

Hebridae of Russia and adjacent countries (Heteroptera)

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A taxonomic revision of Hebridae of Russia and adjacent countries (former USSR) is given. Nine species are found on this territory, five of them described as new: *Hebrus kiritshenkoi* (Tajikistan, Uzbekistan), *H. pilipes* (Ukraine, south of European Russia, Transcaucasia, Middle Asia, Iran), *H. hissarensis* (Tajikistan), *H. oxianus* (Turkmenistan, Uzbekistan, Tajikistan), and *H. pilosellus* (Far East of Russia).

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Introduction

Waterstriders of the family Hebridae are very small insects (1.3-2.4 mm) living on the margins of various aquatic habitats, sometimes in wet mosses, on floating plants or on the water surface near the shore. Our species are univoltine. The eggs are deposited on leaves and mosses (Lebrun, 1960; Wróblewski, 1980). There are five larval instars. Imago overwinters in litter at some distance from water (Golub & al., 1994). All species are predators.

The world fauna includes 7 genera and about 150 species; only the most speciose genus *Hebrus* Curtis, 1833 occurs in the territory of the former USSR. Andersen (1981, 1995) published a key to the world genera and a catalogue of the Palaearctic species. Descriptions of new and redescriptions of some poorly known Palaearctic, Oriental and Ethiopian species were published by Horváth (1929), Lundblad (1933), Jordan (1954), Wagner (1954, 1957), Cobben (1982), Linnavuori (1994) and other authors. The works of Stichel (1955), Poisson (1957), Tamanini (1979), Wróblewski (1980) and Nieser (1982) contain keys, illustrations and data on biology of European species.

Four species of *Hebrus* were recorded from the former USSR: the widely distributed *H. ruficeps* Thomson and *H. pusillus* Fallén, *H. montanus* Kolenati from Caucasus and Middle Asia, and *H. liliimacula* Horváth from Transcaucasia (Kiritshenko, 1951, 1964; Kerzhner & Jaczewski, 1964; Vinokurov & Kanyukova, 1995). *H. nipponicus*

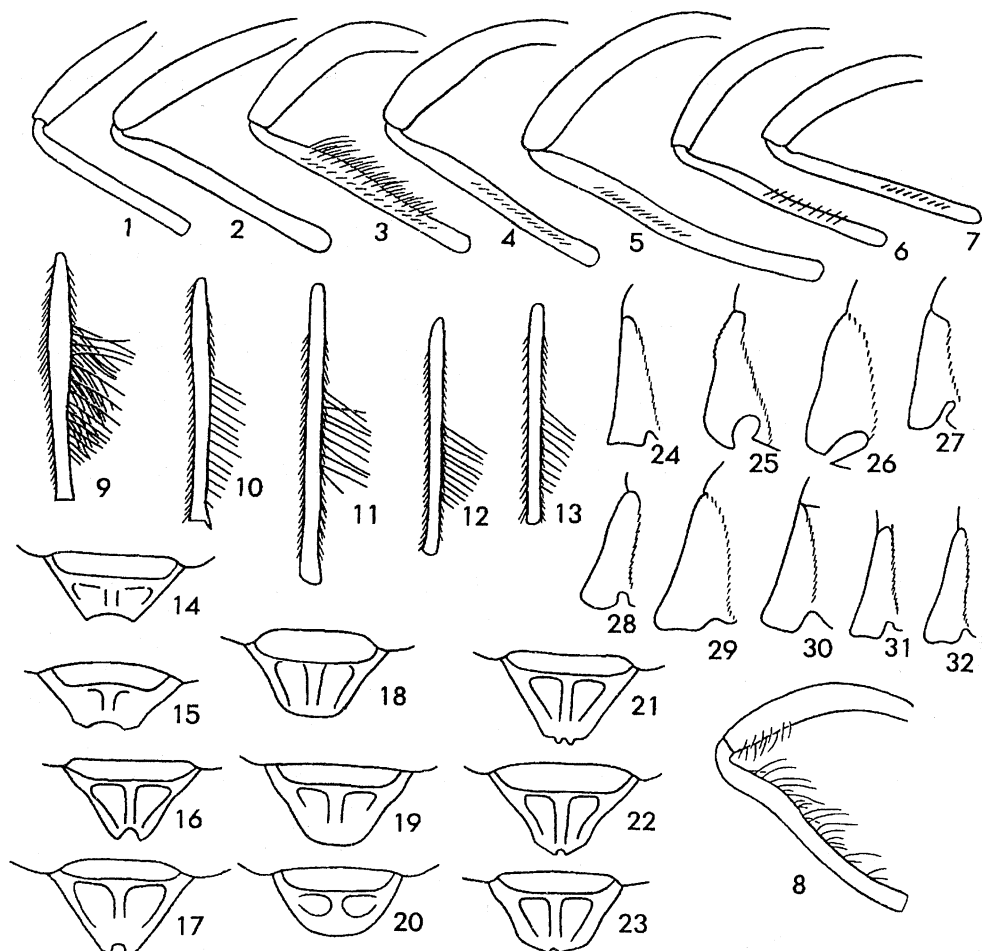
Horváth was erroneously recorded from the Far East of Russia (Kanyukova, 1988).

This paper is based on examination of the extensive collection of the Zoological Institute, St. Petersburg. Most specimens in this collection were accumulated by the late Professor A.N. Kiritshenko, many of them collected by him. Nine species, five of them new, are found in Russia and adjacent countries (former USSR).

Species of *Hebrus* demonstrate high individual variability in coloration, ratios of antennal segments, structure of parameres and other characters (see also Lundblad, 1933). Females are usually darker than males; specimens with entirely black head, pronotum and hemelytra occur among females more often than among males; in some males of dark coloured species, head and pronotum are pale brown. In both sexes, hemelytra are usually darker than head and pronotum.

Males of some species can be readily distinguished by the long hairs on inner and/or upper margin of hind tibiae additional to the shorter hairs covering the tibiae in both sexes of all species.

The structure of parameres is difficult to examine because of their S-shaped form (Lundblad, 1933; Cobben, 1982). We examined them in glycerine and illustrated in three positions: external, internal and lateral views. Two groups of species can be distinguished based on the structure of the parameres: with process on the internal surface (*pusillus* group) and without process (*H. ruficeps*, *H. kiritshenkoi*, and possibly *H. lili-*



Figs 1-32. *Hebrus*, hind leg of male, scutellum and buccula. 1, 14, 15, 24, *H. ruficeps*; 2, 16, 25, *H. kiritshenkoi*; 3, 9, 18, 30, *H. pilipes*; 4, 10, 19, 29, *H. pusillus*; 5, 11, 21, 28, *H. montanus*; 6, 12, 22, 31, *H. oxianus*; 7, 13, 23, 32, *H. his-sarensis*; 8, 20, 27, *H. pilosellus*; 17, 26, *H. liliimacula*. 1-8, hind femur and tibia of male, dorsal view; 9-13, tibia of male, lateral view; 14-23, scutellum (14, brachypterous specimen; 15, macropterous specimen); 24-32, buccula.

imacula). Within the groups, the structure of the parameres is very similar in various species.

The division of the genus into subgenera needs further study. Most species discussed in this paper are related to *H. pusillus* and belong to the subgenus *Hebrus*; *H. ruficeps* is the type species of the subgenus *Hebrusella* Poisson, distinguished by the partly membranous internode between antennal segments IV and V; the subgeneric position of *H. liliimacula* and *H. kiritshenkoi* is not ascertained.

Holotypes and paratypes of all new species are kept in the Zoological Institute, St. Petersburg, some paratypes also in the In-

stitute of Biology and Soil Sciences, Vladivostok.

Key to species of *Hebrus* from Russia and adjacent countries

- 1(2). Scutellum short, widely emarginate or truncate at apex (Figs 14, 15). Head and pronotum yellowish red, rarely with brown spots. Bucculae as in Fig. 24. Antennae and legs yellowish red. Brachypterous, rarely macropterous. Length 1.3-1.8 mm. Latvia to Ukraine, European Russia, Siberia, Far East, Kazakhstan, Uzbekistan *H. ruficeps* Thoms.
- 2(1). Scutellum not shortened, not widely emarginate or truncate (Figs 16-23). Usually larger. Always macropterous.

- 3(6). Apex of scutellum distinctly raised and deeply incised (Figs 16, 17). In males (for *H. liliimacula* unknown) hind femora straight, hind tibiae without rows of long thin hairs (Fig. 2).
- 4(5). Head black, rarely brownish black. Pronotum yellow-brown, often with black fore corners; meso- and metapleura brownish black. Bucculae as in Fig. 25. Scutellum and hemelytra as in Figs 16, 35; pale area at base of clavus small; membrane with three narrow white spots, the fourth spot indistinct. Length 2-2.2 mm. Uzbekistan, Tajikistan **H. kiritshenkoi** sp. n.
- 5(4). Head brown. Pronotum yellow-brown, its fore corners not blackened; meso- and metapleura yellow-brown. Bucculae as in Fig. 26. Scutellum and hemelytra as in Figs 17, 34; pale area at base of clavus large; membrane with 4 fused, large white spots. Length 2 mm. Caucasus (exact locality unknown) **H. liliimacula** Horv.
- 6(3). Apex of scutellum not raised or weakly raised, rounded or slightly bifurcated (Figs 18-23). In male, hind femora curved, hind tibiae with one or several rows of long thin hairs (Figs 3-13).
- 7(10). Male hind tibiae with long thin hairs on inner side (Figs 3, 8, 9).
- 8(9). Head and pronotum pale brown to black. Upper side, especially hemelytra, with short, white or yellowish pubescence. Male hind tibiae not curved at base, thickened near the middle, with several rows of long hairs on upper and inner sides (Figs 3, 9); hind femora apically without long hairs (Fig. 3). Scutellum and hemelytra as in Figs 18, 33. Pale spot at base of clavus pure white, nearly square, as long as scutellum or at least two-thirds of its length. Bucculae as in Fig. 30. Length 1.8-2.2 mm. South of European Russia (N Caucasus, Astrakhan'), Ukraine (Crimea), Georgia, Armenia, Azerbaijan, Turkmenistan, Uzbekistan, Tajikistan, S Kazakhstan, N Iran. **H. pilipes** sp. n.
- 9(8). Body dark brown, with dense, long, dark brown pubescence. Male hind tibiae curved at base, with long hairs along the whole inner side; also femora apically with long hairs (Fig. 8). Scutellum and hemelytra as in Figs 20, 39. Pale spot at base of clavus as in *H. pilipes*, but narrower. Bucculae as in Fig. 27. Length 1.8-2.1 mm. Russia: south of the Primorsk Territory **H. pilosellus** sp. n.
- 10(7). Male hind tibiae with one row of thin long hairs on upper side (Figs 4-7, 10-13).
- 11(12). All femora dark brown above. Scutellum (Fig. 19) widely rounded at apex, not incised. Pale spot at base of clavus pure white, nearly square, extending nearly to apex of scutellum. Hind tibiae of male (Figs 4, 10) with a row of long hairs in apical half. Bucculae as in Fig. 29. Length 1.8-2.1 mm. Russia from European part to Far East, Estonia, Latvia, Belarus, Ukraine, Moldavia, N Kazakhstan **H. pusillus** (Fall.)
- 12(11). All femora yellow or yellowish brown above. Scutellum (Figs 21-23) slightly incised at apex, this incision sometimes indistinct because hidden under hairs. Clavus either whitish only at very base or entirely smoky brown, haired, without white "window" (Figs 36-38). Long hairs on hind femora of male as in Figs 5-7, 11-13.
- 13(14). The row of long hairs on hind tibia of male situated in its middle (Figs 5, 11). Head black or reddish brown; pronotum reddish brown, sometimes with black fore corners. Bucculae as in Fig. 28. Scutellum and hemelytra as in Figs 21, 36. Clavus whitish at very base only, the remainder smoky brown, covered with golden hairs. Length 2.1-2.4 mm. South of European Russia (N Caucasus), Georgia, Armenia, Azerbaijan, Iran. **H. montanus** Kol.
- 14(13). The row of long hairs on hind tibia of male situated in its apical half (Figs 6, 7, 12, 13). Head and pronotum often yellowish or reddish.
- 15(16). Head, pronotum, antennae and legs reddish brown. Scutellum, lateral margin of pronotum, and hemelytra as in Figs 23, 37. Hind femora of male (Fig. 7) less curved, hind tibiae as in Figs 7, 13. Length 1.7-2 mm. Tajikistan. **H. hissarensis** sp. n.
- 16(15). Head whitish yellow, brownish yellow (sometimes with black middle), or entirely black; pronotum whitish yellow, brownish with rows of brown spots, or entirely dark brown or black. Antennae and legs whitish yellow or brownish yellow. Scutellum, lateral margin of pronotum, and hemelytra as in Figs 22, 38. Hind femora of male (Fig. 6) more curved, hind tibiae as in Figs 6, 12. Length 1.6-2 mm. Turkmenistan, Uzbekistan, Tajikistan **H. oxianus** sp. n.

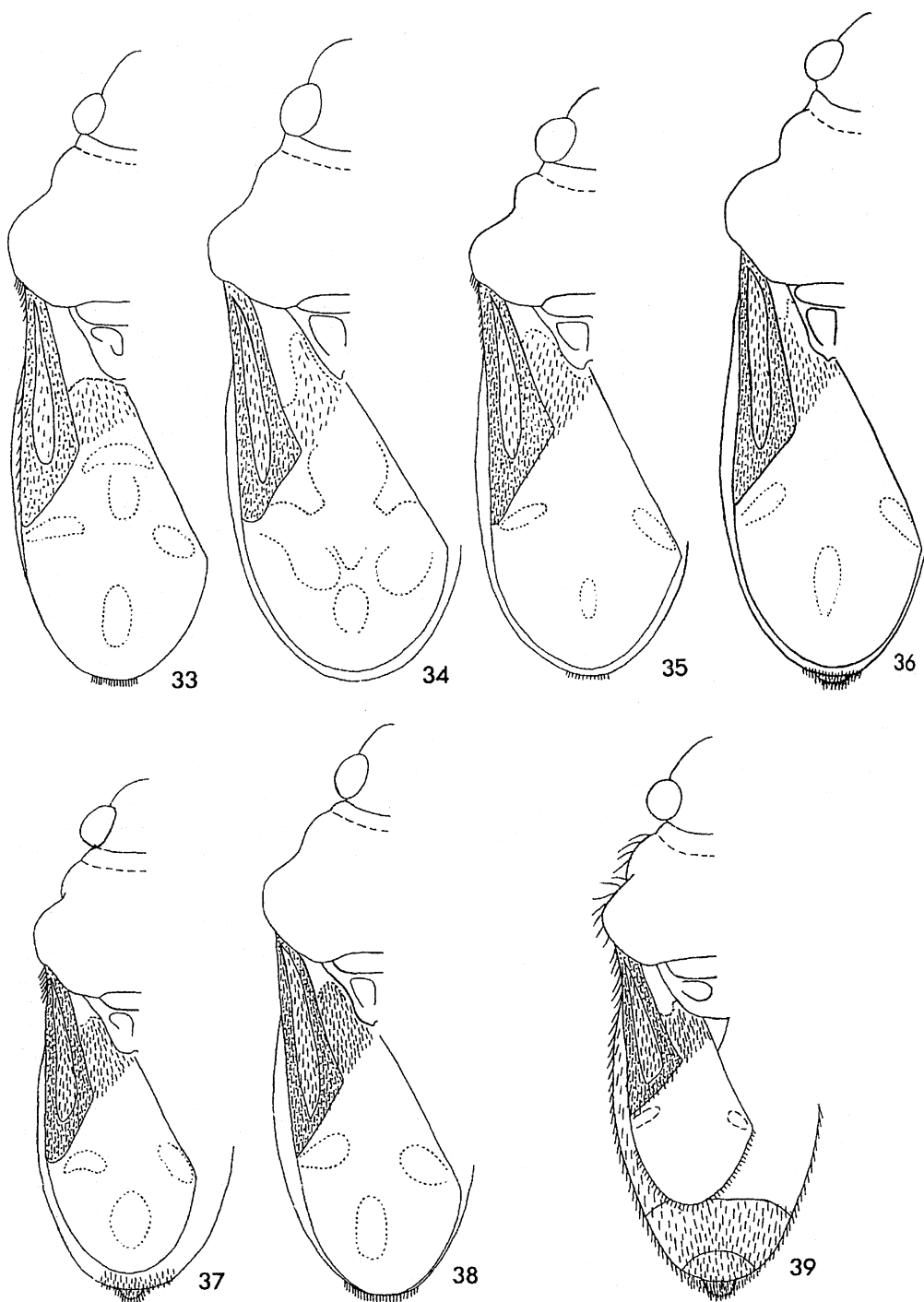
Hebrus ruficeps Thomson, 1871 (Figs 1, 14, 15, 24, 46, 47, 84)

Material examined: about 100 specimens from Russia, Ukraine, Kazakhstan and Uzbekistan.

Description. Mostly brachypterous, with rudimentary hemelytra; macropterous specimens rare.

Pubescence on head, pronotum and sides of thorax very short, indistinct. Clavus and corium, especially their veins, with yellowish brown hairs. Ventral side of thorax and abdomen with dense, yellowish white hairs along the middle. Antennae and legs, especially the ventral side of fore and middle legs, with dense, long, pale hairs.

Head yellowish red, with two brown spots at vertex, in dark specimens brownish in fore part. Eyes dark brown, slightly reddish. Antennal segments I and II reddish yellow, segments III-V slightly brownish or brown. Bucculae (Fig. 24) and rostrum yellow. Pronotum yellowish red or brownish red. Scutellum reddish brown or brown, short, widely emarginate at apex, especially in macropterous specimens (Figs 14, 15). In macropterous specimens, hemelytra with brown veins; membranous part of corium smoky brown; clavus basally white up to the



Figs 33-39. *Hebrus*, body. 33, *H. pilipes*; 34, *H. lilimacula*; 35, *H. kiritshenkoi*; 36, *H. montanus*; 37, *H. hissarensis*; 38, *H. oxianus*; 39, *H. pilosellus*.

level of 2/3 of scutellum, gradually becoming smoky brown; membrane nearly reaching the apex of abdomen, smoky brown to dark brown, rarely with two narrow dirty white stripes near apices of veins. In brachypterous specimens, rudimentary hemelytra scarcely longer than scutellum, with two almost fused dark brown veins and smoky brown membranous part of clavus. Prothorax laterally yellowish red, meso- and metathorax brownish, margins of coxal covers yellow. Meso- and metathorax medioventrally and abdomen dark brown, almost black. Legs yellowish red. In male, hind femora not curved and hind tibiae without long hairs (Fig. 1). Male genital segment and parameres as in Figs 46, 47.

Body length 1.3-1.8 mm.

Distribution (Fig. 84). Russia: European part northwards to Karelia, Leningrad and Novgorod provinces, southwards to Kursk and Voronezh provinces, Siberia (Irkutsk), Far East (new record: Artem in Primorsk Terr.); Latvia, Byelorussia, Ukraine, Moldavia, Kazakhstan (new records: Semipalatinsk Prov. and Chimkent), Uzbekistan (Fergana Valley). Recorded from nearly all countries of Europe, except Spain (Ander- sen, 1995).

Biology. *H. ruficeps* lives mostly on peat-bogs, where it may occur at water surface between sphagnum hillocks and at margins of marshes (Jordan, 1952; etc.). The larvae were described by Wróblewski (1980). In environs of Voronezh, Golub & Tsurikov (Golub & al., 1994) using an original trap placed between forest and marshy meadow have shown that the species migrates in spring (28.IV-19.V) from the forest to meadow and in autumn (end of September – mid November) from the meadow to a higher place in the forest for overwintering. No specimens were collected in traps in summer. The species migrates during day-time.

***Hebrus kiritshenkoi* sp. n.**

(Figs 2, 16, 25, 35, 48-51, 85)

Holotype. ♂, **Tajikistan**, Kafirnigan River near Sezar, 25.VI.1943 (Kiritshenko).

Paratypes. **Tajikistan:** 11 ♂, 14 ♀, 1 larva, as holotype, 25.VI, 26.VIII.1943; 13 ♂, 12 ♀, Lyuchob River near Stalinabad [= Dushanbe], 29.VIII.1943, 19.II.1944 (Kiritshenko); 4 ♀, Stalinabad [= Dushanbe], 6.IV.1943, 20.II, 7.IV, 21.V.1944 (Kiritshenko); 1 ♂, stream Gul'bista, 21.X.1943 (Kiritshenko); 5 ♀, Shaartuz, Kafirnigan R., 8.VI.1944 (Kiritshenko); 1 ♂, Novabad, Lyuchob River, 14.III.1944 (Kir'yanova). **Uzbekistan:** 1 ♂, Shirabad, 28.V.1912 (Kirit-

shenko); 4 ♂, 5 ♀, Lyaylyakan, 29.V.1912 (Kiritshenko); 2 ♀, Kitab, 11.VI.1932 (Gussakovskij).

Description. Body elongate, slender. Always macropterous, with membrane reaching apex of abdomen.

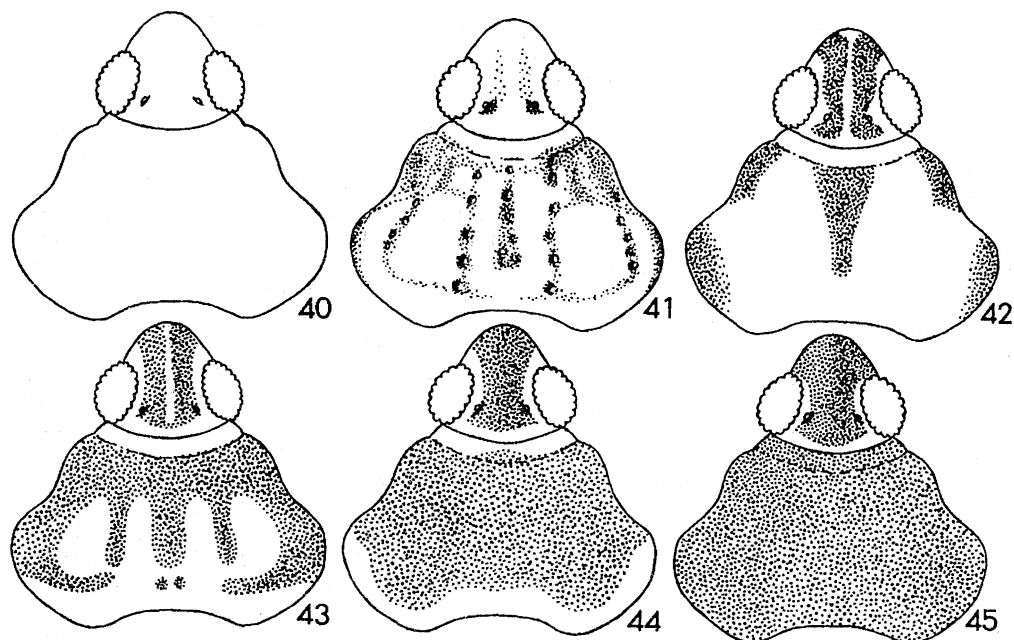
Upperside with short golden pubescence slightly longer and denser on hemelytra, but white spot at clavus bare. Meso- and metathorax medioventrally with long white hairs along the rostral groove. Legs densely and evenly covered with pale yellow hairs; ventral surface of fore and middle coxae, trochanters and femora with longer hairs. Abdomen with short white hairs.

Head in median parts of vertex and frons black or brown-black, rarely reddish brown anteriorly and posteriorly. Clypeus and labrum usually brown or yellow-brown, rarely black. Bucculae and rostrum yellow. Eyes reddish brown. Antennae yellow, sometimes apices of segments I and II and segments III-V darker, yellow-brown; hairs on segments III-V longer than on I and II; ratio of segments (I-V) 11 : 7 : 10 : 6 : 9. Pronotum yellow-brown, paler than head and hemelytra, with blackish fore corners and yellow collar. Scutellum brownish or dark brown, sometimes of same colour as pronotum, its apex raised and incised (Fig. 16). Hemelytra mostly dark brown, with darker, almost black veins. Clavus at base with a small greyish white spot reaching to one-third or half of scutellum. Membrane with 3 narrow whitish spots; the fourth spot, at base, indistinct, with indefinite outlines. Membranous part of corium, clavus and membrane smoky brown or brown, in pale specimens nearly whitish, with pale spots on membrane hardly distinguishable. Sides of prothorax yellow-brown, of meso- and metathorax blackish brown; margins of all coxal covers yellow. Median part of meso- and metathorax and the whole abdomen black. Legs yellow; knees, tarsal segments I and apex of segment II sometimes slightly embrowned. In male, hind femora not curved and hind tibiae without long hairs (Fig. 2); ratio of lengths femur : tibia : tarsus in hind leg of male 23 : 25 : 8. Genital segment of male (Fig. 48) with proctiger widened at apex. Paramere (Figs 49-51) with inner surface even, without process, only with scattered hairs.

Body length ♂ 2.0, ♀ 2.2-2.3 mm; width of pronotum between fore corners ♂ 0.6, ♀ 0.65 mm, between hind corners ♂ 0.85, ♀ 0.95 mm.

Distribution (Fig. 85). Tajikistan, Uzbekistan.

Biology. The species has been collected from February 19 to October 21. Kiritshen-



Figs 40-45. *Hebrus oxianus*, variability of coloration of head and pronotum.

ko (1964) reported collecting this species (misidentified by him as *H. pusillus* and *H. montanus*) on bare pebbly banks of Kafirni-gan River.

Comparison. The new species shares with *H. syriacus* Horváth, 1929 (Israel) and *H. liliimacula* Horváth, 1929 (Transcaucasia) the triangular scutellum deeply incised at apex and bucculae with deep, rounded incision of hind margin. *H. syriacus* is smaller, entirely pale yellow, with hemelytra clearly not reaching the apex of abdomen, also the ratios of antennal segments and the form of head in lateral view (see Linnavuori, 1994, Fig. 4a) are different. *H. liliimacula* resembles the new species in habitus, and the differences are indicated in the key.

H. kiritshenkoi is similar to *H. pusillus* and related species (*Hebrus* s. str.) in the structure of the internode between antennal segments IV and V, but differs in the form of proctiger, absence of process on the inner surface of paramere, male hind femora not curved and hind tibiae without long hairs, and deep incision at apex of scutellum.

***Hebrus liliimacula* Horváth, 1929**
(Figs 17, 26, 34)

Material examined. 1 ♀ labelled "Kaukasus, Leder", "*Hebrus montanus* Kol. O.M. Reuter det."

The specimen belongs to the sample from which *H. liliimacula* was described and was compared by I.M. Kerzhner with the syntypes of *H. liliimacula* kept in the Hungarian Museum of Natural History.

Description. Macropterous. Pilosity on head and pronotum rubbed in the specimen examined, on hemelytra short (sparse on clavus, dense and yellowish golden on corium). Ventral side of thorax and abdomen with sparse, possibly rubbed hairs.

Head dark brown, with apex and vertex yellow-brown. Eyes reddish brown. Antennae yellow-brown. Bucculae yellow. Pronotum entirely yellow-brown, its fore corners not blackened. Scutellum brownish, paler distally, raised and deeply incised at apex (Fig. 17). Macropterous. Hemelytra yellowish at base, brown in middle part; veins darker; membranous part white with some brownish areas in central portion and at apex. White spot at base of clavus large (Fig. 34), reaching the apex of scutellum. Membrane with 4 large fused spots. Sides of prothorax yellow, of meso- and metathorax yellow-brown, coxal covers yellow. Legs yellow. Abdomen black with brown margins.

Body length 2.2 mm.

Distribution. Apparently, Armenia or Azerbaijan. The species is known only from several females labelled "Kaukasus, Leder".

Comparison. Differences from related species are given in the key.

Hebrus pusillus (Fallén, 1807)

(Figs 4, 10, 19, 29, 60-63, 84)

Material examined (about 100 specimens). Russia: Karelia, Leningrad Prov. (many records), Yaroslavl', Voronezh Prov. (Novokhopersk), Altai Terr. (Pavlovsk; Aul nr Zmeinogorsk), Irkutsk, Primorsk Terr. (Khanka Lake); Ukraine: Odessa, Aleshki, Saki in Crimea; Byelorussia: Polotsk, Mogilev; Kazakhstan (new record): Semipalatinsk Prov. (Bol'shaya Bukon' River).

Description. Macropterous. Hairs on head, pronotum and abdomen short, white; on corium and dark part of clavus slightly longer, whitish yellow; on medioventral part of thorax long and white. Antennae and legs with whitish hairs. Hind tibiae of male with a row of long hairs in distal half of dorsal side (Figs 4, 10).

Males blackish brown, rarely brown; females usually black. Head black; vertex and borders of eyes, in pale specimens also clypeus and labrum brown. Eyes dark brown. Bucculae (Fig. 29) brown, sometimes blackish with paler apex, in pale specimens yellow. Rostrum yellow, sometimes with black apex. Antennae reddish brown or dark brown. Pronotum in females black, in males blackish brown with fore lobe and all corners usually black and central portion of hind lobe often reddish brown; in pale males, pronotum entirely brown or with black corners. Scutellum (Fig. 19) black or brown, nearly semicircular, with evenly rounded hind margin, sometimes slightly raised at apex. Hemelytra almost reaching the apex of abdomen, with dark brown, nearly black veins. Membranous part of corium white, sometimes smoky white entirely or in distal half. Base of clavus (Fig. 29) pure white, forming a square "window" reaching almost to apex of scutellum; remainder of clavus brown. Membrane smoky brown to dark brown with 4 (rarely 3) dirty white spots forming a cross. Ventral side of thorax black or brownish black, coxal covers sometimes brownish. Abdomen black. Legs reddish brown to dark brown. Hind femora of male (Fig. 4) curved. Ratio of lengths femur : tibia : tarsus in male hind leg 25 : 29 : 9.

Genital segment and parameres as in Figs 60-63.

Body length 1.8-2.1 mm.

Distribution (Fig. 84). Transpalearctic species, in the former USSR found in Russia from Karelia to the Primorsk Terr., Estonia,

Latvia, Byelorussia, Ukraine, Moldavia and E. Kazakhstan. Records from Caucasus and Middle Asia, and most records from the Crimea concern other species. The species is recorded from nearly all countries of Europe and N. Africa; records from SW Asia need confirmation (Andersen, 1995).

Biology. Mode of life and larvae were described by Jordan (1952), Lebrun (1960), Wróblewski (1980) and Nieser (1982). I collected imagoes of this species in second half of August at the river Spasovka falling into lake Khanka. The bugs ran on the moist soil at the bank, pushed their rostrum in crevices, sometimes ran out at water and floating leaves of plants.

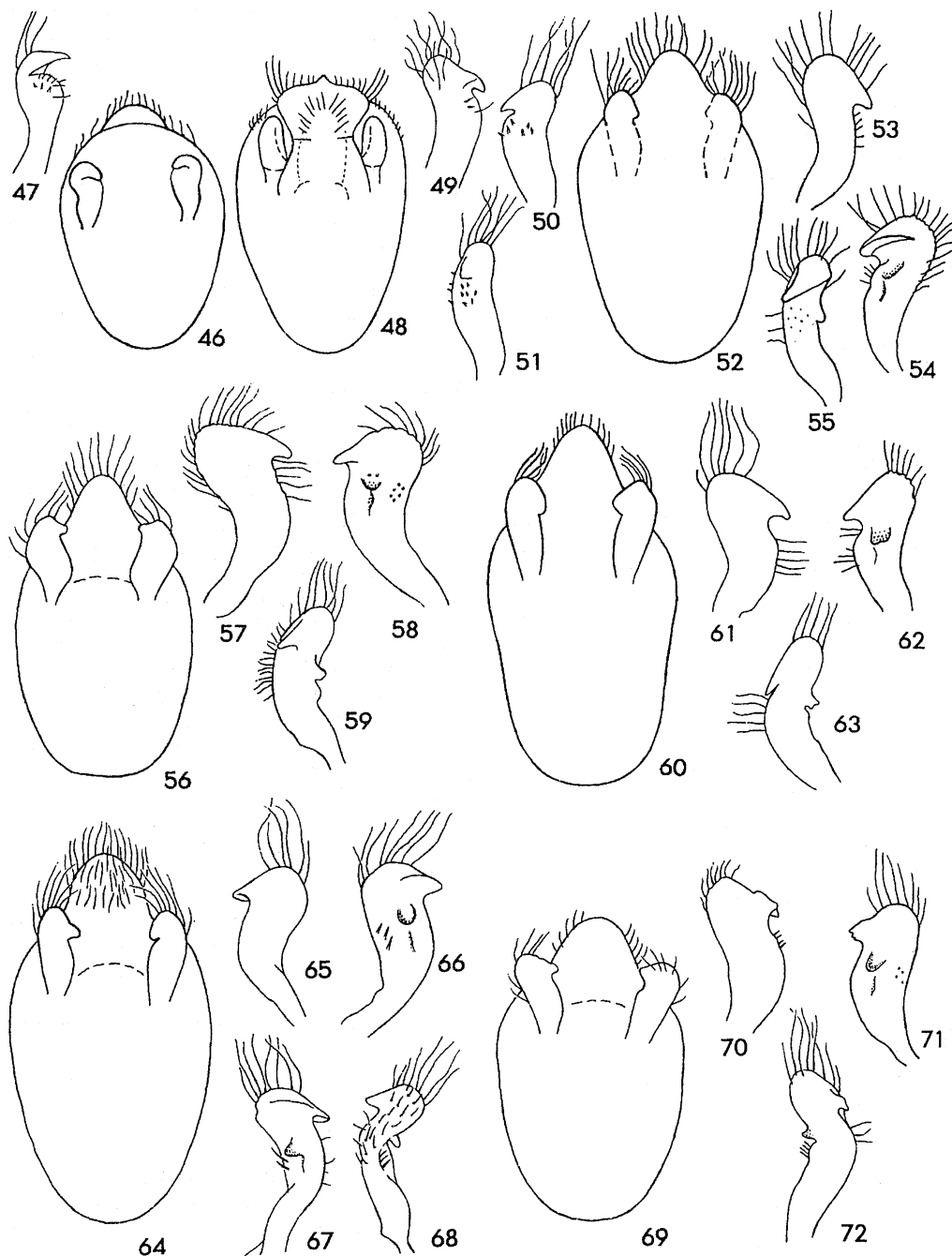
Hebrus montanus Kolenati, 1857

(Figs 5, 11, 21, 28, 36, 64-68, 85)

Material examined (about 200 specimens). Russia: Krasnodar Terr. (Abinskaya; Krasnaya Polyana), Stavropol' Terr. (Mt. Mashuk), Dagestan (Samur R.); Georgia (Sukhumi; Abastumani), Armenia (Erevan; Megri; Shnakh); Azerbaijan (Nakhichevan' Prov.; Talysh Mts; env. of Evlakh), Iran (Astrabad = Gorgan). These specimens agree well with the original description and notes by I.M. Kerzhner on the type in the Museum of Natural History in Vienna.

Description. Macropterous. Pubescence of head and pronotum very fine, goldish. Hemelytra with longer and denser, adpressed, golden hairs; hairs on white spot of clavus sparser. Ventral side of body with white hairs. Fore tibiae with dense, long hairs. Hind tibiae of male with a row of long hairs in the middle of dorsal surface (Figs 5, 11).

Males reddish brown; females blackish brown, darker than males. Head in males reddish brown, sometimes darker in fore part or almost entirely black, except for vertex and borders of eyes reddish brown. In females, head usually black with reddish brown vertex and borders of eyes. Rostrum, bucculae (Fig. 28) and antennae yellow or brownish yellow, antennal segments III-V and apices of segments I and II darker. Eyes mid to dark brown. Pronotum reddish brown; sometimes fore or also hind corners brown or black; in the darkest specimens, pronotum black with reddish brown collar. Scutellum (Fig. 21) brown or black, in males almost triangular, in females slightly more rounded, its apex very faintly bifurcate, but this bifurcation sometimes indistinct because hidden by hairs or even absent. Apex of scutellum sometimes raised. Hemelytra brown with dark brown or almost black veins. Membranous part of hemelytra (Fig.



Figs 46-72. *Hebrus*, genital segment and paramere. 46, 47, *H. ruficeps*; 48-51, *H. kiritshenkoi*; 52-55, *H. pilosellus*; 56-59, *H. pilipes*; 60-63, *H. pusillus*; 64-68, *H. montanus*; 69-72, *H. hissarensis*. 46, 48, 52, 56, 60, 64, 69, genital segment; 47, 49, 53, 57, 61, 65, 70, paramere, external view; 50, 54, 58, 62, 66, 71, paramere, internal view; 51, 55, 59, 63, 67, 72, paramere, anterior view; 68, paramere, posterior view.

36) smoky brown, only the base of clavus with dirty white spot not more than half as long as scutellum, sometimes this spot very indistinct. Membrane mid or dark brown, with 3 elongate, sometimes indistinct, dirty white spots. Ventral side of body black, with coxal covers yellowish or reddish brown; in pale specimens, ventral side of prothorax reddish brown. Legs yellow or yellowish brown; knees, tarsal segments I and bases of segments II sometimes brown. In male, hind femora curved, hind tibiae longer than in related species (Fig. 5). Ratio of lengths femur : tibia : tarsus in the male hind legs 26 : 36 : 11. Genital segment and parameres as in Figs 64-68.

Body length 2.1-2.4 mm.

Distribution (Fig. 85). Russia (N. Caucasus), Georgia, Armenia, Azerbaijan, Iran. The species is recorded also from S Europe, N Africa and SW Asia (Andersen, 1995), but these records need confirmation. Records from Tajikistan and Uzbekistan (Kiritshenko, 1964) concern other species.

Hebrus pilipes sp. n.

(Figs 3, 9, 18, 30, 33, 56-59, 85)

Holotype. ♂, Ukraine, Crimea, Evpatoriya, 19.VIII.1905 (V.E. Jakovlev).

Paratypes. **Russia:** Krasnodar Terr.: 5 ♂, 6 ♀, Grienskaya, 22, 24.IV.1933 (Rysakov); 2 ♂, 3 ♀, Abinskaya, 26.IX.1936, 12.VII.1939 (Rysakov); 1 ♂, Novonikolaevskaya, 28.VI.1933 (Rysakov); **Astrakhan' Prov.:** 1 ♂, Vyshka, 80 km S of Astrakhan', 16.VII.1961 (Kerzhner); **Ukraine, Crimea:** 8 ♂, 13 ♀, Evpatoriya, 19, 25.VIII.1905, 7, 9.V.1907 (Jakovlev); 8 ♀, Saki, 18.VII.1908, 4.VIII.1910 (Pliginskij); 4 ♂, Sevastopol', 24.V.1911 (Pliginskij); 9 ♂, 12 ♀, Kerch', 7, 10, 20.IV, 19.V, 29.VIII.1918 (Kiritshenko); **Georgia:** 1 ♀, Sukhumi, 7.V.1928 (Zimin); 1 ♂, 1 ♀, Kasris-Tskhali, 1.V.1983 (Ryvkin); 1 ♀, Bakuriani, 3.VII.1949 (Kiritshenko); **Armenia:** 4 ♂, 6 ♀, Dzhrvezh nr Erevan, 22.V.1958 (Akramovskaja); 8 ♀, Erevan, river Zanga, 17.IV.1936 (Richter); **Azerbaijan:** 3 ♀, Talysh, Mistan, 20.V.1909 (Kiritshenko); 1 ♀, Talysh, Rasi, 30.IV.1909 (Kiritshenko); 2 ♀, Talysh, Gelyadara, 10.VII.1909 (Kiritshenko); 1 ♂, 4 ♀, Narimanabad S of Lenkoran', 24.V.1983 (Shatrovski); 2 ♀, Agdzhigan-chai, Turut steppe, 19.V.1948 (Bogachev); **Turkmenistan:** 3 ♂, 1 ♀, 1 larva, Kopetdag, Chandyr River, 19.X.1936 (Arnoldi); 1 ♂, Choloyuk, Atrek River, 30.X.1932 (Ushinskij); 2 ♂, 7 ♀, Ak-Yaila, Atrek River, 18.VII.1932 (Ushinskij); **Uzbekistan:** 1 ♂, 5 ♀, 1 larva, Skobelev [= Fergana], 17, 18.V. 1908 (Grigor'ev); 7 ♂, 2 ♀, Min-Bulak nr Namangan, 22.VI.1908 (Grigor'ev); **Tajikistan:** 2 ♂, 3 ♀, Kurgan-Tyube, 28.III, 21.VI.1944 (Kiritshenko); 1 ♂, 1 ♀, Shaartuz, Kafirnigan River, 8.VI.1944 (Kiritshenko); 8 ♂, 8 ♀, Vakhsh River, 6 km W of Kuybyshevsk, 19-22.VII.1943 (Kiritshenko); 4 ♂, 4

♀, 1 larva, Stalinabad [= Dushanbe], 21.V.1944 (Kiritshenko); 3 ♀, stream Gulbista nr Stalinabad, 20.IV.1943 (Kiritshenko); 23 ♂, 26 ♀, Novabad nr Stalinabad, 19, 20, 25.I, 2, 17.II, 8.IV.1944 (Kiritshenko); 2 ♀, 1 larva, same locality, 10.III.1944 (Kir'janova); 1 ♂, 1 ♀, Lyuchob River nr Stalinabad, 29.VIII.1943, 28.I.1944 (Kiritshenko); 2 ♀, 1 larva, Kafirnigan River nr Stalinabad, 8.VII. 1945 (Gusakovskij); 1 ♀, Karatag, 28.VI.1941 (Luppova); **Kazakhstan:** 1 ♀, env. of Kzyl-Orda, 1.VII. 1973 (Asanova); **Iran:** 9 ♂, 11 ♀, Astrabad [= Gorgan], 17, 21-28.IV, 2.V.1914 (Kiritshenko).

Description. Macropterous. Pubescence whitish, on head and pronotum very short, on corium and dark part of clavus slightly longer, adpressed, similar to that of *H. pusillus*. Ventral side of body with silvery white hairs; median part of thorax with long, erect, white hairs at both sides of median line. Antennae and legs with yellowish white hairs, ventral side of fore and middle legs with longer hairs. Hind tibiae of male with a row of long hairs on dorsal surface and several rows of shorter hairs on inner surface (Figs 3, 9).

Coloration variable. General coloration in male mostly yellowish or reddish brown, rarely black; in female, blackish brown or black, rarely reddish brown. Head in male yellowish brown, brown, or entirely black, except for vertex or eye borders; in female, usually black, rarely dark brown with darker fore part and paler vertex and eye borders. Clypeus and labrum yellowish or brown even in specimens with the rest of head black. Eyes reddish brown. Bucculae (Fig. 30) and rostrum yellow or yellowish brown. Antennae yellow, segments III-V and apex of segment II brownish yellow. Ratio of lengths of antennal segments (I-V) in male 9-10 : 6-7 : 10-11 : 5-6 : 8. Internode between segments IV and V as in *H. pusillus*. Pronotum in male yellowish or reddish brown, fore corners or the entire fore lobe (except collar) often blackish; in female, reddish brown with black fore lobe (except collar) to entirely black (including collar). Scutellum (Fig. 18) reddish brown, brown, or black, with more or less raised apical half. Hemelytra reaching or (mostly in females) nearly reaching apex of abdomen, with dark brown or black veins. Membranous part of corium white, or smoky brown apically or entirely. Base of clavus (Fig. 33) with a large pure white spot reaching to apex or to two-thirds of scutellum; the remainder of clavus smoky brown, rarely dirty white. Membrane smoky brown, with 2, 3 or 4 dirty white, sometimes indistinct spots; rarely membrane dirty white with small brownish areas. Ventral side of

thorax yellowish brown to black, coxal covers yellow. Abdomen black. Legs yellow, rarely brownish yellow; knees, tarsal segments I and apices of segments II often brown. Hind femora of male curved. Ratio of lengths femur : tibia : tarsus in male 22 : 26 : 7. Genital segment and parameres as in Figs 56-59.

Body length ♂ 1.8-2.1, ♀ 1.9-2.2; width of pronotum between fore corners ♂ 0.5-0.6, ♀ 0.6-0.65 mm, between hind corners: ♂ 0.77-0.85, ♀ 0.85-0.95 mm.

Distribution (Fig. 85). Ukraine (Crimea), the south of European Russia, Georgia, Armenia, Azerbaijan, N Iran, Turkmenistan, Uzbekistan, Tajikistan, S Kazakhstan.

Biology. The species has been collected in Tajikistan from January 19 to August 19, in Turkmenistan in October, and in the Krasnodar Terr. from end of April to end of September. Kiritshenko (1964) reported collecting this species (misidentified by him as *H. pusillus* and *H. montanus*) from a bank of a stream at Karatag.

Comparison. The new species is readily distinguished from other our species by the thickened hind tibiae of male with several rows of long hairs. It is similar to *H. pusillus*, but usually paler; the black-coloured specimens of *H. pilipes* may be distinguished as follows: antennal segments I and II and legs yellow, only knees, tarsal segments I and apices of segments II slightly brownish (in *H. pusillus*, antennal segments I and II and dorsal side of legs reddish brown to dark brown, ventral side of legs pale brown, but not yellow); bucculae yellow, rarely slightly embrowned in middle (in *H. pusillus*, bucculae usually brown with dark brown spot in middle). *H. montanus* co-occurring with the new species in the Caucasus can be distinguished by the apex of scutellum with slight incision (sometimes indistinct), small and dirty white spot at base of clavus not surpassing 1/3-1/2 of scutellum, longer and goldish hairs on hemelytra.

Hebrus hissarensis sp. n.
(Figs 7, 13, 23, 32, 37, 69-72, 85)

Holotype. ♂, **Tajikistan**, Hissar Range, Khodzha-Obi-Garm, 17.IX.1943 (Kiritshenko).

Paratypes. **Tajikistan**, Hissar Range: 57 ♂, 50 ♀, as holotype, 2.IX-1.X.1943; 4 ♀, Kondara, valley of Varzob, 1100 m, 14.VII.1939 (Gussakovskij); 4 ♂, 1 ♀, Gazni, Varzob River, 10.II.1944 (Kiritshenko); 2 ♂, 14 ♀, 1 larva, confluence of Maikhur and Ziddy rivers 3-4.IX.1947 (Kiritshenko, Rezvoi); 1 ♂, 3 ♀, Stalinabad [= Dushanbe], 24.X.1943, 6.V.1944

(Kiritshenko); 3 ♀, stream Gulbista nr Stalinabad, 20.IV, 6.V, 21-24.X.1943 (Kiritshenko).

Description. Macropterous. Pubescence of upper side goldish, on head and pronotum semierect, on scutellum and hemelytra adpressed. Hairs on corium and clavus dense and covering also the membranous parts. Sides of thorax sparsely pubescent. Abdomen with dense white hairs. Legs with short yellowish hairs; hind tibiae of male with a row of long hairs on upper side.

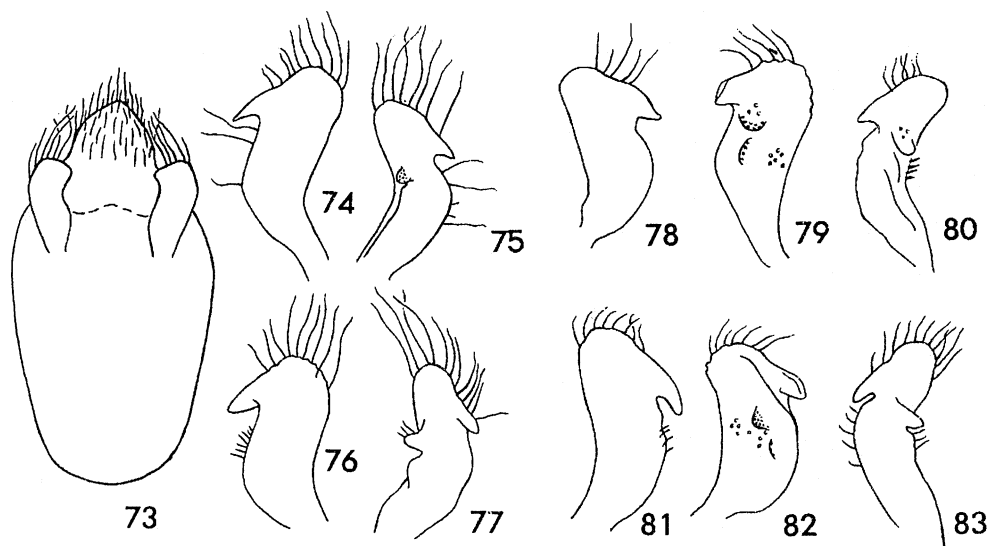
Coloration quite stable. General colour reddish brown. Head reddish brown, with labrum, margins of bucculae, and 2 spots at vertex brown. Eyes dark brown, almost black, with slight reddish tinge. Antennae reddish yellow, segments III-V and apices of segments I and II brownish yellow. Ratio of lengths of antennal segments (I-V) 9.5 : 6.5 : 8 : 5 : 7.5. Internode between segments IV and V as in *H. pusillus*. Bucculae (Fig. 32) and rostrum yellow. Pronotum and ventral side of thorax reddish or yellowish brown. In dark specimens, fore corners of pronotum black, meso- and metathorax with brown spots. Scutellum (Fig. 23) reddish brown to dark brown or almost black, more or less raised and with a slight, sometimes indistinct bifurcation at apex. Hemelytra dark brown; corium dark brown, its membranous part sometimes slightly paler, dusky brown. Clavus (Fig. 37) dusky brown, at base with a greyish white spot occupying not more than 1/3-1/2 of scutellum length. Membrane not reaching apex of pregenital segment, dusky brown, with 3 indistinct, dirty white, rounded spots, sometimes with traces of a fourth spot at base. Abdomen dark brown or black. Legs reddish yellow, apices of tarsi, sometimes also knees and tarsal segments I brown. Hind femur and tibia of male as in Figs 7, 13. Ratio of lengths femur : tibia : tarsus in hind legs of male 21 : 24 : 8. Genital segment and parameres as in Figs 69-72.

Body length 1.6-1.85 mm; width of pronotum between fore corners 0.5 mm, between hind corners 0.75 mm.

Distribution (Fig. 85). **Tajikistan** (Hissar Range: basin of Varzob River).

Biology. Kiritshenko (1964) reported collecting this species (misidentified by him as *H. montanus*) at Khodzha-Obi-Garm from banks of streams running out from hot springs with temperature 56 °C and from the bank of Kondara River.

Comparison. The species is very close to *H. oxianus*, especially to brown-coloured specimens from the basin of Kafirnigan River of



Figs 73-83. *Hebrus oxianus*: 74, 75, Tajikistan, Der'e-Kul' Lake; 76, 77, Turkmenistan, pale specimen; 78-80, Turkmenistan, dark specimen; 81-83, Tashkent. 73, genital segment; 74, 76, 78, 81, paramere, external view; 75, 77, 80, 83, paramere, anterior view; 79, 82, paramere, internal view.

which the Varzob River is a tributary. The differences are given in the key.

Hebrus oxianus sp. n.

(Figs 6, 12, 22, 31, 38, 40-45, 73-83, 85)

Holotype. ♂, **Tajikistan**, Der'e-Kul' Lake, lower reaches of Vakhsh River, 23.III.1944 (Kiritshenko).

Paratypes. **Tajikistan:** 42 ♂, 75 ♀, as holotype, 13-23.III.1944; 1 ♂, Khalkha-Kul' Lake, lower reaches of Vakhsh, 11.VII.1944 (Gussakovskij); 2 ♀, Molotovabad [= Nizhniy Pyandzh] on Vakhsh River, 24.III.1944 (Arnoldi); 2 ♂, 4 ♀, Shaartuz, lower reaches of Kafirnigan River, 8.VI.1944 (Kiritshenko); 1 ♂, 1 ♀, Lyuchob River nr Stalinabad, 22.X.1943 (Kiritshenko); **Uzbekistan:** 4 ♂, 2 ♀, Bassaga, Amu-Darya River nr Kelif, 27.X.1931 (Ushinskiy); 1 ♂, 1 ♀, Termez, 28.VI.1912 (Kiritshenko); 5 ♂, 3 ♀, Tashkent (B. Jakovlev's collection); **Turkmenistan:** 9 ♂, 24 ♀, 150 km N of Chardzhou, 15 km N of Kabakly, 13.IX-18.X.1989 (Isakov).

Description. Macropterous. Pubescence of upper side goldish, fine, dense, almost uniform on head, pronotum and hemelytra. Hairs on clavus covering also the white spot. Sides of thorax sparsely pubescent. Abdomen with dense white hairs. Legs with short yellowish hairs; hind tibiae of male with a row of long hairs on upper side.

Coloration very variable (Figs 40-45). General colour of head, pronotum and hemelytra varying from whitish yellow to black; dark specimens more frequent among

females. In palest specimens, head whitish yellow or brownish yellow with two brown spots at vertex; in darker specimens, frons with two longitudinal dark stripes; in the darkest specimens, these stripes fused and head nearly entirely dark brown or black, except for vertex and eye borders. Eyes dark brown or reddish. Antennae yellow, segments III-V and apices of segments I and II brown; in darkest specimens, segments I and II pale brown with darker apices. Ratio of lengths of antennal segments (I-V) 8 : 6 : 9 : 5 : 8. Internode between segments IV and V as in *H. pusillus*. Bucculae (Fig. 31) and rostrum yellow. Pronotum in pale specimens whitish yellow, brownish yellow or brown, fore and sometimes hind corners darker, brownish, sometimes fore lobe with brownish borders of pits or with two indistinct brownish stripes along these spots. In darker specimens, pronotum reddish brown with dark brown fore corners and median groove, or with dark fore half, or entirely dark brown or black. Scutellum (Fig. 22) yellow to black, more or less raised and with a slight, sometimes indistinct bifurcation at apex. Hemelytra from yellowish white with slightly darker veins to dark brown with almost black veins. Membranous part of corium usually slightly paler than veins, with pale brown to dark brown mottling. Clavus (Fig.

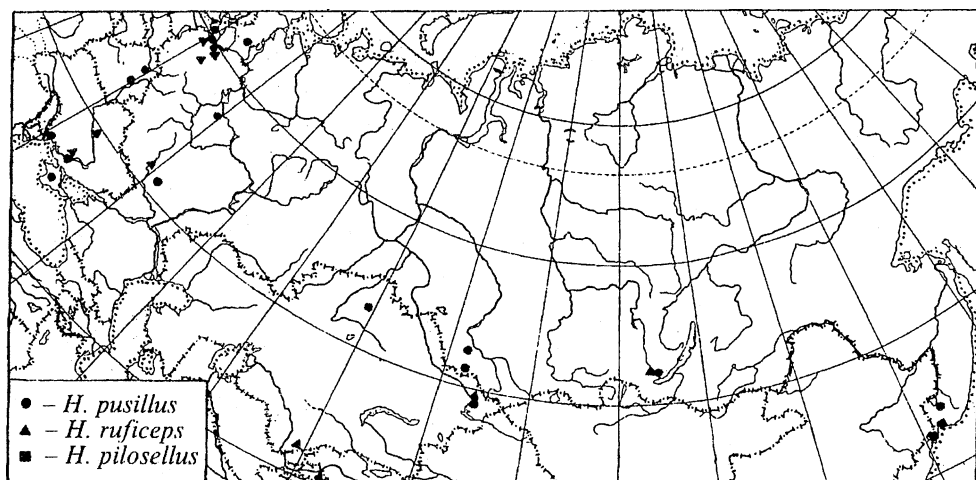


Fig. 84. *Hebrus*, distribution in the former USSR and N Iran based on specimens in the Zoological Institute, St. Petersburg.

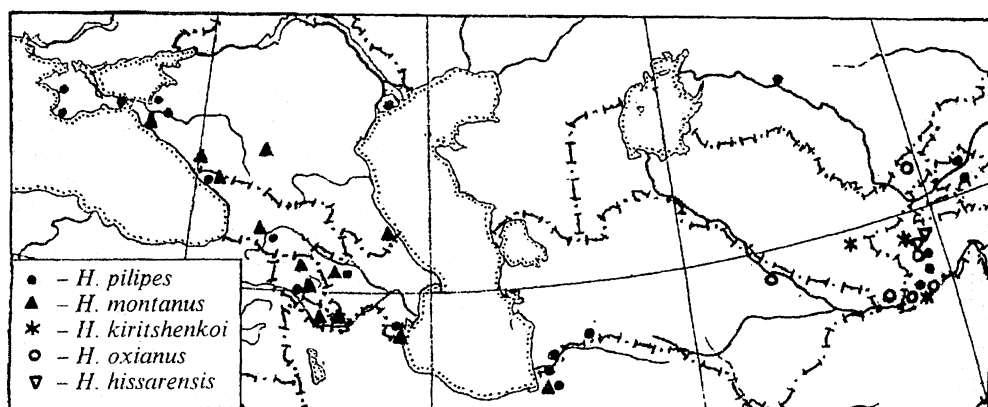


Fig. 85. *Hebrus*, distribution in the former USSR and N Iran based on specimens in the Zoological Institute, St. Petersburg.

38) dusky brown, at base with a greyish white spot occupying up to half of scutellum length, sometimes this spot indistinct. Membrane reaching or almost reaching apex of abdomen, dusky brown to dark brown, with 3-4 indistinct, dirty white spots. In pale specimens, ventral side of thorax yellow with brown spots, abdomen dark brown; in dark specimens, prothorax yellow, meso- and metathorax brownish, abdomen black; in darkest specimens, ventral side of thorax and abdomen entirely black, except for yellow coxal covers. Legs whitish yellow with slightly brownish apices of femora, tarsal

segments I and apices of segments II, sometimes entirely yellowish brown. Hind femur and tibia of male as in Figs 6, 12. Ratio of lengths femur : tibia : tarsus in hind legs of male 22 : 27 : 8. Genital segment and parameres as in Figs 73-83.

Body length 1.8-2.1 mm; width of pronotum between fore corners 0.6 mm, between hind corners 0.8 mm in male and 0.9 mm in female.

Distribution (Fig. 85). Turkmenistan, Uzbekistan, Tajikistan. All records are from the basin of Amu-Darya River, except specimens labelled "Tashkent".

Biology. Kiritshenko (1964) reported collecting this species (misidentified by him as *H. montanus*) under hygrophilous plants along Der'e-Kul' Lake and on an island of Kafirnigan River near Shaartuz. Isakov collected this species in Turkmenistan on wet banks under decayed remains of plants.

***Hebrus pilosellus* sp. n.**

(Figs 8, 20, 27, 39, 52-55, 84)

Holotype. ♂, **Russia, Primorsk Terr.**, locality "Golubiny Utes", 8 km E of Khasan Lake, 25.VIII.1996 (Kanyukova).

Paratypes. **Russia, Primorsk Terr.:** 50 ♂, 45 ♀, 20 larvae, as holotype; 3 ♀, same locality, 28-29.V.1978 (Kanyukova); 1 ♂, 1 ♀, lake on Putyatn Island, 29-30.VII.1978 (Lafer).

Description. Submacropterous. Pubescence of head, pronotum and scutellum dark brown, long, almost erect, especially on head (except clypeus). Corium and dark part of clavus with brown hairs directed backwards. Sides of thorax with short pubescence, but with longer hairs along rostral groove (as in other Hebridae). Abdomen with dense white hairs, the latter longer near its apex. Antennae with erect brown hairs. Legs of all pairs with dense hairs, hind tibiae of male in addition to simple hairs with long hairs on inner side.

Head black or blackish brown, eye borders reddish brown. Eyes reddish brown. Antennae brown, segments I and II yellowish brown. Ratio of lengths of antennal segments (I-V) 8 : 6 : 9 : 5 : 8. Internode between segments IV and V as in *H. pusillus*. Bucculae (Fig. 27) and rostrum yellow. Pronotum reddish brown, fore corners or a transverse stripe in fore half black. Scutellum (Fig. 20) black or dark brown, short, with rounded hind margin, slightly raised at apex. Hemelytra (Fig. 39), including membranous part of corium, dark brown. Clavus dark brown, at base with a narrow white spot reaching to 2/3 or almost to apex of scutellum. Membrane dirty brown, sometimes with 2-3 dirty white spots, not covering two pregenital segments of abdomen. Ventral side of thorax brownish black with reddish brown collar and brown coxal covers. Abdomen black. Coxae, trochanters and basal halves of femora yellow, apical halves of femora brownish, tibiae brown, tarsi yellow with brown apices. Hind femur and tibia of male as in Fig. 8. Ratio of lengths femur : tibia : tarsus in hind legs of male 21 : 25 : 8. Genital segment and parameres as in Figs 52-55.

Body length ♂ 1.85, ♀ 1.9-2.1 mm; width of pronotum between fore corners ♂ 0.6, ♀ 0.67 mm, between hind corners ♂ 0.77, ♀ 0.87 mm.

Distribution. Russia: southern part of the Primorsk Terr.

Biology. Numerous imago and larvae of last instars have been collected in end of August at margins of a small freshwater lake. They inhabited a belt with *Phragmites*, *Typha* and *Lemna* growing in water in about 10 m of the shore. The bugs slowly walked on fallen dry stems and on water between stems. Other arthropods were represented by springtails and spiders.

Comparison. The new species is similar to species of the *H. pusillus* group in the structure of internode between antennal segments IV and V, presence of process on inner side of paramere, and form of the genital segment, but readily distinguished by the coloration, pubescence of body, slightly shortened hemelytra, and hairs on hind tibiae of male.

H. pilosellus is similar to *H. nipponicus* Horv. (Japan) in the dense, brown pubescence of body, especially of hemelytra, and in the dark brown with reddish tinge coloration of body. For comparison of these species given below I used one male syntype of *H. nipponicus* received from the Hungarian Museum of Natural History. In *H. nipponicus*, antennal segment I the longest, 1.6 times as long as segment II and 1.15 times as long as segment III; in *H. pilosellus*, segment III the longest, segment I only 1.3 times as long as II and slightly shorter than III. Hind margin of scutellum is with slight incision in *H. nipponicus*, without incision in *H. pilosellus*. Hind femora of male straight and legs entirely yellow in *H. nipponicus*; hind femora of male curved and legs partly brown in *H. pilosellus*. Hemelytra less shortened, not covering only last segment of abdomen in *H. nipponicus*, but two last segments in *H. pilosellus*. The white spot at base of clavus is small, almost square, not surpassing the middle of scutellum in *H. nipponicus*, but stripe-like and distinctly longer in *H. pilosellus*. Fore corners of pronotum are less distinctly darkened and the ventral side of thorax reddish brown in *H. nipponicus*.

The record of *H. nipponicus* from the Primorsk Terr. (Kanyukova, 1988) is based on misidentification of *H. pusillus*. *H. pusillus* differs from *H. pilosellus* in the femora entirely dark brown, pubescence of hemelytra short, adpressed and white, and membrane covering the apex of abdomen.

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