Eur. J. Entomol. **109**: 117–128, 2012
http://www.eje.cz/scripts/viewabstract.php?abstract=1687
ISSN 1210-5759 (print), 1802-8829 (online)

A new genus and species of the tribe Orthotylini (Heteroptera: Miridae: Orthotylinae) from Central Asia

ALEXANDER A. KNYSHOV and FEDOR V. KONSTANTINOV

St. Petersburg State University, Department of Entomology, Universitetskaya nab. 7/9, 199034 St. Petersburg, Russia; e-mails: knyshovspb@list.ru; fkonstantinov@gmail.com

Key words. Heteroptera, Miridae, Orthotylinae, taxonomy, new genus, new species, *Angulonotus grisescens*, Uzbekistan, Kazakhstan, *Hyoidea*

Abstract. A new genus and new species, *Angulonotus grisescens*, is described from Kazakhstan and Uzbekistan and its taxonomic placement within the tribe Orthotylini is discussed. Illustrations of male and female genitalia, micrographs of selected characters, photographs of dorsal habitus, hosts and distributional records of this new taxon are provided. Comparisons are made with species of the genus *Hyoidea* Reuter, 1876.

INTRODUCTION

This paper is part of a series of ongoing efforts to improve our knowledge of the poorly known Central Asian fauna for the plant bug family Miridae. Examination of the extensive material in the collection of the Zoological Institute, Russian Academy of Sciences, revealed one new species from Kazakhstan and Uzbekistan. The new taxon described in this paper belongs to the nominotypical tribe of the subfamily Orthotylinae and cannot be assigned to any known orthotyline genus.

The Orthotylinae is the third most species-rich subfamily of Miridae and currently contains three recognized tribes (Schuh, 1976, 1995; Schuh & Slater, 1995) although additional tribes, e.g., Austromirini (Carvalho, 1976), are sometimes considered as well. Classification of the largest nominate tribe is rather unsatisfactory. The unusually high variability in external morphology and the structures of the external genitalia raises doubts about the monophyly of the tribe (e.g., Yasunaga, 1999). The most distinctive and reliable feature of Orthotylini sensu lato is the presence of interramal lobes projecting dorsally from the posterior wall of the female genitalia (Slater, 1950; Davis, 1955).

Schuh (1974) recognized four informal supra-generic assemblages within the Orthotylini: the *Falconia*, *Orthotylus*, *Sericophanes* and *Zanchius* groups. The *Orthotylus* group is by far the largest and can be recognized by the usually well-developed and sclerotized spicules in the vesica (Schuh, 1974). Almost all other characters are very variable and the group is presumably not monophyletic. Nonetheless, the new genus *Angulonotus*, described in the present paper, undoubtedly belongs to the *Orthotylus* group in its present concept.

Most Palaearctic representatives of the group differ markedly from the new genus. In particular, the genera *Campylotropis* Reuter, *Cyllecoris* Hahn, *Dryophilocoris* Reuter, *Globiceps* Lepeletier & Serville, *Ulmocyllus* Seidenstücker, *Cyllecoridea* Kerzhner, *Cyrtorhinus* Fieber, *Heterotoma* Lepeletier & Serville, *Mecomma* Fieber and *Mecommopsis* Kerzhner are distinguished by the more or less expressed ant-mimetic habitus, including a shiny dorsal surface and dark coloration with some light maculae. In the genus *Aetorhinella* Noualhier the eyes are located at a distance from the anterior margin of the pronotum. The genera *Brachynotocoris* Reuter, *Reuteria* Puton, and *Ulmica* Kerzhner differ from the new genus in having a short pronotal disc that covers only half of the mesoscutum. The genera, *Heterocordylus* Fieber and *Excentricus* Reuter, can be easily distinguished by the peculiar shape of their antennae.

Careful examination of the remaining Palaearctic genera in the *Orthotylus* group, namely *Blepharidopterus* Kolenati, *Canariocoris* Lindberg, *Fieberocapsus* Carvalho & Southwood, *Pseudoloxops* Kirkaldy, *Hyoidea* Reuter, *Hyoidellus* Wagner, *Hypsitylus* Fieber, *Parahypsitylus* Wagner, *Platycranus* Fieber and *Orthotylus* Fieber, indicates that *Hyoidea* is the most similar and apparently a sister taxon of the new genus described in this paper. This conclusion is corroborated by the presence of a thin pronotal collar and carinate anterolateral angles of the pronotum not observed in other Palaearctic genera in the *Orthotylus* group and several other characters: body proportions, coloration and structures of male external genitalia (see diagnosis).

Hyoidea was described from the Astrakhan Province of Russia by Reuter (1876) based on a single species, *H. notaticeps*. Its current distributional range spans the steppe and semidesert zones of the Palaearctic extending from Hungary and Slovakia in the west, through the Ukraine, Caucasus, southern European Russia and Central Asia to Northern China in the east. The second species in the genus, *H. horvathi*, was described by Montandon (1980) from Algeria. Later Hoberlandt (1963) revised the genus and described two species, *H. lindbergi*, currently known from Morocco and Tunisia, and *H. kerzhneri*, which has similar distributional range to *H.*

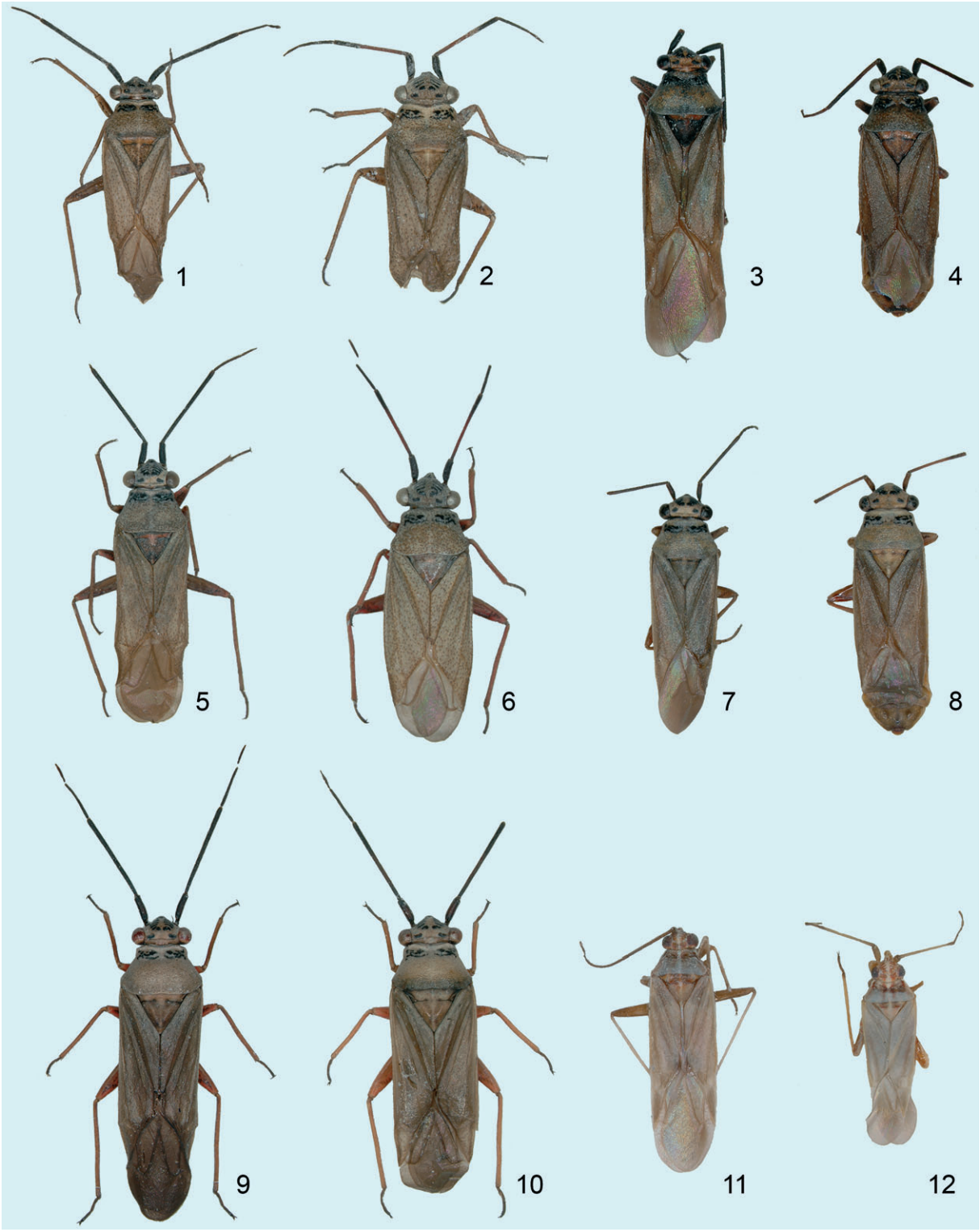
TABLE 1. Measurements of species of *Angulonotus* and *Hyoidea*.

		Total Length	Cun-Clyp	Length Head	Length Pronot	Width Head	Width Prono	AntSeg1	AntSeg2	InterOcDi
Angulonotus grisescens										
Males N = 7	Mean	4.55	3.73	0.41	0.44	0.71	1.06	0.32	1.16	0.30
	SD	0.17	0.09	0.02	0.02	0.02	0.03	0.02	0.03	0.01
	Range	0.43	0.25	0.05	0.05	0.06	0.10	0.05	0.10	0.03
	Minimum	4.38	3.63	0.38	0.43	0.69	1.00	0.30	1.10	0.29
	Maximum	4.80	3.88	0.43	0.48	0.75	1.10	0.35	1.20	0.31
Females N = 5	Mean	3.66	3.08	0.39	0.38	0.66	0.96	0.32	1.14	0.35
	SD	0.24	0.23	0.02	0.02	0.03	0.04	0.01	0.04	0.01
	Range	0.50	0.50	0.05	0.05	0.06	0.10	0.03	0.10	0.03
	Minimum	3.50	2.88	0.38	0.35	0.63	0.93	0.30	1.08	0.33
	Maximum	4.00	3.38	0.43	0.40	0.69	1.03	0.33	1.18	0.35
Hyoidea kerzhneri										
Males N = 5	Mean	5.74	4.56	0.54	0.79	1.04	1.38	0.43	1.57	0.56
	SD	0.58	0.11	0.03	0.04	0.03	0.04	0.03	0.09	0.02
	Range	1.50	0.25	0.08	0.10	0.08	0.10	0.08	0.23	0.04
	Minimum	5.25	4.50	0.50	0.73	1.00	1.33	0.38	1.45	0.54
	Maximum	6.75	4.75	0.58	0.83	1.08	1.43	0.45	1.68	0.58
Females N = 5	Mean	4.72	3.98	0.58	0.76	1.12	1.34	0.39	1.26	0.68
	SD	0.29	0.34	0.06	0.04	0.03	0.03	0.05	0.12	0.02
	Range	0.68	0.75	0.15	0.10	0.08	0.09	0.13	0.33	0.05
	Minimum	4.33	3.50	0.50	0.70	1.08	1.29	0.30	1.05	0.65
	Maximum	5.00	4.25	0.65	0.80	1.15	1.38	0.43	1.38	0.70
Hyoidea lindbergi										
Males N = 5	Mean	4.88	4.19	0.53	0.81	1.04	1.33	0.43	1.64	0.54
	SD	0.18	0.11	0.02	0.03	0.02	0.04	0.01	0.07	0.04
	Range	0.48	0.25	0.05	0.08	0.05	0.08	0.01	0.18	0.09
	Minimum	4.63	4.00	0.50	0.78	1.03	1.30	0.43	1.58	0.49
	Maximum	5.10	4.25	0.55	0.85	1.08	1.38	0.44	1.75	0.58
Females N = 5	Mean	5.08	4.35	0.65	0.85	1.19	1.48	0.49	1.52	0.72
	SD	0.50	0.35	0.03	0.05	0.08	0.04	0.10	0.04	0.04
	Range	1.25	0.88	0.08	0.13	0.20	0.10	0.25	0.10	0.10
	Minimum	4.25	3.75	0.63	0.75	1.05	1.43	0.43	1.45	0.65
	Maximum	5.50	4.63	0.70	0.88	1.25	1.53	0.68	1.55	0.75
Hyoidea notaticeps										
Males N = 5	Mean	4.58	3.85	0.50	0.73	1.02	1.23	0.36	1.19	0.58
	SD	0.24	0.14	0.02	0.02	0.03	0.02	0.03	0.09	0.02
	Range	0.63	0.38	0.05	0.05	0.08	0.05	0.05	0.23	0.05
	Minimum	4.25	3.63	0.48	0.70	0.98	1.20	0.33	1.05	0.55
	Maximum	4.88	4.00	0.53	0.75	1.05	1.25	0.38	1.28	0.60
Females N = 4	Mean	4.81	4.03	0.60	0.75	1.15	1.34	0.34	1.12	0.72
	SD	0.07	0.16	0.05	0.02	0.04	0.05	0.02	0.06	0.02
	Range	0.13	0.38	0.10	0.04	0.08	0.13	0.05	0.14	0.05
	Minimum	4.75	3.88	0.53	0.73	1.13	1.28	0.33	1.04	0.70
	Maximum	4.88	4.25	0.63	0.76	1.20	1.40	0.38	1.18	0.75

nitaticeps, from Eastern Europe to Central Asia and China. Five more species were described within the next forty years, viz., *H. hermione* Linnavuori, *H. hannothiauxi* Carapezza, *H. flavolimbata* Ribes & Ribes, *H. lopezcoloni* Baena & Günther and *H. stehliki* Baena & Günther, bringing the total number of species to nine. All of them are specialized feeders on *Ephedra* spp. (Ephedraceae) and known mainly from the Mediterranean Region or Central Asia.

MATERIAL AND METHODS

All specimens examined in the course of this study, including types, are located at the Zoological Institute, St. Petersburg, Russia (ZISP). All specimens were assigned a unique specimen identifier (USI) with the contained information digitized in the Planetary Biodiversity Inventory locality database. USI is printed as a matrix code label with an alphanumeric string and mounted on one pin with the insect. USI numbers usually identify particular specimens. The associated information can be obtained from the website of the Planetary Biodiversity Inventory (= PBI) Project on Plant Bugs (http://research.amnh.org/



Figs 1–12. Dorsal habitus of *Hyoidea* and *Angulonotus*: 1–2, *H. hermione*: 1 – ♂, 2 – ♀; 3–4, *H. kerzhneri*: 3 – ♂, 4 – ♀; 5–6, *H. lindbergi*: 5 – ♂, 6 – ♀; 7–8, *H. lindbergi*: 7 – ♂, 8 – ♀; 9–10, *H. stehliki*: 9 – ♂, 10 – ♀; 11–12, *A. grisescens*: 11 – ♂, 12 – ♀.

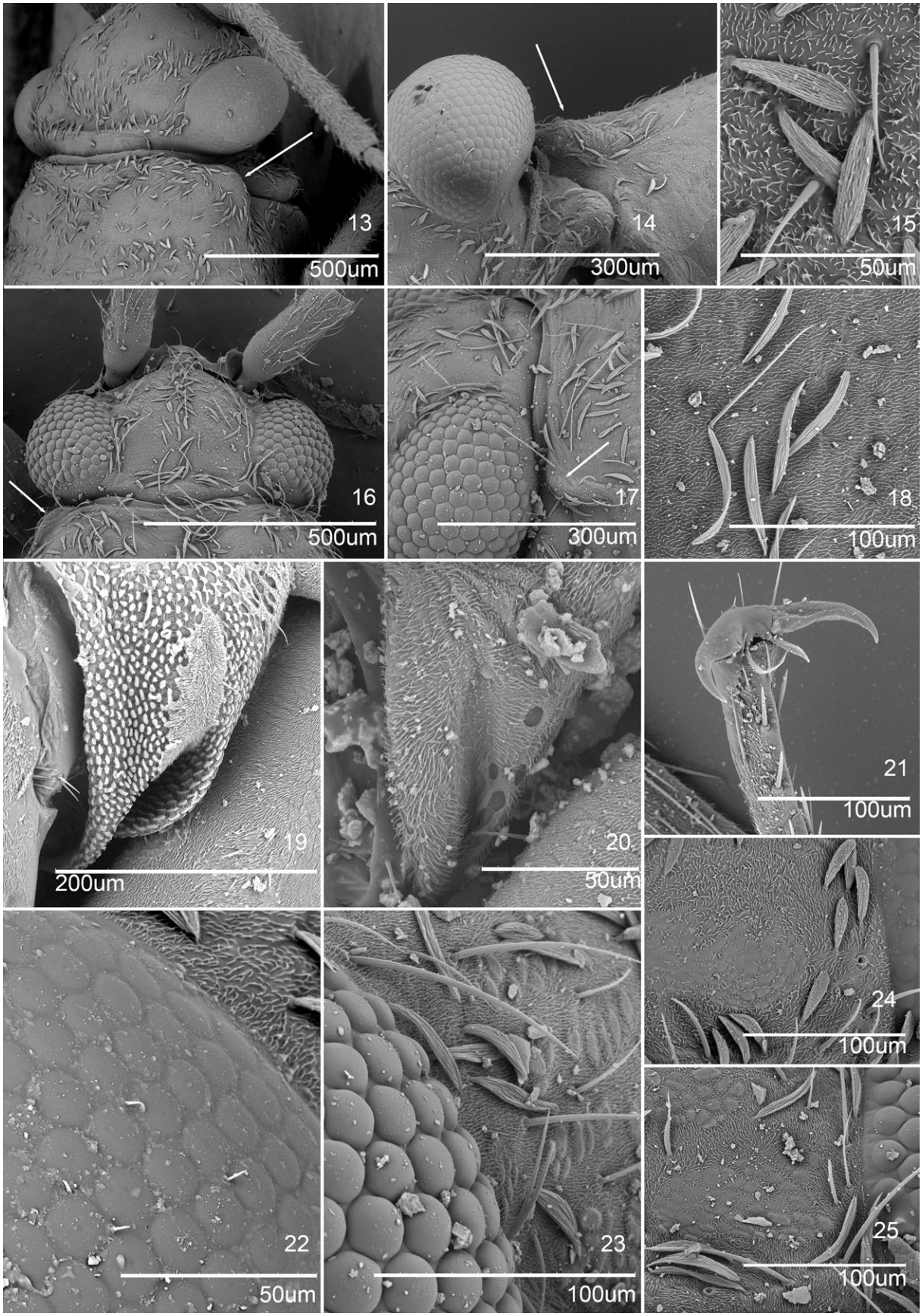
pbi/heteropteraspeciespage/) and also accessed through the www.discoverlife.org website.

Geo-reference data for each locality were obtained from gazetteers, atlases and other sources.

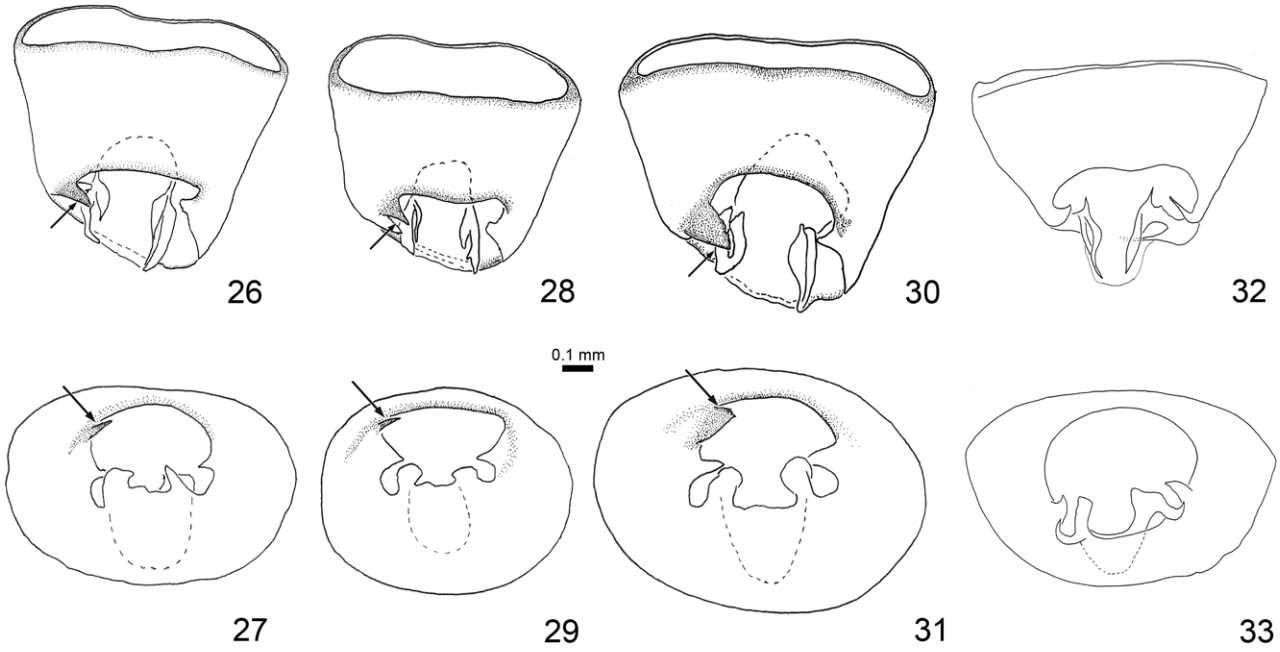
Dorsal photographs of the habitus of the bugs were taken using a Nikon SMZ1500 stereomicroscope equipped with Nikon D-70 camera. Photographs of the ovipositor were taken with a Leica DM 4000 microscope equipped with DIC optics. Scanning electron micrographs were taken using a Hitachi TM1000 Tabletop Microscope.

All measurements are in millimeters. Measurements are shown in the Table 1 and include body length, clypeus to cuneus length, head and pronotum length and width, inter-ocular distance and length of antennal segments I and II.

The terminology used for male genitalia follows Konstantinov (2003) and for females follows Davis (1955).



Figs 13–25. Scanning electron micrographs of particular characters: 13–14, *Hyoidea kerzhneri*, head and pronotum: 13 – ♀, 14 – B; 15 – *H. kerzhneri*, ♀, vestiture on hemelytron; 16–17, *Angulonotus grisescens*, ♂, head and pronotum; 18 – *A. grisescens* B, vestiture on hemelytron; 19–20, scent gland evaporatory area: 19 – *H. notaticeps*, ♀, 20 – *A. grisescens*, ♀; 21 – *A. grisescens*, ♀, pretarsus; 22–23, eye facets: 22 – *H. kerzhneri*, ♀, 23 – *A. grisescens*, ♂; 24–25, vertex: 24 – *H. kerzhneri*, ♀, 25 – *A. grisescens*, ♂. Arrow indicates the carinate anterolateral angle of pronotum.



Figs 26–33. Male genital segment in dorsal and caudal views: 26–27 – *Hyoidea lindbergi*, 28–29 – *H. notaticeps*, 30–31 – *H. stehliki*, 32–33 – *Angulonotus grisescens*. Arrow indicates the tubercle.

RESULTS

Genus *Angulonotus* gen. n.

Type species. *Angulonotus grisescens* sp. n. (present designation).

Diagnosis

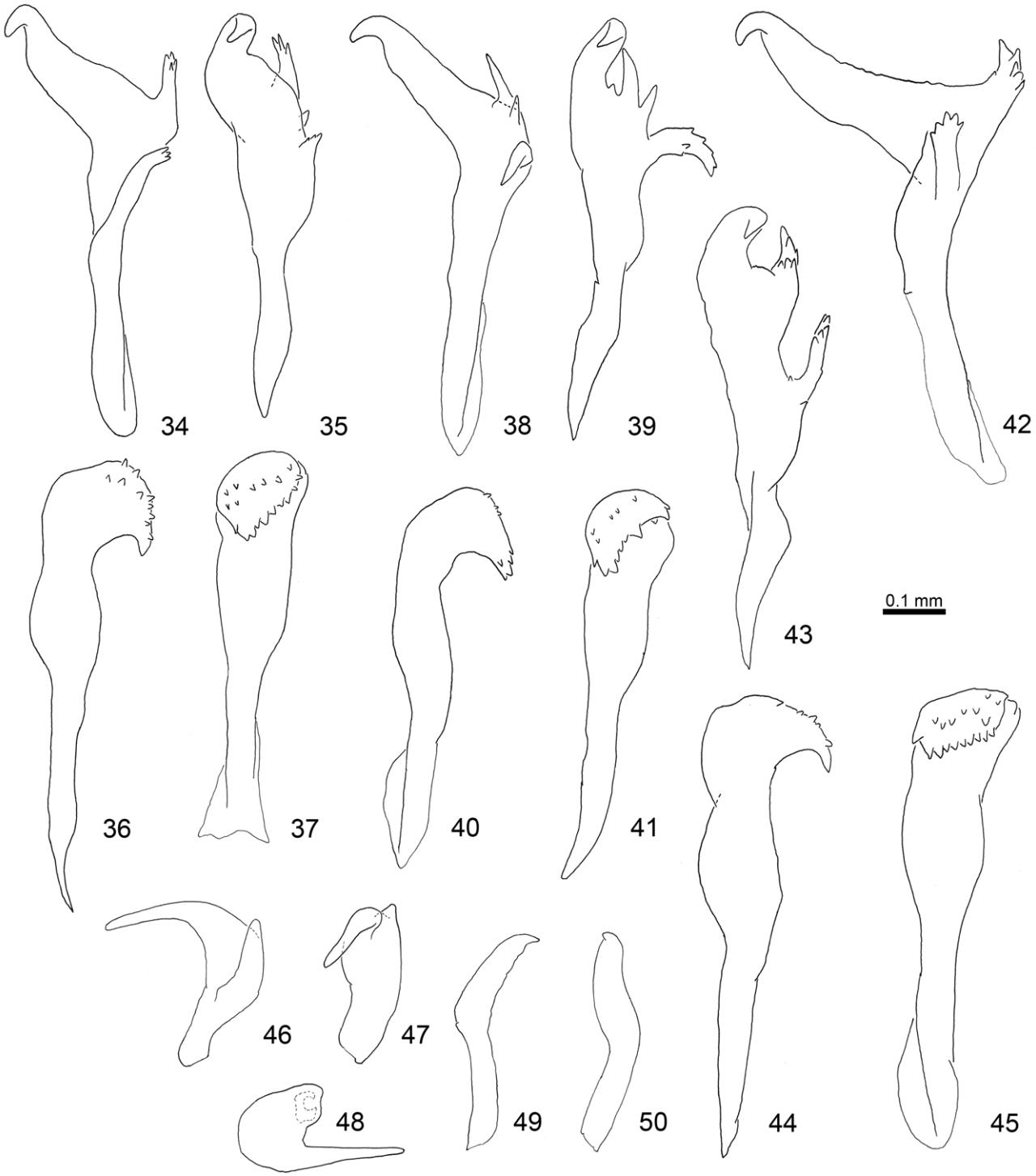
Distinguished from other Palaearctic *Orthotylus* group genera by the following combination of characters: delicate pale body; vestiture composed of pale, long, simple, semierect setae and silvery scalelike setae; eyes located close to pronotum; second antennal segment not incrassate, slender; labium reaching middle coxae; anterolateral angles of pronotum protruding and distinctly carinate; anterior part of pronotum not delimited; mesoscutum almost entirely covered by pronotum; metepisternal scent gland evaporatory area small, without mushroom bodies; cuplike sclerite noticeably protrudes beyond margin of genital segment; parameres not serrate; aedeagus with two comparatively short spicules; dorsal lobe of interramal sclerite distinctly twin-coned; sclerotized rings of dorsal labiate plate small and distinctly ovate. Most similar to *Hyoidea* in that the anterolateral angles of the pronotum are distinctly carinate (compare Figs 13, 14 and 16, 17), thin but distinct pronotal collar (Figs 13, 16, 17) and several large dark spots on the frons and vertex. *Angulonotus* can be distinguished from *Hyoidea* spp. by the strongly granulated eyes with large facets (compare Figs 22 and 23), relatively weak transverse carina on vertex (compare Figs 13 and 16), distinctly depressed calli, slightly wrinkled pronotum, distinctly elongate scalelike setae (compare Figs 15 and 18), and evaporatory area of the metathoracic scent gland without mushroom bodies, entirely covered with microtrichia (compare Figs 19 and 20). In addition, *Angulonotus* differs from *Hyoidea* in several characters of the male and female genitalia, particularly the absence of a tubercle on left side of genital opening (compare Figs 26–31 and 32–33), a noticeably protruding apex of the cuplike sclerite (compare Figs 26, 28, 30, and 32), aedeagus with two spicules (Fig. 55–57), left paramere with apical process and sensory lobe not serrate and devoid of additional processes (compare Figs 34, 35, 38, 39, 42, 43 and 46–48), relatively straight and slender right paramere (compare Figs 36, 37, 40, 41, 44, 45 and 49–50), clearly ovate sclerotized rings of dorsal labiate plate (compare Figs 58–60), weakly sclerotized interramal lobes (Fig. 65), and abruptly tapering, not sagittate apex of ovipositor (Figs 73–74).

Description

Male

Macropterous, elongate, average-sized (see Table 1).

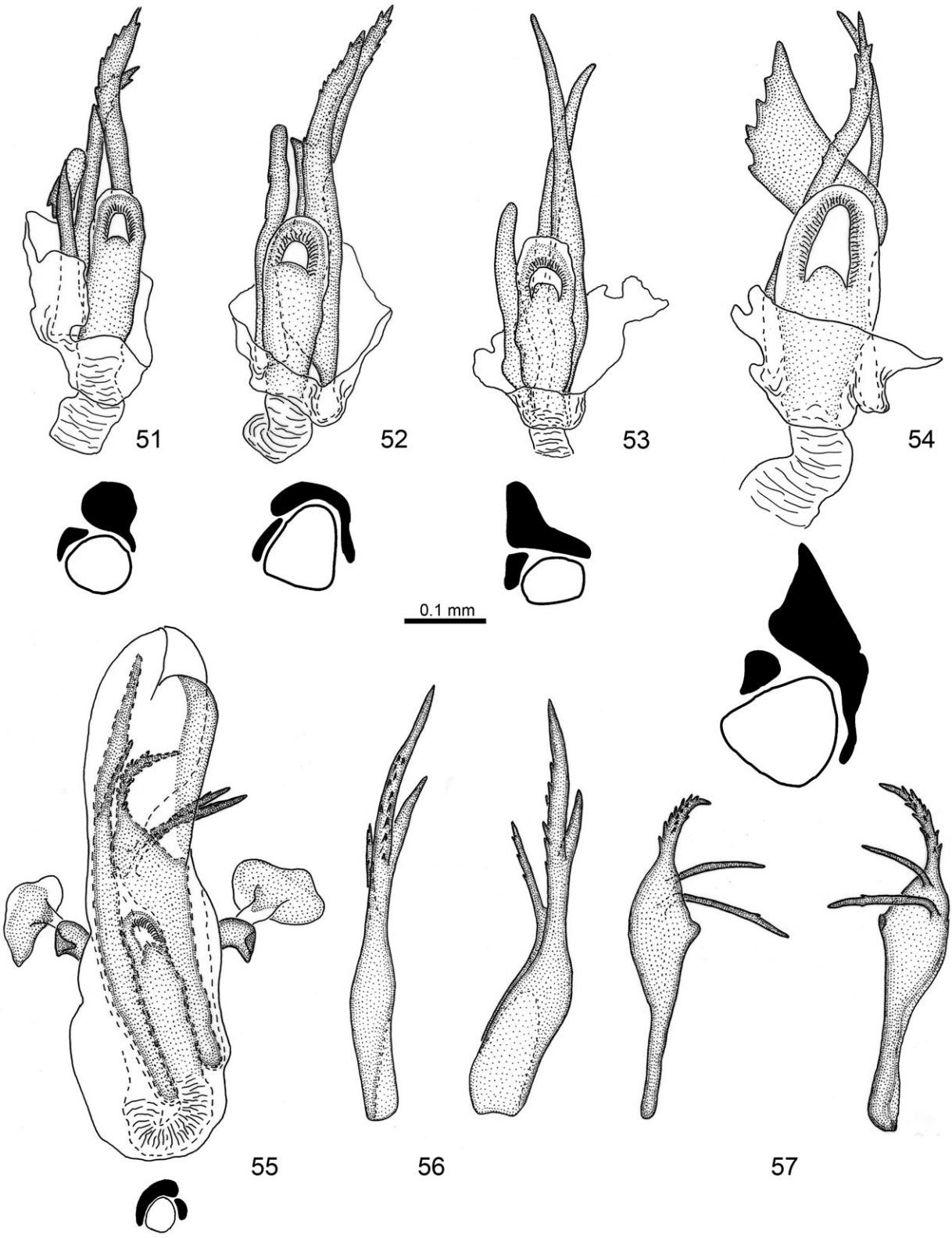
Coloration. Dirty whitish to pale brown (Fig. 11). Head: pale, frons and vertex with a series of large brown and confluent spots radiating from midline, in dark specimens frons and vertex uniformly brown, with whitish midline; mandibular plate uniformly pale, maxillary plate with darkened apex, clypeus pale, somewhat darkened at sides; antenna brown; first and second labial segments yellowish, third and fourth brown. Thorax: anterior margin of pronotum usually with narrow whitish-yellow stripe, at least anterolateral angles and spot at middle whitish, calli brown to dark brown, disc dirty whitish to pale yellow, rarely pale brown, typically with four indistinctly bordered smoky pale brown longitudinal stripes; coloration of mesonotum variable, its exposed part dirty yellow to entirely brown, sometimes with pale midline and two spots at sides; scuto-scutellar suture usually dark brown, scutellum dirty yellow to pale brown, apically whitish, usually with more or less expressed pale midline;



Figs 34–50. Parameres: 34–37 – *Hyoidea lindbergi*, 38–41 – *H. notaticeps*, 42–45 – *H. stehliki*, 46–50 – *Angulonotus grisescens* (34–35, 38–39, 42–43, 46–48 – left paramere; 36–37, 40–41, 44–45, 49–50 – right paramere).

propleura yellow, meso- and metapleura brown with yellow margins. Hemelytron: dirty whitish to pale brown, with whitish lateral margin and narrowly darkened inner margin of clavus; somewhat infuscated along cuneal vein, medial fracture, medio-apical area of corium and inner margin of cuneus in pale specimens, almost uniformly pale brown in dark specimens. Legs: femora pale brown, sometimes with minute brown spots on inner surfaces; tibiae pale yellow, tarsi somewhat darker, pale brown to brown. Abdomen: dirty yellow to pale brown, with reddish markings, genital segment usually darker.

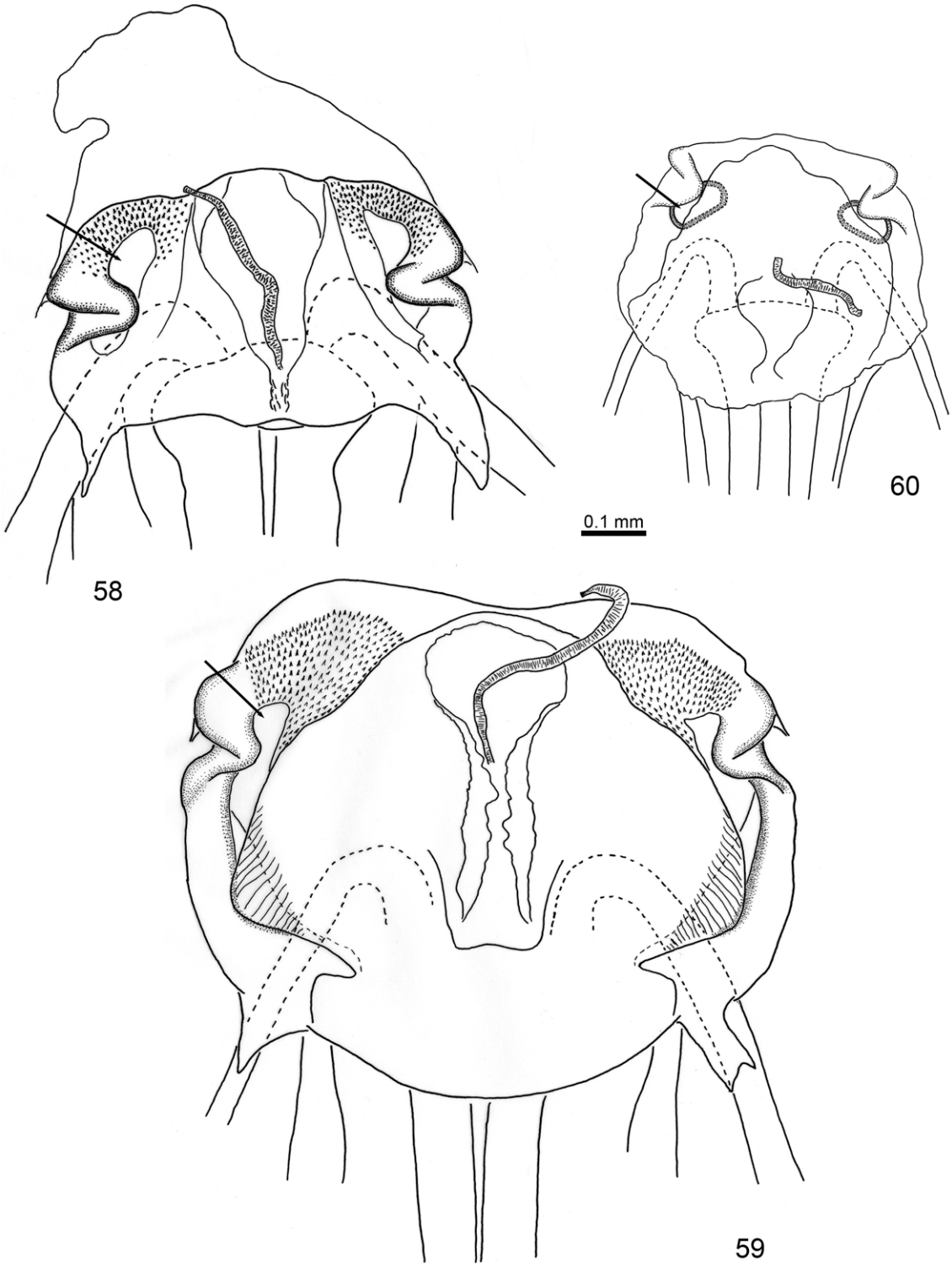
Surface and vestiture. Dorsum dull, head and hemelytron smooth, pronotum somewhat rugose; clothed with long, simple, semierect, pale setae and long, slender, scalelike setae (Fig. 18); appendages with comparatively long semierect simple pale setae, first antennal segment with three slightly infuscated mesial spines, tibial spines pale, thin and short, almost equal in length to width of



Figs 51–57. 51–54 –aedeagus in ventral view and in transverse section at base (phallotheca and phallobase removed): 51 – *Hyoidea hermione*, 52 – *H. kerzhneri*, 53 – *H. lindbergi*; 54 – *H. stehliki*; 55 – *Angulonotus grisescens*: 55 – aedeagus in ventral view and sagittal section of ductus seminis and spicules at base, 56–57 – spicules.

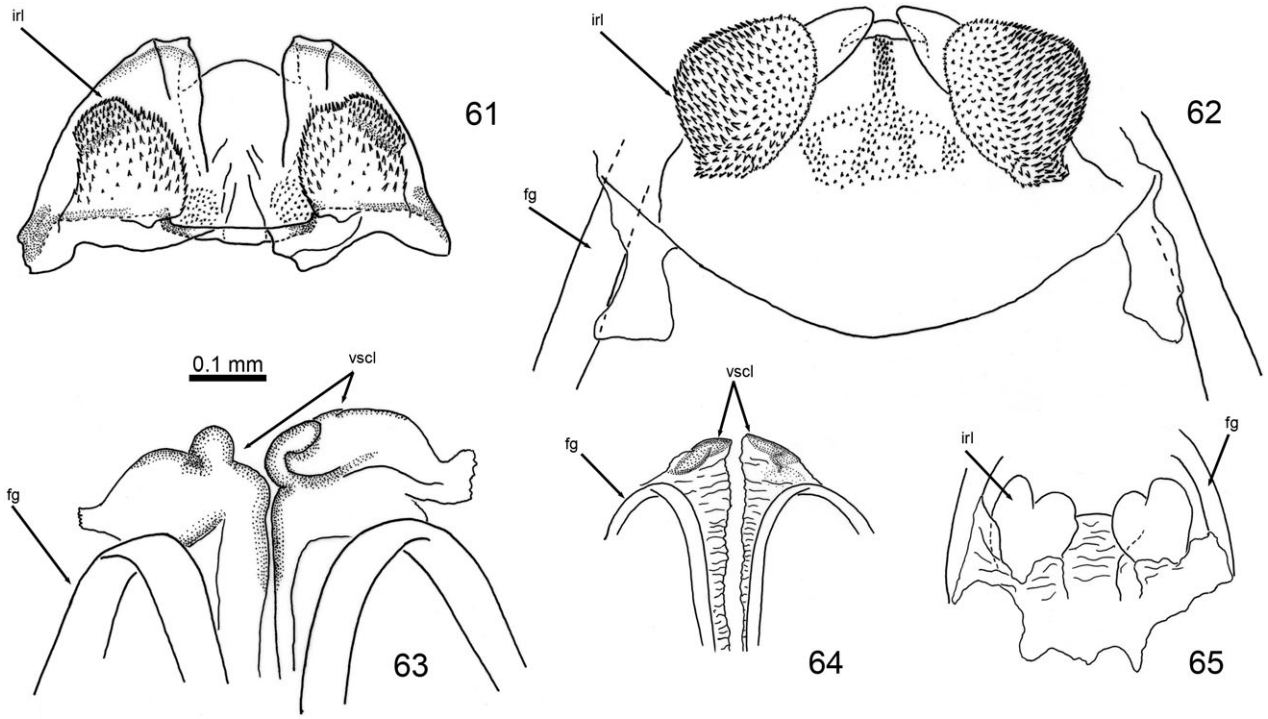
tibia, ventral side of abdomen covered with pale simple setae.

Structure. Head: eyes granulated (Fig. 23), ovate in lateral view, posterior margin slightly concave; facets large and convex; frons convex, vertex almost flat, with two spots of distinct ornamentation corresponding to dark spots (Fig. 25) and weak transverse posterior keel; labium reaching middle coxa; first antennal segment twice as



Figs 58–60. Dorsal labiate plate: 58 – *Hyoidea hermione*, 59 – *H. kerzhneri*, 60 – *Angulonotus grisescens*. Arrow indicates the sclerotized ring.

thick as second segment. Thorax: pronotum trapeziform, with straight or slightly concave lateral margins, strongly concave anterior and posterior margins; anterolateral angles distinctly carinate (Figs 16, 17); pronotal collar very thin, but distinct at sides (Figs 16, 17), almost vanishing at middle; calli distinctly depressed; scutellum slightly convex, with weakly pointed apex; metepisternal scent gland evaporatory areas relatively small, triangular, without mushroom bodies, entirely covered with microtrichia (Fig. 20). Hemelytron: nearly parallel-sided; cuneus twice as long as broad; membrane of forewing relatively long, far extending beyond apex of abdomen, almost 0.15–0.2 × as long as body. Legs: femora flattened, tibiae cylindrical; third tarsal segment equal in length to first and second segments combined; pretarsus with long



Figs 61–65. Female genital structures: 61–62, 65 – posterior wall: 61 – *Hyoidea hermione*, 62 – *H. kerzhneri*, 65 – *Angulonotus grisescens*; 63–64 – vestibular sclerites encircling vulva: 63 – *H. hermione*, 64 – *Angulonotus grisescens*; irl – interramal lobes, fg – first gonapophyses, vscl – vulvar sclerites.

smoothly curved claws and lamellate, apically convergent paraempodia, pulvilli absent (Fig. 21).

Genitalia. Genital segment wide, without spines or distinctive ornamentation, cuplike sclerite noticeably protruding posteriorly beyond margin of genital segment (Figs 32, 33); left paramere without serrations or additional processes, L-shaped, with thin, more or less straight and gradually tapering apical process, sensory lobe well developed, with blunt apex (Figs 46–48); right paramere more or less cylindrical, slightly bent at middle and with acute apex (Figs 49, 50); aedeagus with weakly sclerotized phallotheca, two trifurcate spicules, bases of both spicules wide and enveloping sclerotized portion of ductus seminis (Fig. 55); long spicule broad basally, sharply narrowed at middle, with one smooth and two serrate branches (Fig. 56); short spicule distinctly widened at middle, with two spinelike, straight, weakly serrate branches located almost at a right angle to spicule and gradually curved, strongly serrate apical branch (Fig. 57).

Female

Similar to male, but smaller and more oval (Fig. 12).

Coloration. Similar to male but generally paler.

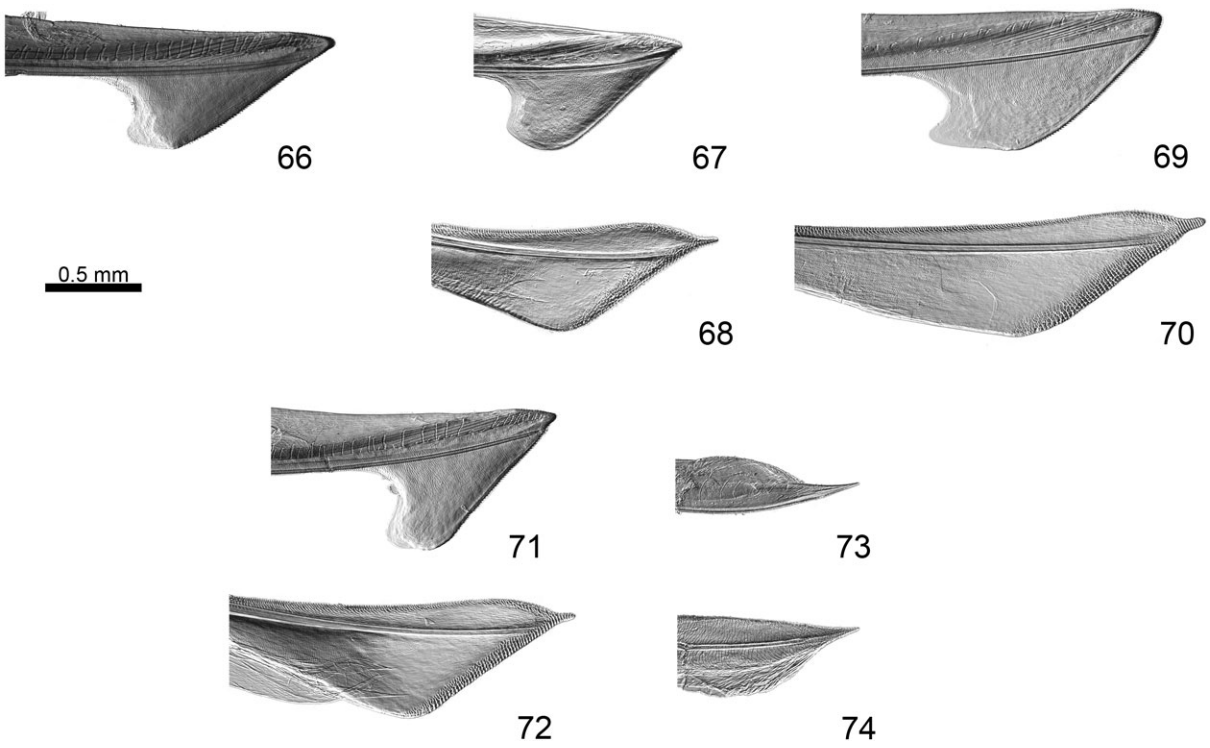
Structure. Similar to male except larger interocular distance and less developed anterolateral angles of pronotum.

Genitalia. posterior wall with dorsally projecting interramal lobes as in Fig. 65, twin-coned, not serrate, with coarse rugosity and weakly sclerotized central area; sclerotized rings of dorsal labiate plate clearly ovate (Fig. 60), bursa copulatrix membranous, without serrate fields; inner margins of first gonapophyses vestibulum with simple, only slightly asymmetrical sclerites encircling vulva (Fig. 64); apices of ovipositor strongly tapering (Figs 73, 74), apices of second gonapophyses not sagittate (Fig. 74).

Etymology. From the Latin *angulus*, meaning angular and *notos*, meaning thorax, referring to the apical angles of the pronotum. The gender is masculine.

Discussion. *Angulonotus* and *Hyoidea* share a combination of characters that seems to be unique within the Orthotylini. Pronotal margins in both genera are distinctly carinate anteriorly or even along their entire length, whereas the anterolateral angles of pronotum are noticeably projecting. The pronotal collar is reduced but always clearly demarcated by a suture and, sometimes, by coloration. Both genera have the same type of vestiture composed of long, pale, simple setae and silvery scalelike setae. Also there is some similarity in the shape and color pattern on the head.

Most characters listed in the diagnosis occur separately in otherwise unrelated orthotyline genera, but not in combination as they do in *Hyoidea* and *Angulonotus*. For example, the presence of a weak pronotal collar is documented for Ceratocapsini or *Sericophanes* group sensu Schuh, 1974 (e.g., Henry, 2006), lateral pronotal margin is apically carinate in the orthotyline *Heterocordylus tumidicornis* (Herrich-Schaeffer, 1835), whereas the collar like anterior pronotal margin in conjunction with protruding antero-lateral angles of the pronotum are present in all representatives of the austromirine *Lattinova*-complex (Cassis, 2008) and the halticine *Compositocoris senecionus* (Schwartz et al., 2008).



Figs 66–74. Apices of ovipositor: 66 – *Hyoidea hermione*, 67–68 – *H. kerzhneri*, 69–70 – *H. lindbergi*, 71–72 – *H. notaticeps*, 73–74 – *Angulonotus grisescens* (68, 70, 72, 74 – first gonapophyses; 66, 67, 69, 71, 73 – second gonapophyses).

All representatives of *Hyoidea* can be clearly distinguished from the new genus by their larger size and darker coloration (see Table 1, Figs 1–10), shorter and wider scalelike setae, scent gland evaporatory area with mushroom bodies and different structure of the genitalia. In contrast to *Angulonotus*, the parameres in *Hyoidea* spp. are apically covered with denticles, the left paramere has additional processes, and the right paramere has a wide, gradually curved apex (Figs 34–45). The genital segment in *Hyoidea* differs from that in other orthotyline genera in having a tubercle on the left side of the genital opening (Figs 26–31). The aedeagus of *Hyoidea* spp. always has three spicules, although the bases of the two longer spiclules merge (Figs 51–54). Females of *Hyoidea* further differ from those of *Angulonotus* in having more or less sclerotized bursa copulatrix with serrate areas and strongly infolded sclerotized rings (Figs 58, 59), almost entirely serrate interramal lobes of the posterior wall (Figs 61–62), second gonapophyses with sagittate apices (Figs 66, 67, 69, 71) and more complex, distinctly asymmetrical vestibular sclerites encircling the vulva (Fig. 63). The peculiar structure of the scent gland evaporatory area seems to be a unique feature of *Angulonotus*, since it is entirely covered with microtrichia and devoid of peritreme and mushroom bodies. To our knowledge, this type of scent gland structure has so far not been reported in any other orthotyline genus.

Based on a preponderance of morphological evidence, we conclude that neither *Hyoidea*, nor any other orthotyline genus can adequately accommodate the new taxon. Thus a new monotypic genus is erected for this new taxon.

***Angulonotus grisescens* sp. n.**

Figs 11, 12, 16–18, 20, 21, 23, 25, 32, 33, 46–50, 55–57, 60, 64, 65, 73, 74.

Diagnosis

Same as generic diagnosis.

Description

Male: Total length 4.3–4.8 (see Table 1). Structure: Vertex 1.33–1.56× as broad as eye. First antennal segment 0.4–0.5× head width. Second antennal segment 1.57–1.71× head width and 1.06–1.18× pronotum width. Pronotum 2.26–2.47× as broad as long and 1.43–1.53× as broad as head. Coloration, surface and vestiture, genitalia: As in generic description.

Female: Total length 3.5–4.0 (see Table 1). Structure: Vertex 2.0–2.24× as broad as an eye. First antennal segment 0.46–0.52× head width. Second antennal segment 1.65–1.8× head width and 1.15–1.24× pronotum width. Pronotum 2.38–2.64× as broad as long and 1.35–1.52× as broad as head. Coloration, surface and vestiture, genitalia: As in generic description.

Material. Holotype: Uzbekistan: Qyzylqum sands, 10 km N from Tamdybulak, 41.839°N 64.65°E, 05.v.1965, I.M. Kerzhner, 1♂ (AMNH_PBI 00314187). Paratypes: Kazakhstan: Almaty Prov.: 60 km NW ok Akkol' [Ak-kul'], downstream of Ili River, 45.403°N 75.113°E, 15.vi.1983, Danilovich, 1♀ (AMNH_PBI 00314160). Mangistau Prov.: S Usturt, chink Burchliburun, 41.95°N 56.18333°E, 12.v.1984, Unknown, (Chenopodiaceae), 1♂ (AMNH_PBI 00314181), 1♀ (AMNH_PBI 00314161); 15.v.1987, Mitroshina, *Salsola gemmascens* (Chenopodiaceae), 2♀ (AMNH_PBI 00314182, AMNH_PBI 00337447). Uzbekistan: 10 km S of Kulkuduk,

42.448°N 63.306°E, 12.v.1976, I.M. Kerzhner, *Salsola arbuscula* (Chenopodiaceae), 1♀ (AMNH_PBI 00314159). 65 km SE Uchkuduk, Central Qyzylqum Desert, 40.665°N 63.37°E, 07.v.1966, I.M. Kerzhner, *Haloxylon* sp. (Chenopodiaceae), 2♂ (AMNH_PBI 00314152, AMNH_PBI 00314153). Aktau Mt. W of Tamdybulak, 41.6706°N 64.48945°E, 10.v.1965, I.M. Kerzhner, collected under *Artemisia* sp. (Asteraceae), 1♀ (AMNH_PBI 00314162). Aznek, 90 km S Tamdybulak, Qyzylqum sands, 41.15°N 64.5833°E, 09.v.1966, I.M. Kerzhner, 1♂ (AMNH_PBI 00314151). Bukantau Mts N of Kulkuduk, 42.55°N 63.33333°E, 13 May 1965, I.M. Kerzhner, 3♂ (AMNH_PBI 00314184, AMNH_PBI 00337444–AMNH_PBI 00337445), 5♀ (AMNH_PBI 00314188–AMNH_PBI 00314189, AMNH_PBI 00337446, AMNH_PBI 00337449–AMNH_PBI 00337450). Qyzylqum sands, 10 km N from Tamdybulak, 41.839°N 64.65°E, 05.v.1965, I.M. Kerzhner, 1♂ (AMNH_PBI 00314186). Qyzylqum sands, 70 km S from Tamdybulak, 41.11666°N 64.65°E, 01.v.1965, Narchuk, 1♀ (AMNH_PBI 00314164); 01.v.1965, I.M. Kerzhner, 6♂ (AMNH_PBI 00314165–AMNH_PBI 00314167, AMNH_PBI 00314190, AMNH_PBI 00314192–AMNH_PBI 00314193); 02.v.1965, Loginova, 1♀ (AMNH_PBI 00314163); 02.v.1965, I.M. Kerzhner, 1♂ (AMNH_PBI 00314183), 1♀ (AMNH_PBI 00337448); 03.v.1965, Narchuk, 1♂ (AMNH_PBI 00314185).

Etymology. From the Latin, *gris*, meaning grey and referring to the coloration.

Distribution. Uzbekistan (Buxoro and Navoiy prov.) and Kazakhstan (Almaty and Mangistau prov.).

Host plants. Several specimens were collected from *Salsola arbuscula* Pall., *S. gemmascens* Pall., *Haloxylon* sp. (Chenopodiaceae) and under *Artemisia* sp. (Asteraceae). Some of these records are probably for itinerant specimens of this species.

ACKNOWLEDGEMENTS. We are indebted to S.G. Medvedev (Laboratory of Parasitology, ZISP) for help with taking the digital photographs of the ovipositor and T.K. Tsogoev (Department of Electron Microscopy, ZISP) who assisted with the preparation of the scanning electron micrographs. We also thank M.D. Schwartz (CNC) and three anonymous reviewers for reviewing and commenting on the manuscript. Funding for this study was provided by the Russian Foundation for Basic Research, projects No. 09-04-00968 to F.V. Konstantinov. The equipment used during the work was funded by the Council for Grants from the President of Russian Federation and by the State Support of Leading Scientific Schools (grant 3332. 2010.4).

REFERENCES

CARVALHO J.C.M. 1976: Analecta miridologica: Concerning changes of taxonomic positions of some genera and species (Hemiptera). *Rev. Brasil. Biol.* **36**: 49–59.

CASSIS G. 2008: The Lattinova complex of austromirine plant bugs (Hemiptera: Heteroptera: Orthotylinae). *Proc. Entomol. Soc. Wash.* **110**: 845–939.

DAVIS N.T. 1955: Morphology of the female organs of reproduction in the Miridae (Hemiptera). *Ann. Entomol. Soc. Am.* **48**: 132–150.

HENRY T.J. 2006: Izycapsus (Heteroptera: Miridae: Orthotylinae), a new ceratocapsine plant bug genus established to accommodate two new species from Mexico. *Russ. Entomol. J.* **15**: 163–170.

HOBERLANDT L. 1963: Distributional notes on some species of Heteroptera from Czechoslovakia with a contribution on the taxonomy of the genus Hyoidea (Heteroptera, Miridae). *Acta Faun. Entomol. Mus. Natn. Pragae* **9**: 253–283.

KONSTANTINOV F.V. 2003: Male genitalia in Miridae (Heteroptera) and their significance for suprageneric classification of the family. Part I: general review, Isometopinae and Psallopinae. *Belg. J. Entomol.* **5**: 3–36.

MONTANDON A.L. 1890: Hémiptères Hétéroptères paléarctiques nouveaux. *Rev. Entomol. (Caen)* **9**: 174–180.

REUTER O.M. 1876: Diagnoses praecursoriae Hemipterorum-Heteropterorum. *Petites Nouv. Entomol.* **2**(147): 33–34.

SCHUH R.T. 1974: The Orthotylinae and Phylinae (Hemiptera: Miridae) of South Africa with a phylogenetic analysis of the ant-mimetic tribes of the two subfamilies for the world. *Entomol. Am.* **47**: 1–332.

SCHUH R.T. 1975: The structure, distribution, and taxonomic importance of trichobothria in the Miridae (Hemiptera). *Am. Mus. Novit.* **2585**: 1–26.

SCHUH R.T. 1976: Pretarsal structure in the Miridae (Hemiptera) with a cladistic analysis of relationships within the family. *Am. Mus. Novit.* **2601**: 1–39.

SCHUH R.T. 1995: *Plant Bugs of the World (Insecta: Heteroptera: Miridae): Systematic Catalog, Distributions, Host List, and Bibliography*. The New York Entomological Society, New York, xii + 1329 pp.

SCHUH R.T. & SLATER J.A. 1995*: True Bugs of the World (Hemiptera: Heteroptera) Classification and Natural History*. Cornell University Press, Ithaca, xii + 336 pp.

SCHWARTZ M.D., SCHUH R.T. & TATARNIC N. 2008: A new genus and species of Halticini from South Africa (Hemiptera: Miridae). *Afr. Entomol.* **16**: 23–32.

SLATER J.A.S. 1950: An investigation of the female genitalia as taxonomic characters in the Miridae (Heteroptera). *Iowa State Coll. J. Sci.* **25**: 1–81.

WAGNER E. 1973: Die Miridae Hahn, 1831, des Mittelmeerraumes und der Makaronesischen Inseln (Hemiptera, Heteroptera). Teil 2. *Entomol. Abh. Staatl. Mus. Tierk. Dresden (Suppl.)* **39**: i–ii + 1–421.

YASUNAGA T. 1999: The plant bug tribe Orthotylini in Japan (Heteroptera: Miridae: Orthotylinae). *Tijdschr. Entomol.* **142**: 143–183.

Received July 12, 2011; revised and accepted August 16, 2011

APPENDIX. USI numbers of figured specimens.

Figure	Species	Sex	USI number
1, 51	*Hyoidea hermione*	male	AMNH_PBI 00312777
2	*Hyoidea hermione*	female	AMNH_PBI 00312778
58, 61, 63, 66	*Hyoidea hermione*	female	AMNH_PBI 00312779
3	*Hyoidea kerzhneri*	male	AMNH_PBI 00311257
14	*Hyoidea kerzhneri*	male	AMNH_PBI 00311258
52	*Hyoidea kerzhneri*	male	AMNH_PBI 00311261
4	*Hyoidea kerzhneri*	female	AMNH_PBI 00311289
13, 15, 22, 24	*Hyoidea kerzhneri*	female	AMNH_PBI 00311276

59, 62, 67, 68	*Hyoidea kerzhneri*	female	AMNH_PBI 00311277
5, 26, 27, 34–37, 53	*Hyoidea lindbergi*	male	AMNH_PBI 00311349
6	*Hyoidea lindbergi*	female	AMNH_PBI 00311354
69, 70	*Hyoidea lindbergi*	female	AMNH_PBI 00311357
7	*Hyoidea notaticeps*	male	AMNH_PBI 00312732
28, 29, 38–41	*Hyoidea notaticeps*	male	AMNH_PBI 00312729
8	*Hyoidea notaticeps*	female	AMNH_PBI 00312722
19	*Hyoidea notaticeps*	female	AMNH_PBI 00312721
71, 72	*Hyoidea notaticeps*	female	AMNH_PBI 00312723
9, 30, 31, 42–45, 54	*Hyoidea stehliki*	male	AMNH_PBI 00334229
10	*Hyoidea stehliki*	female	AMNH_PBI 00337442
11	*Angulonotus grisescens*	male	AMNH_PBI 00314187
16, 17, 18, 23, 25	*Angulonotus grisescens*	male	AMNH_PBI 00314186
32, 33, 46–50, 56, 57	*Angulonotus grisescens*	male	AMNH_PBI 00314190
55	*Angulonotus grisescens*	male	AMNH_PBI 00314184
12	*Angulonotus grisescens*	female	AMNH_PBI 00314164
20, 21	*Angulonotus grisescens*	female	AMNH_PBI 00337443
60, 64, 65	*Angulonotus grisescens*	female	AMNH_PBI 00314182
73, 74	*Angulonotus grisescens*	female	AMNH_PBI 00314162