown, inner basal area of membrane whitish transparent, remainder of hemelytra black to blackish brown. Ostiolar peritreme and evaporatorium brown; ostiolar peritreme crescent, not acute at apex, not reaching anterior margin of metapleuron. Legs covered with short, silky setae; fore femur black, ventrally with row of 10−15 spinules of various size; fore tibia and fore tarsus pale yellow; mid- and hind femora black, without spinules ventrally; mid- and hind tibiae and tarsi pale yellow.

Abdomen. Abdomen dark brown, densely covered with short setae; scissures on abdominal tergite reaching end of posterior margin of segment III. Uradenia with balloon-shaped secretory body.

Male genitalia with cup-shaped pygophore, covered with long setae posteroventrally; paramere blade-like, sharp at apex, with large groove on middle part.

Female: As in male except for genitalia swollen at apex with membranous, twisted copulatory tube.

Specimens examined: 1♂, shiitake mushroom farm, Hoengseong-gun, Gangwon-do, 5.iv.2008, S. Jung.

Biology: This species is found under the bark of the oak, *Quercus acutissima* Carruth (Fagaceae), which is used in shiitake mushroom cultivation. It is primarily found in bed logs damaged by the shiitake pest *Camptomyia* spp.

Distribution: Korea (Middle part).

Region: Palaearctic.

Korea: GW.

Genus *Xylocoris* Dufour, 1831

Xylocoris Dufour, 1831: 423.

41. *Xylocoris hiurai* Kerzhner and Elov, 1976 (Pl. 13, 127−128)

Xylocoris (*Proxylocoris*) *hiurai* Kerzhner and Elove, 1976: 366. Type: female; TL: China, Fujian, Fuzhou; TD: ZMAS.

Xylocoris hiurai: Kwon et al., 1996: 109 (Korean record).

Diagnosis: Easily recognized by thickened fore tibia; transparent hemelytra with brownish marginal line.

Description: Body generally brown, oblong-oval; dorsal surface densely covered with short pubescence. Body length 2.30−2.35 mm, width 0.66−0.69 mm.

Head. Head dark brown, almost as long as width across eyes; anteocular portion longer than length of eye; tylus tinged with light brown; vertex about two times as wide as eye; eyes dark brown, not touching anterior margin of pronotum; ocelli reddish brown. Antennae dark brown to brown, segment I brown, nearly reaching apex of head, with sparse short setae; segments II pale brown, apical 1/4 part dark brown, as long as head width across eyes, clothe with suberect setae; segment III brown, thin, filiform, with long sparse setae; segment IV brown, thin, filiform, with long sparse setae; lengths of segments I−IV (♀) 0.15, 0.41, 0.33, 0.25, respectively. Rostrum brown, long, reaching mesosternum, sparsely covered with short setae; lengths of segments II−IV (♀) 0.09, 0.65, 0.31, respectively.

Thorax. Pronotum dark brown, sub-trapezoidal, little depressed posteromedially, with one suberect seta near each corner; anterior margin slightly short than mesal length; later margin nearly straight, weakly round; posterior margin curved inwardly, more than twice as long as anterior margin; collar dark brown, broad; callus weakly swollen, with pair of suberect setae near anterior angles and depression in anterior part. Scutellum dark brown, with two deep, circular foveae in middle; 1/2 anterior part swollen, posterior half flattened and rugose. Hemelytra transparent including cuneus, brownish marginal line; embolial margin about 2 times as long as lateral cuneal

margin; membrane transparent. Ostiolar peritreme and evaporative area dark brown; ostiolar peritreme long, slightly curved backwards. Femur thick, covered with short, recumbent pubenscence, brown; tibia pale brown, thin.

Abdomen. Dark brown.

Female: As in male except for genitalia with almost reduced ovipositor.

Specimens examined: 1♂, Hongcheon-eup, Hongcheon-gun, Gangwon-do, 12.vi.2006, S. Jung.
Biology: This species is found in the leaf litter of an unidentified dead shrub.
Distribution: Korea, China, Japan.
Region: Palaearctic.
Korea: GW.

Genus *Lasiochilus* Reuter, 1871

Lasiochilus Reuter, 1871: 562.

42. *Lasiochilus japonicus* Hiura, 1967 (Pl. 13, 129−130)

Lasiochilus (*Dilasia*) *japonicus* Hiura, 1967: 61. Type: male; TL: Japan, Osaka, Mt Ashû, Kitakuwata-gun; OMNH.
Lasiochilus japonicus: Jung and Lee, 2007: 7 (Korean record).

Diagnosis: Easily recognized by pale brown abdomen and knife-shaped paramere.
Description: Body brown to dark brown; body elongated, parallel-sided; covered with pale brown pubescence. Body length 2.98−2.99 mm, width 0.72−0.73 mm.

Head. Head entirely shiny dark brown or almost black, length, shorter than distance across eyes without neck, width of anteocular portion slightly longer than an eye compound eyes black, ocelli brown but reddish-brown in specimens after alcohol preservation, antennae pale, compound eyes relatively small, almost one-thirds as wide as interocular space, antennal segment I attaining apex of head, segment II slightly shorter than head width including compound eyes (0.29 : 0.34), length proportion of antennal segment I−IV in millimeters, 0.16 : 0.29 : 0.27 : 0.26, rostrum long, slightly surpassing front margins of middle coxae; labium dark pale, partly or sometimes widely pale, length of rostrum segments II−IV in millimeter, 0.14 : 0.55 : 0.26.

Thorax. pronotum dark brown and shiny, trapezoidal, anterior width twice as long as posterior width (0.34 : 0.72), bearing backwardly directed long setae at each angle, strongly rounded only at anterior angles, posterior margin widely and shallowly concave, callus weakly swollen, with faint submarginal wrinkles anteriorly, centrally with a faint longitudinal impression; scutellum dark brown and polished except from apex to middle line. Scutellum with basal triangular part smooth, remainder dull, dull area and posterior half of polished area covered with comparatively short, backwardly directed setae; hemelytra chestnut brown, slightly exceeding tip of abdomen, clavus, corium, embolium, and cuneus impunctate, uniformly covered with moderately long, backwardly directed setae; clavus, cuneus, and corium brown but slightly darker than hemelytra, membrane

pale blackish-brown. Legs pale, expanded toward apex, bearing short teeth, with well-developed fossula spongiosa at apex.

Abdomen. Genital paramere knife-shaped with haft, parallel-sided, with a distinct linear apical lobe.

Female: Very similar to male's coloration but slightly paler than male in general.

Specimens examined: 1♂, under the bark of dead pine tree, Gwaneum-sa, Jeju-si, Jeju-do, 27.iv.2006, S. Lee.

Biology: This species is found on the bark of various decaying trees (*Castanopsis* spp., *Quercus acutissima*, *Q. serrata*, *Zelkova serrata*, etc.) (Yamada and Hirowatari, 2003).

Distribution: Korea (JJ), China, Japan.

Region: Palaearctic.

Korea: JJ.

Genus *Lyctocoris* Hahn, 1835

Lyctocoris Hahn, 1835: 19.

43. *Lyctocoris beneficus* (Hiura, 1957) (Pl. 13, 131−132)

Euspudaeus beneficus Hiura, 1957: 31. Type: male; TL: Japan, Shikoku, Zinryo-mura; TD: KUEC.
Lyctocoris beneficus: Kerzhner, 1988: 770 (Korean record).

Diagnosis: Easily recognized by hemelytra transparent; male with one pair of parameres.

Description: Body generally brown, oblong, somewhat rounded; dorsal surface densely covered with short pubescence. Body length 2.40−2.45 mm, width 0.76−0.78 mm.

Head. Head brown, almost as long as width across eyes; anteocular portion shorter than length of eye; tylus tinged with light brown; vertex about three times as wide as eye; eyes dark brown, not touching anterior margin of pronotum; ocelli reddish brown. Antennae dark brown to pale brown, segment I brown, nearly reaching apex of head, with sparse short setae; segments II pale brown, as long as head width across eyes, clothe with suberect setae; segment III dark brown; segment IV brown, basal part dark brown; lengths of segments I−IV (♀) 0.11, 0.36, 0.23, 0.19, respectively. Rostrum dark brown, long, reaching mesosternum, sparsely covered with short setae; lengths of segments II−IV (♀) 0.07, 0.35, 0.89, respectively.

Thorax. Pronotum brown, sub-trapezoidal, little depressed posteromedially, with one suberect seta near each corner; anterior margin slightly short than mesal length; later margin nearly straight, weakly round; posterior margin curved inwardly, more than twice as long as anterior margin; collar dark brown, broad; callus weakly swollen, with pair of suberect setae near anterior angles and depression in anterior part. Scutellum dark brown, with two deep, circular foveae in middle; 1/2 anterior part swollen, posterior half flattened and rugose. Hemelytra transparent including cuneus; embolial margin about 2 times as long as lateral cuneal margin; membrane transparent. Ostiolar peritreme and evaporative area dark brown; ostiolar peritreme long, slightly curved backwards.

Legs moderate, covered with short, recumbent pubenscence; femur brown; tibia pale brown.
Abdomen. Brown.
Female: As in male except for genitalia with almost reduced ovipositor.

Specimens examined: 1♂, Mt. Yongmoon, Gyeonggi-do, from light trap, 13.vii.2009, S. Jung.
Biology: This species inhabits grass piles. It feeds on the rice stem borer, *Chilo supressalis* (Walker, 1863) in stacks of rice straw (Hiura, 1966).
Distribution: Korea, China, Japan, Russia (Far eastern).
Region: Palaearctic.
Korea: GG.

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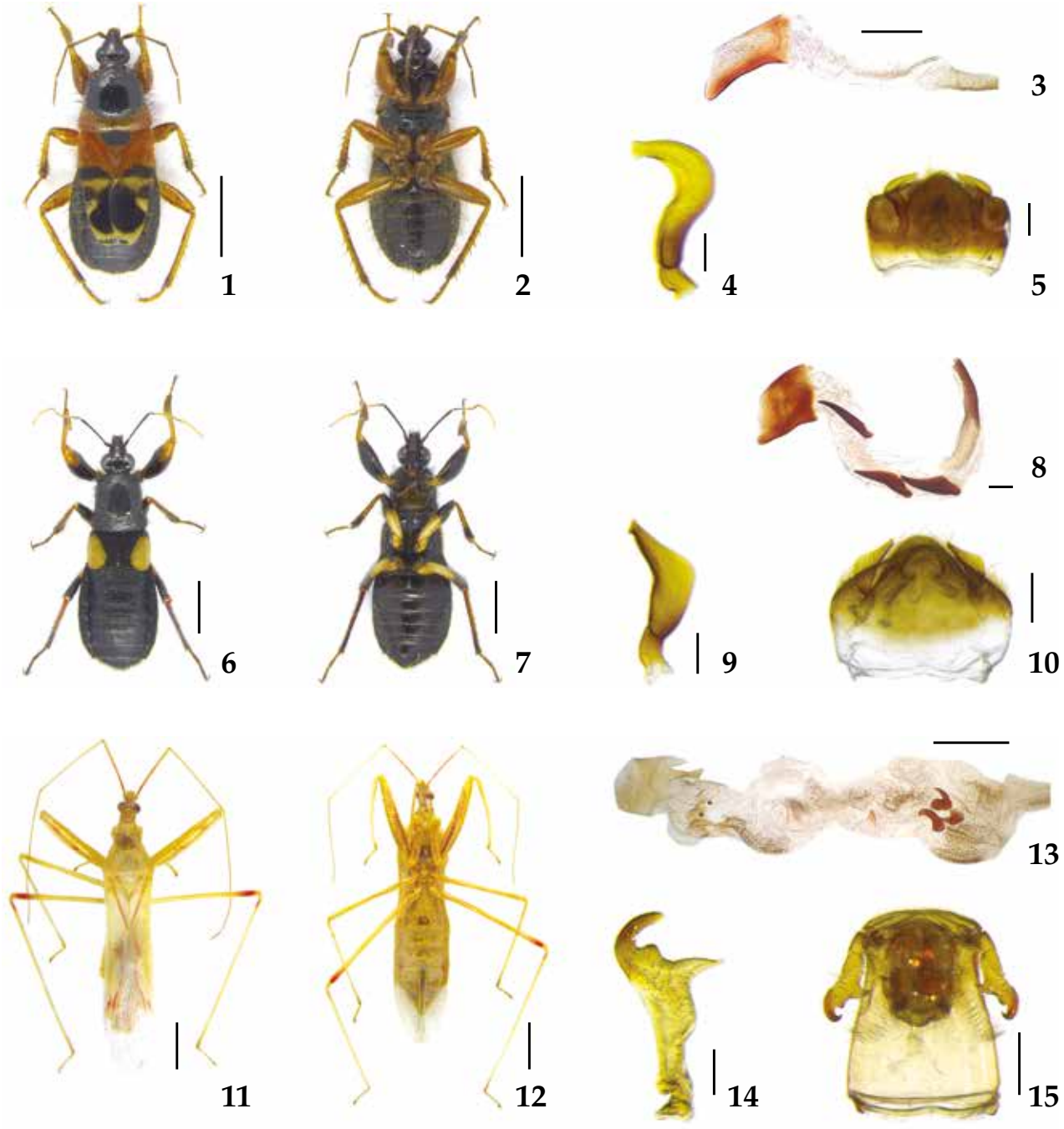
Plates



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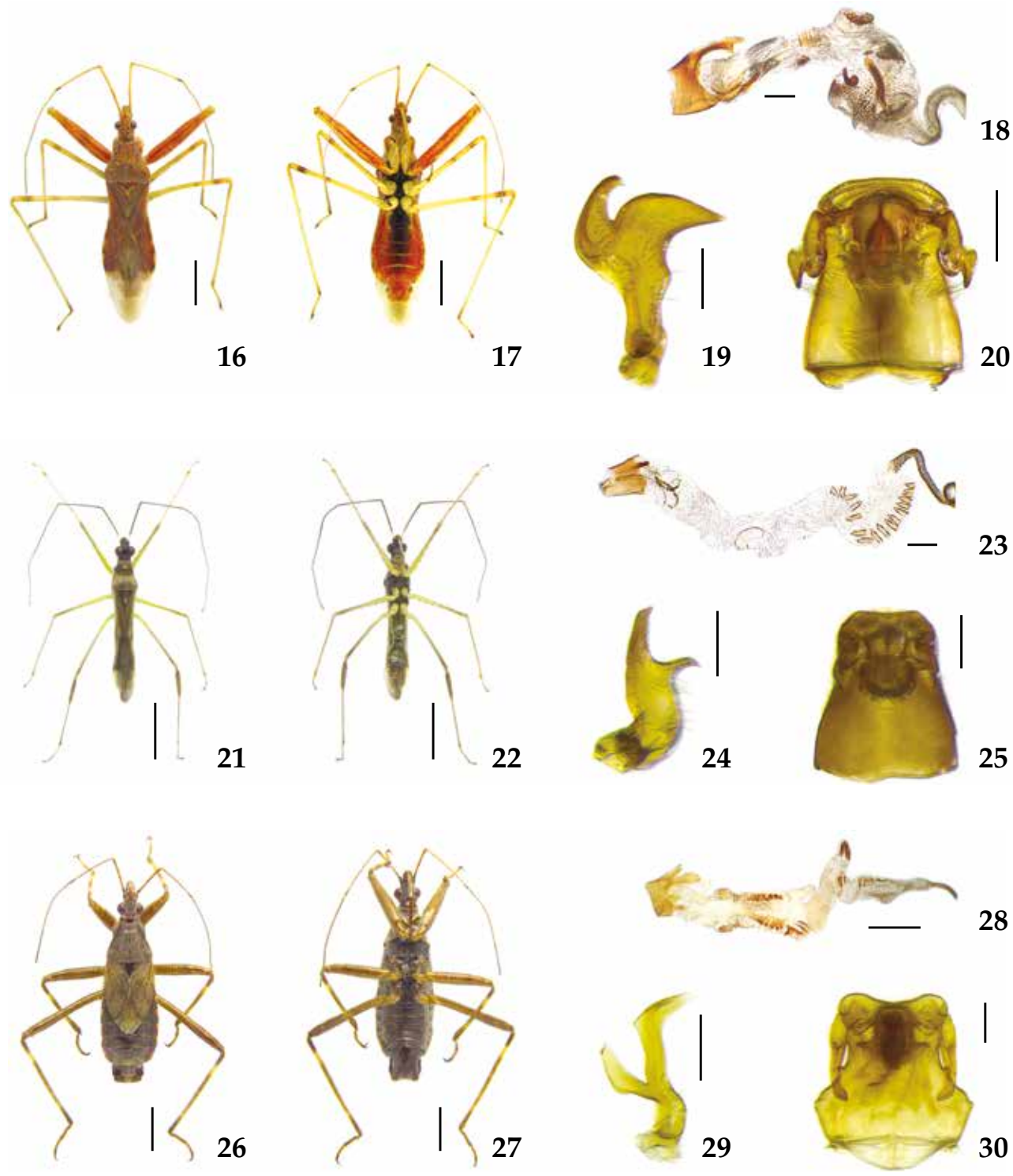

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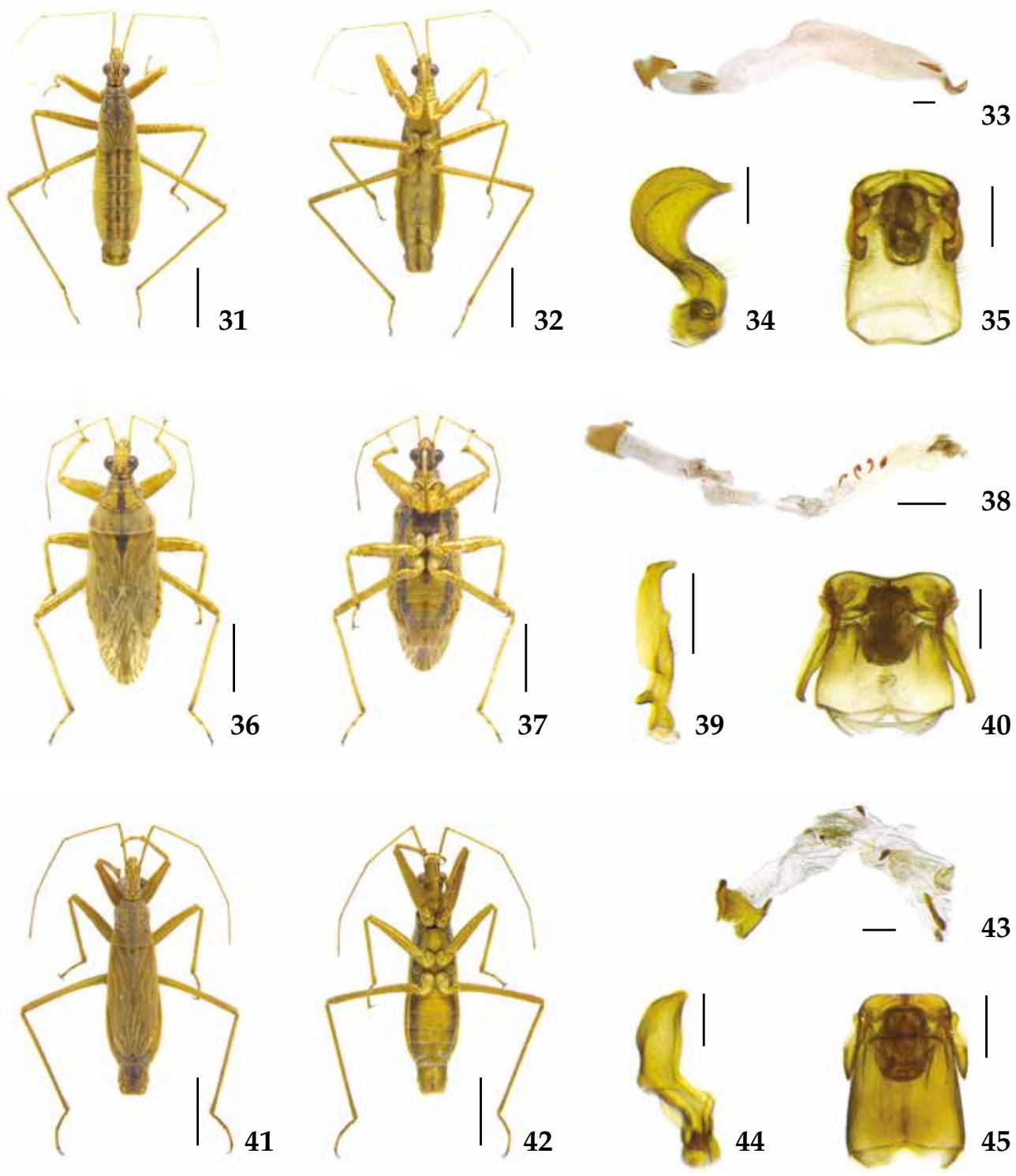

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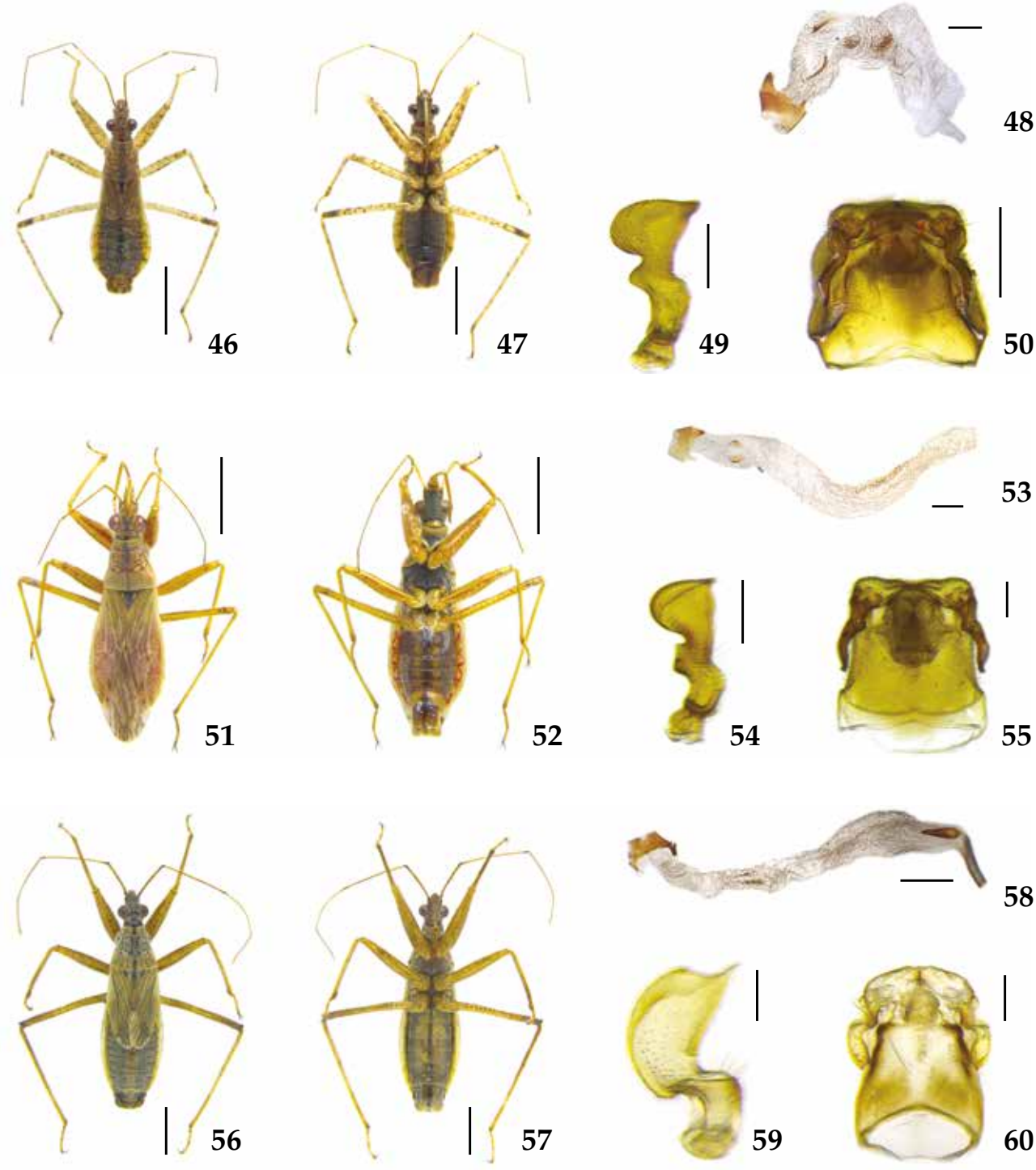

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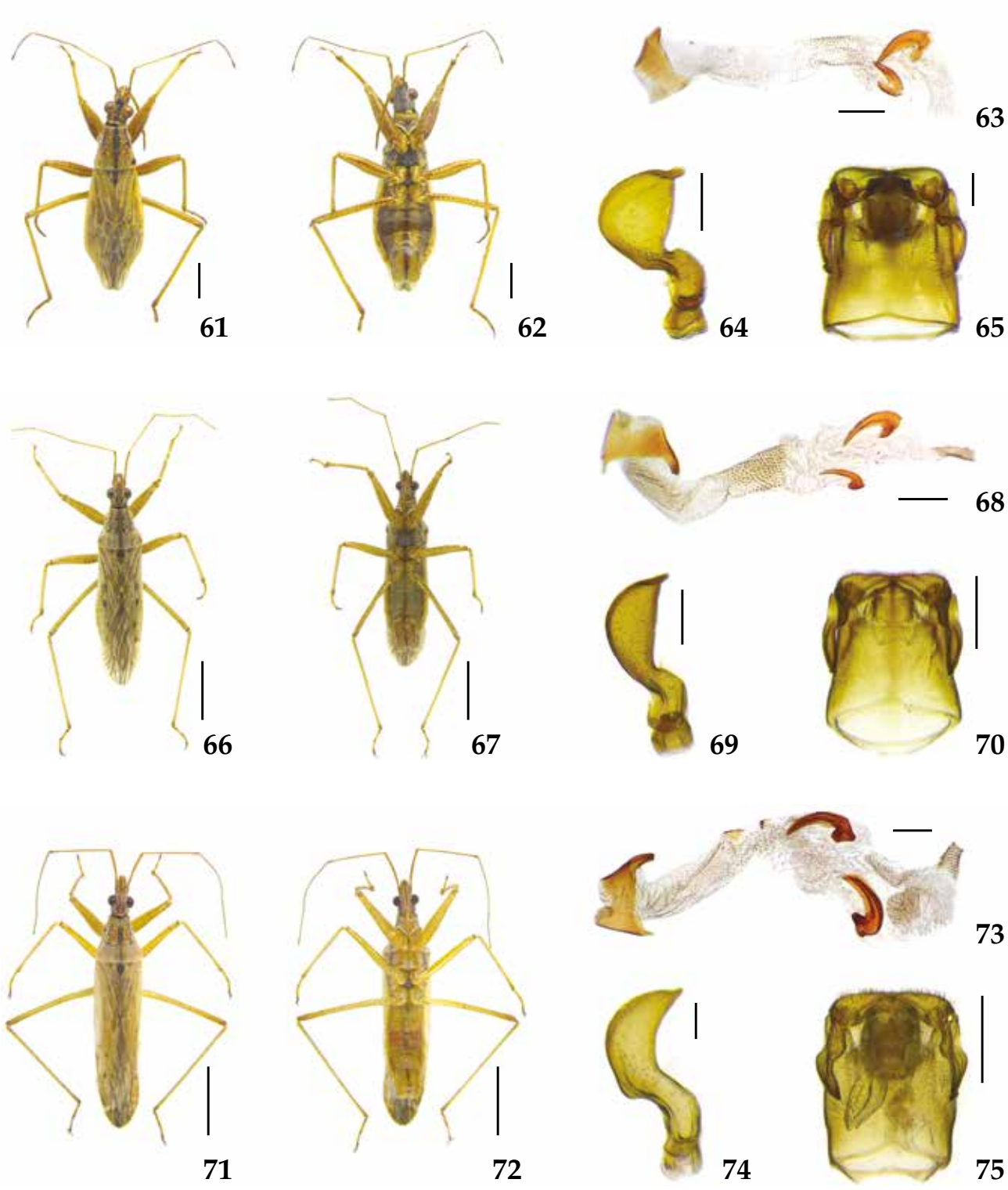

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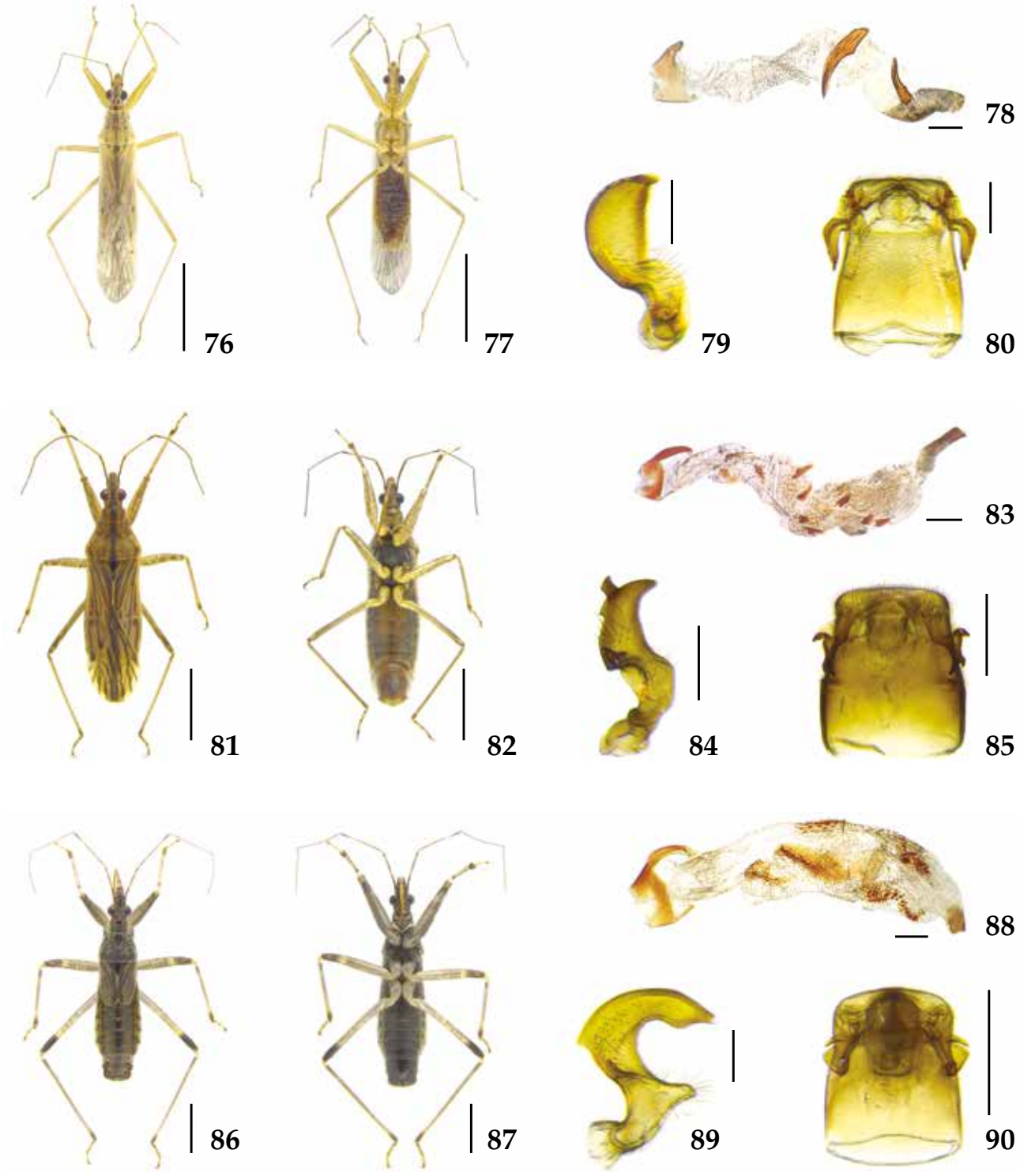

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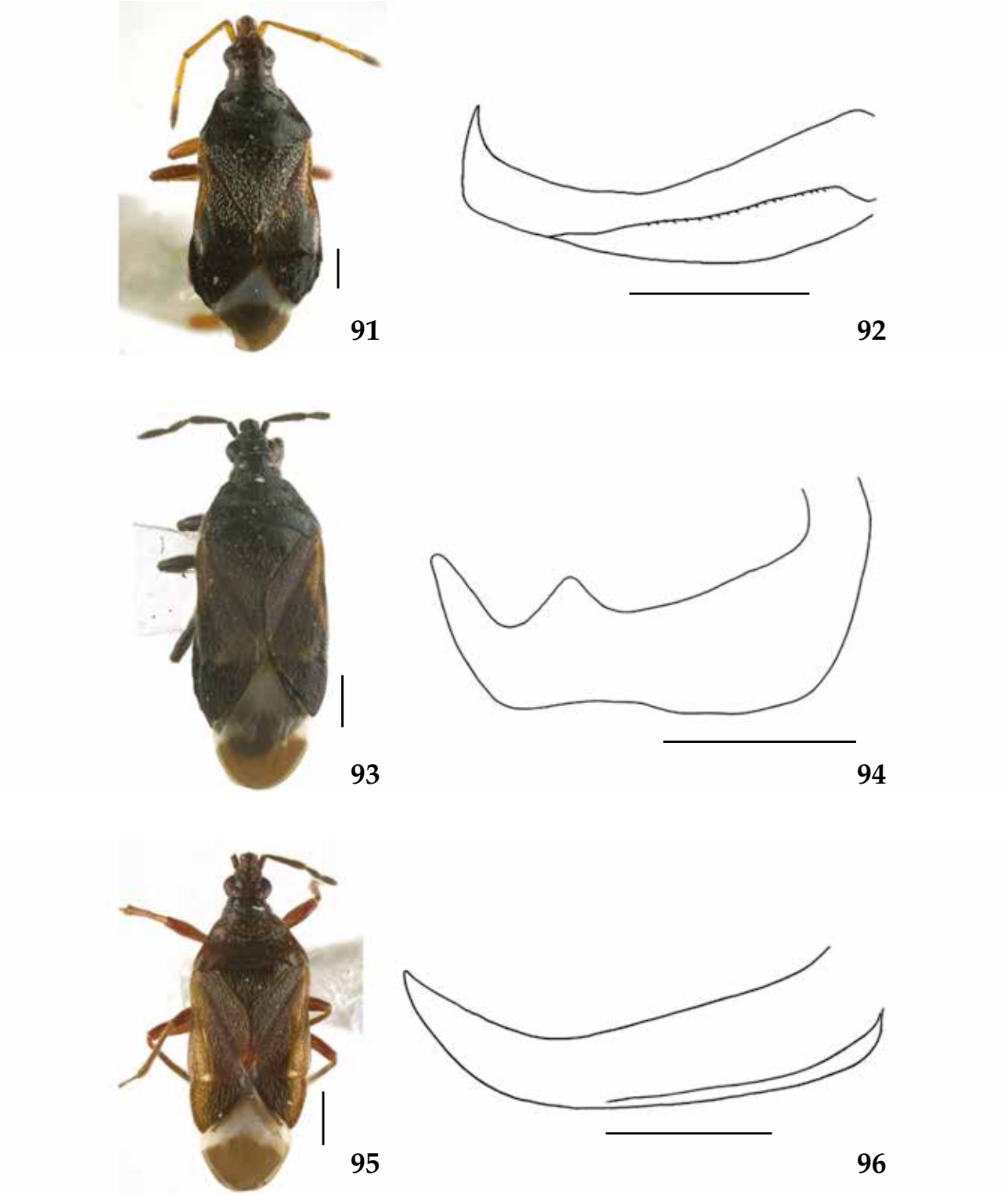

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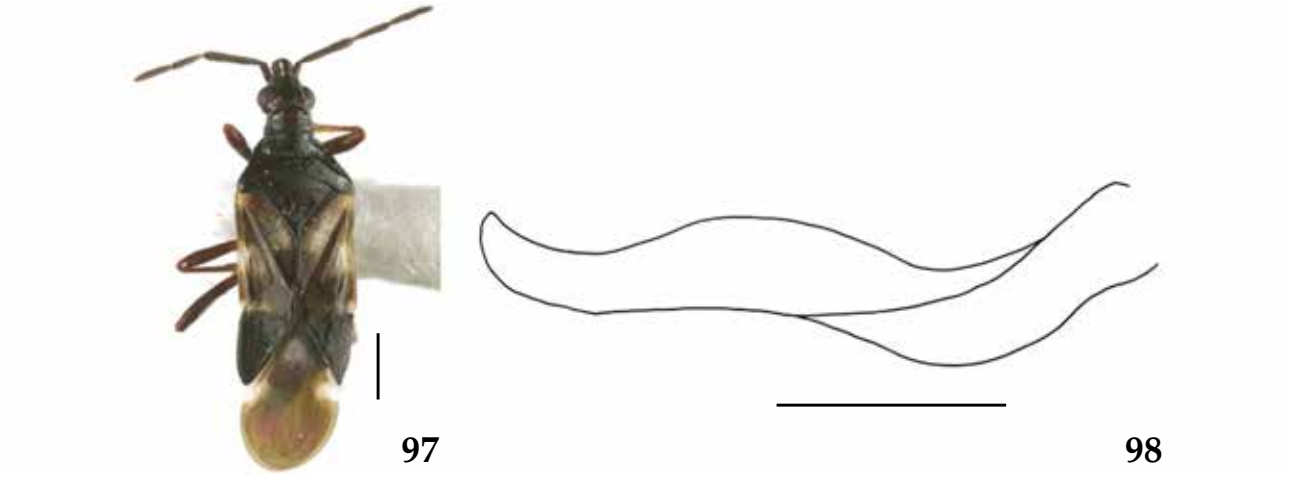

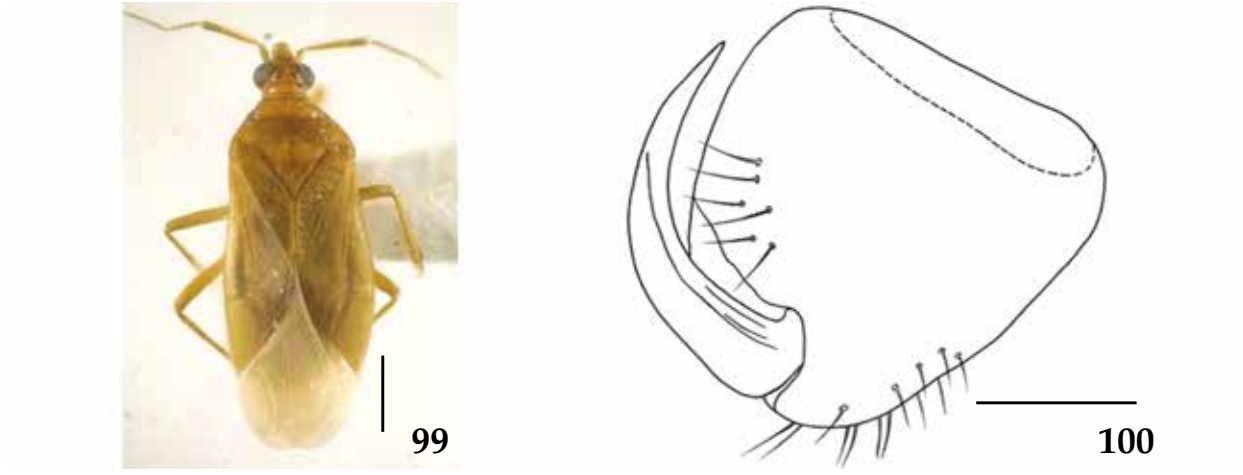

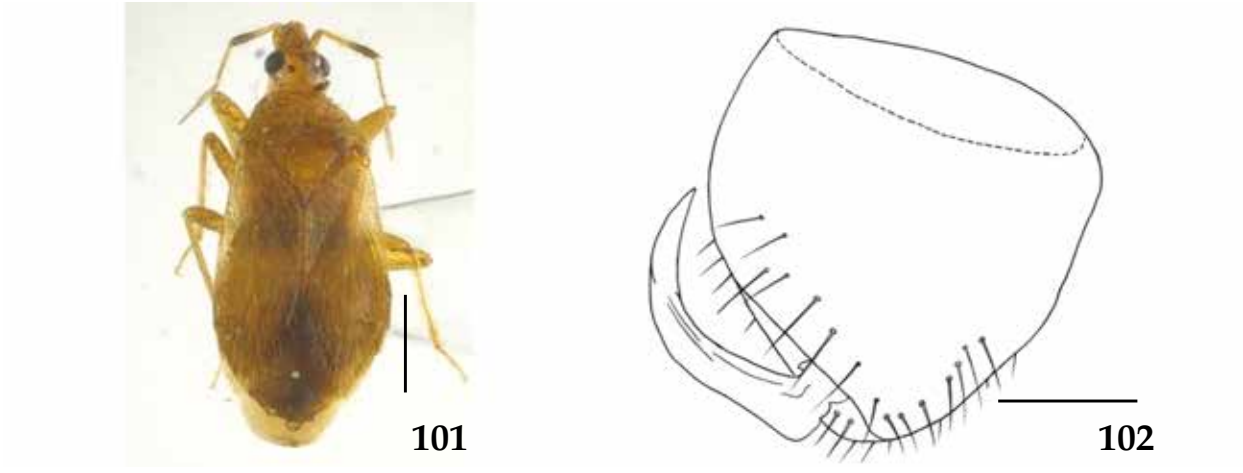

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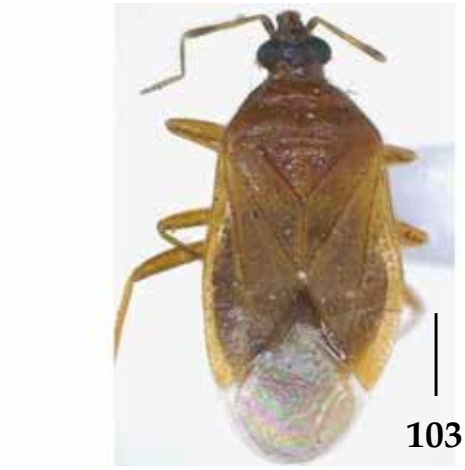

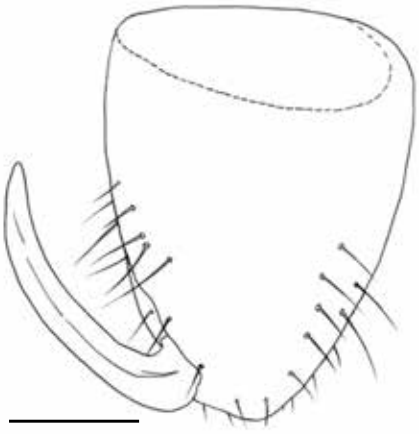

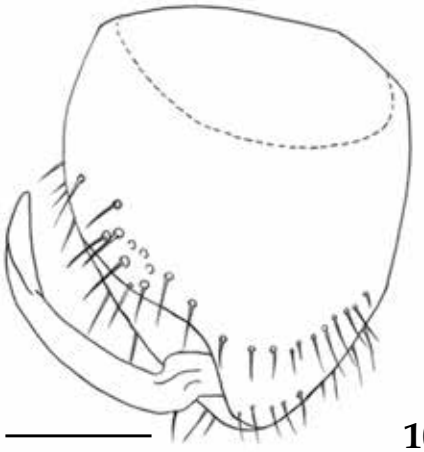

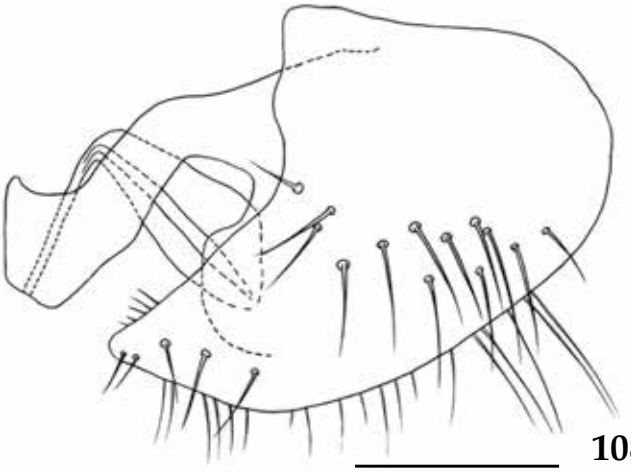

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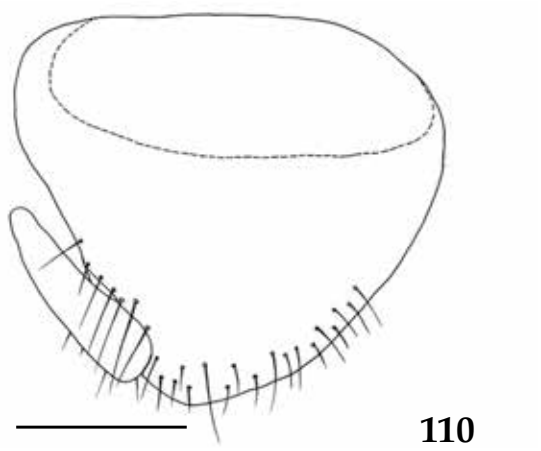

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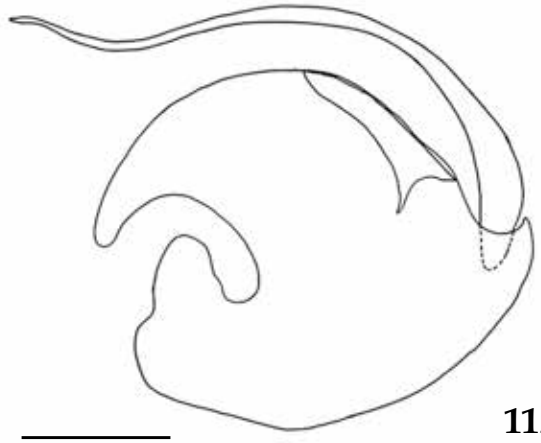

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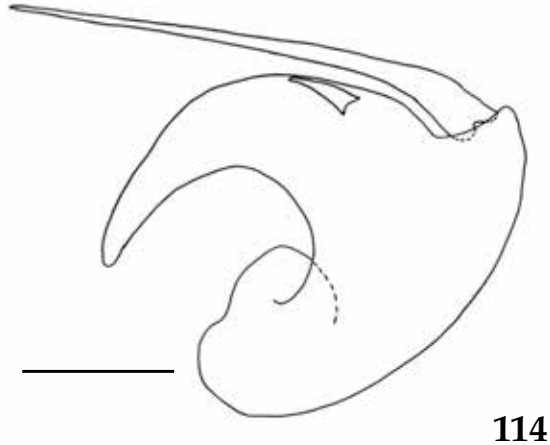

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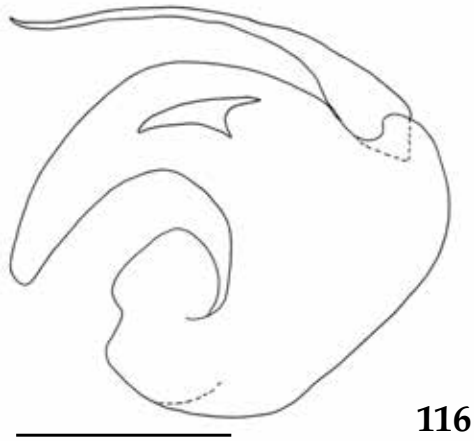

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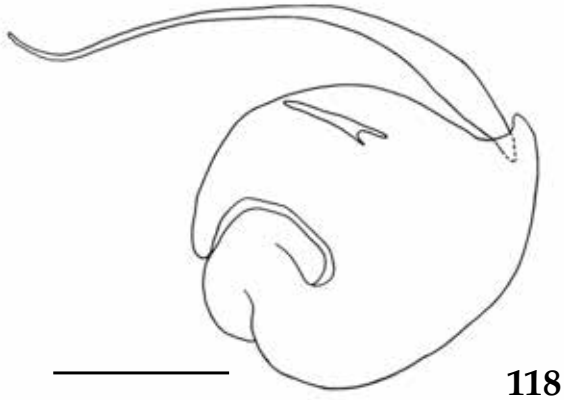

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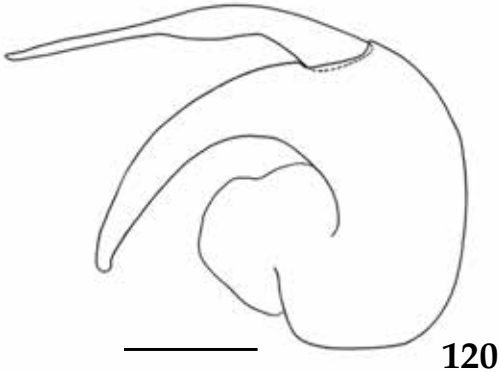

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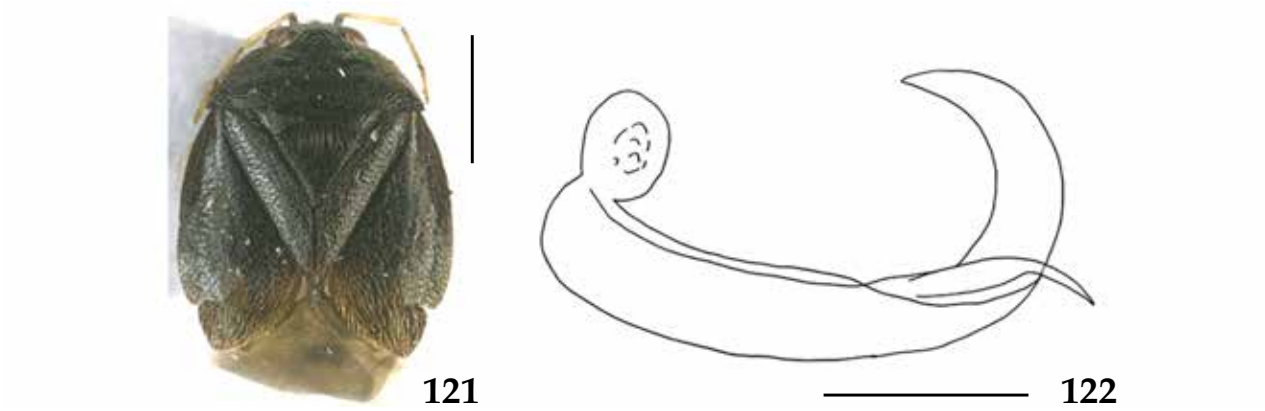

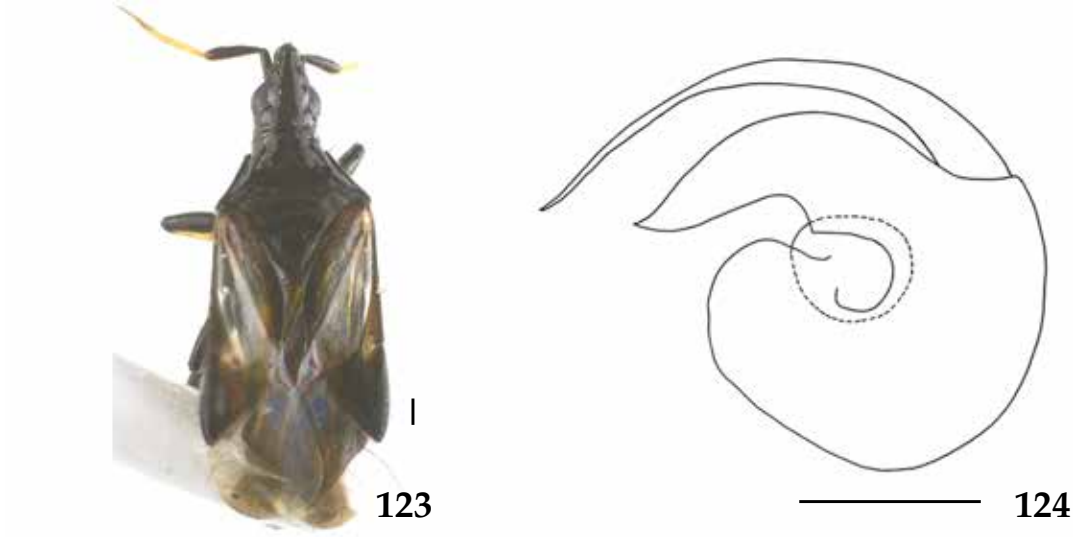

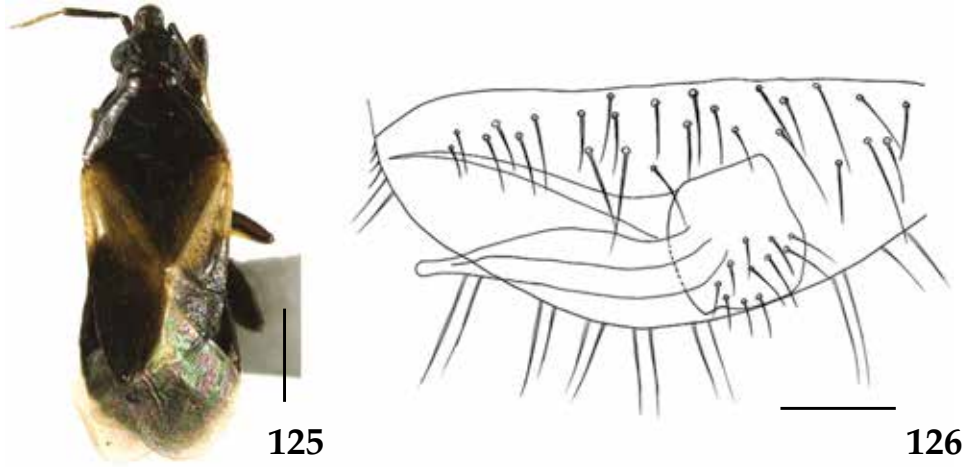

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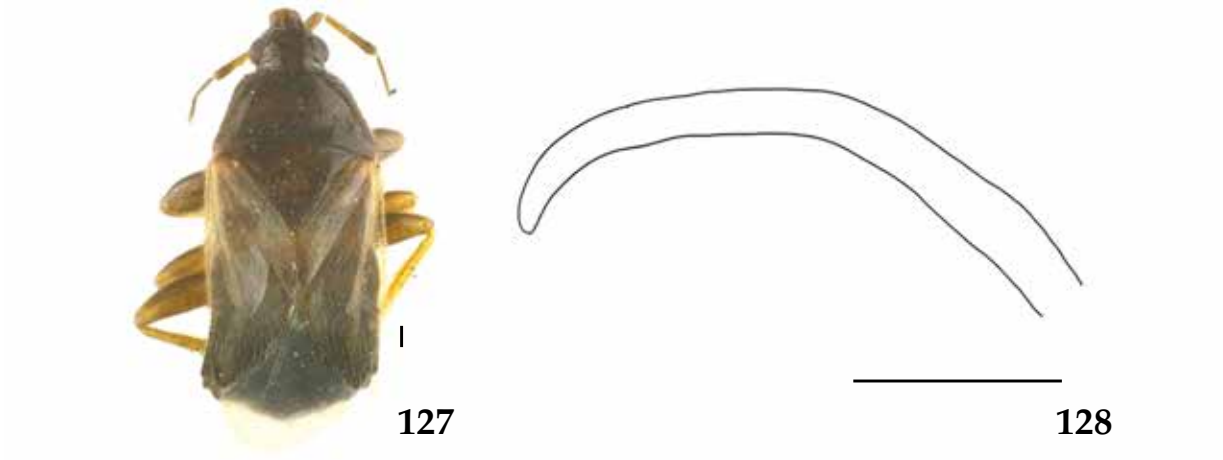

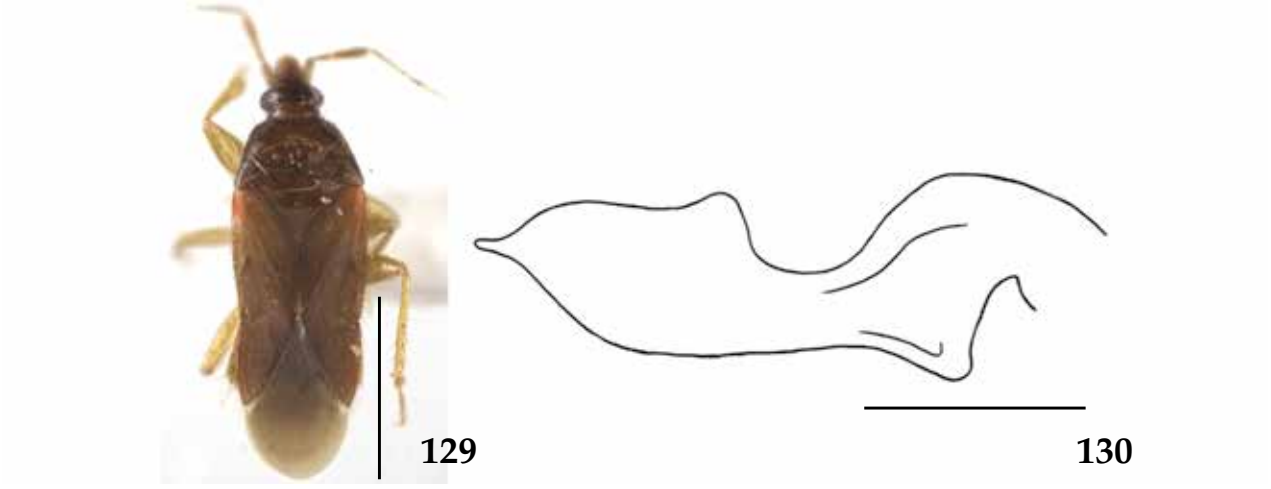

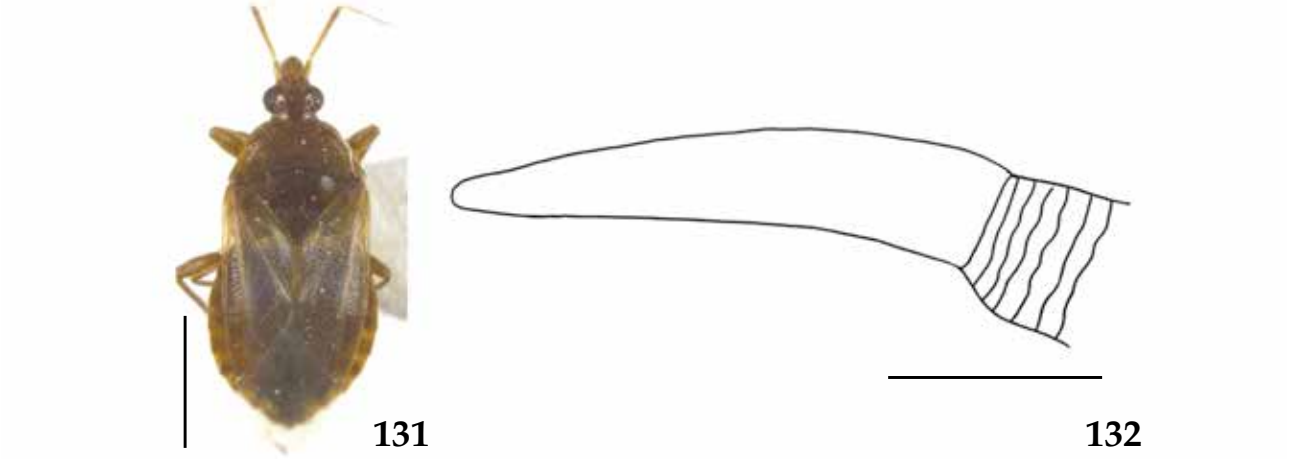

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