Zootaxa 3760 (3): 429–438
www.mapress.com/zootaxa/

Article

ISSN 1175-5326 (print edition)
ZOOTAXA
ISSN 1175-5334 (online edition)

http://dx.doi.org/10.11646/zootaxa.3760.3.9
http://zoobank.org/urn:lsid:zoobank.org:pub:12759523-69AB-4374-A78A-B3CDC4428B2A

On taxonomy of *Hydrobaenus* Fries, 1830 (Diptera: Chironomidae: Orthocladiinae) from the Russian Far East, with a key to species

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Abstract

Additions and corrections to the diagnosis of the genus *Hydrobaenus*, a redescription for adult male and immature stages of *H. distinctus* (Makarchenko *et* Makarchenko) **comb. n.** , a taxonomic notes to *H. jacuticus* Makarchenko *et* Makarchenko and identification keys of adult males, pupae and larvae of *Hydrobaenus* species from the Russian Far East are given.

Key words: Diptera, Chironomidae, *Hydrobaenus,* taxonomy, redescription, key, Russian Far East

Introduction

While performing the taxonomic revision of the genus *Bryophaenocladius* Thienemann some years ago, we described a new species *B. distinctus* Makarchenko *et* Makarchenko from Primorye Territory of the Russian Far East (Makarchenko & Makarchenko 2006a) based on adult male. In the spring of 2013 we collected a mature pupa of Orthocladiinae with larval skin, in which the male hypopygium of *B. distinctus* was clearly visible, but the characters of pupa and larva were very different from the ones described in the genus *Bryophaenocladius*. The re-analysis of adult male, pupa and larva, allowed to conclude that the species *distinctus* should be placed in *Hydrobaenus*, despite some features of adult, larva and pupa, did not allow to assign this species to the genus *Hydrobaenus* using available identification keys (Cranston *et al.* 1983, 1989; Coffman *et al.* 1986; Sæther *et al.* 2000). The reason may be the long time spent since the revision of the genus *Hydrobaenus* (Sæther 1976) and the above mentioned monographs. In fact in the last decades new species were described, including the use of features not only of adults, but also of immature stages (Asari *et al.* 2004; Cranston *et al.* 2007; Makarchenko *et al.* 2009; Makarchenko & Makarchenko 2010, 2011, 2012; Zerguine & Rossaro 2010). To sum up, up to date, the genus *Hydrobaenus* includes at least 44 species (Ashe & O'Connor 2012). In the Russian Far East, we found 16 species, 11 of which were described as new to science.

Analyzing our original data and literature data during the last 13 years, it was emphasized that the descriptions of some species included characters not considered in the diagnosis of the genus *Hydrobaenus*. For this reason the diagnosis of the genus must be emended, especially for what concerns the characters of pupae and larvae. An emended diagnosis of *Hydrobaenus* including new characters from larvae is just published in the new edition of "The larvae of Chironomidae (Diptera) of the Holarctic Region" (Andersen *et al.* 2013).

In the present paper we present additions and corrections to the diagnosis of the genus *Hydrobaenus*, a redescription of adult male and immature stages of *H. distinctus* (Makarchenko *et* Makarchenko) **comb. n.**, taxonomic notes to *H. jacuticus* Makarchenko *et* Makarchenko, as well as identification keys of *Hydrobaenus* species from the Russian Far East.

Accepted by B. Rossaro: 18 Dec. 2013; published: 3 Feb. 2014

Material and methods

The association between larva, pupa and adult of *H. distinctus* has been attempted by rearing alive larvae individually to the mature pupae and from the pupae to adult.

The terminology follows Sæther (1980). The material was preserved in 70% ethanol and later mounted on slides, following the procedure outlined by Makarchenko (1985).

All used material are deposited in the Institute of Biology and Soil Sciences, Far East Branch of the Russian Academy of Sciences, Vladivostok, Russia (IBSS FEB RAS).

Genus *Hydrobaenus* Fries

Hydrobaenus Fries, 1830: 177.

Hydrobaenus Fries; Sæther 1976: 54; Cranston *et al.* 1983: 175, 1989: 204; Coffman *et al.* 1986: 181; Sasa & Kikuchi 1995: 164; Makarchenko & Makarchenko 2006b: 319, 501, 646; Ashe & O'Connor 2012: 311; Andersen *et al.* 2013: 226.
Type species: Hydrobaenus lugubris Fries, 1830, by original designation. Senior homonym of *Hydrobaenus* Fries, 1831.

Generic diagnosis (emended). Based on a new Far-Eastern material and references by Cranston *et al.* (2007); Makarchenko *et al.* (2009); Makarchenko & Makarchenko (2010, 2011, 2012); Zerguine & Rossaro (2010), the generic diagnosis given by Sæther (1976), Cranston *et al.* (1983, 1989), Coffman *et al.* (1986) and Andersen *et al.* (2013) should be emended as follows:

Adult male. Acrostichals absent or present, when present, then weak and short, not strong decumbent, beginning close to antepronotum or some distance from antepronotum, or situated only in middle part of scutum. Pseudospurs present on tarsomere 1 and often tarsomere 2 of mid and hind legs, occasionally absent. Virga consisting of a cluster of few spines or absent. Oral projections of transverse sternapodeme pointed, rod-shaped or roundish triangular. Gonostylus with one or rarely several megasetae.

Pupa. Tergite II with posterior hooklets or with posterior group of simple spinules with apex pointed orally. Pedes spurii A present on sternites IV–VI or IV–VIII, occasionally absent. Segment I with 1–3 L setae from one side; segment II with 3–4 L setae; segments III–VI each with 4 L setae 0–1 of them taeniate on IV, 0–2 taeniate on V, 0–4 taeniate on VI; segment VII with 3 or usually, 4 L setae, 0–4 of them taeniate; segment VIII usually with 4–5 taeniate L setae, sometimes with 4 strong simple L setae. Anal lobe usually with 3, occasionally with 6–7 anal macrosetae and with full to reduced fringe of short setae or sometimes without fringe. Male genital sac ending near or extending beyond of anal lobe, with or without of short apical projection or protuberance.

Larva. Antenna with 5–6 segments; if antenna with 6 segments, the sixth segment vestigial. S_I plumose or sometimes palmate. Mentum with 1–2 median and 6 pairs of lateral teeth or sometimes with 2 median and 5 pairs of lateral teeth.

Key to species of *Hydrobaenus* Fries from the Russian Far East

Males

1. Anal point reduced and usually in the form of rounded or triangular tubercle or projection 2
- Anal point well developed. 6
2. Gonostylus wide, distally angularly, on the outer edge with small peakedness projection 3
- Gonostylus different shapes, without projection on the outer edge 4
3. AR 2.50; LR_1 0.73–0.74. Dorsocentrals 15–17. Transverse sternapodeme wide in middle part. Tergite IX narrowly triangular. Virga consists of 4 setae. Gonostylus nearest of megaseta with some setae of middle length . . . . . *H. laticaudus* Sæther, 1976
- AR 1.27; LR_1 0.61.Dorsocentrals 4–5. Transverse sternapodeme narrow in middle part. Tergite IX rounded.Virga consists of 2 setae. Gonostylus nearest of megaseta with 2 strong and long setae . . . . . *H. tiunovi* Makarchenko *et* Makarchenko, 2010
4. Gonostylus with tooth distally; inferior volsella double, with large rounded-triangular dorsal and ventral parts which well separated from each other. . . . . *H. biwaquartus* Sasa *et* Kawai, 1987
- Gonostylus without tooth distally; inferior volsella different shapes and if consists of two parts, they not clearly separated ... 5
5. Gonostylus straight, with large triangular or rounded triangular crista dorsalis in distal part. Virga consists of 4 setae. Acros-

tichals distally curved and beak-shaped . . . . . *H. kisosecundus* Sasa *et* Kondo, 1991
- Gonostylus slightly curved, distally without crista dorsalis. Virga consists of 2 setae. Acrostichals simple . . . . . *H. fusistylus* (Goetghebuer, 1933)
6. Gonostylus in apical part on the outer edge with a triangular or rounded-triangular projection 7
- Gonostylus in apical part without projection 8
7. Apical projection of gonostylus at angle pointing down. Virga consists of 4 setae. Transverse sternapodema with high rod-like oral projections . . . . . *H. conformis* (Holmgren, 1869)
- Apical projection of gonostylus usually directed forward. Virga absent. Transverse sternapodema with low-triangular oral projections . . . . . *H. pseudoconformis* Makarchenko *et* Makarchenko, 2009
8. Gonostylus distally with crista dorsalis 9
- Gonostylus without crista dorsalis 12
9. Crista dorsalis triangular or rounded-triangular, located in apical inner edge and not always clearly visible behind megaseta. Tergite IX with a relatively long (about 33 μm) and narrow anal point. Acrostichals 0–5 . . . . . *H. sigaensis* Makarchenko, Makarchenko *et* Yavorskaja, 2009
- Crista dorsalis located on preapical inner edge. Acrostichals 22–24 10
10. Virga absent. Anal point parallel-sided or subparallel-sided, 28–40 μm long (Figs. 1–2, 3) . . . . . *H. distinctus* (Makarchenko *et* Makarchenko, 2006) **comb. n.**
- Virga present. Anal point triangular, 16–24 μm long 11
11. Gonostylus in apical quarter naked, crista dorsalis low and long, rounded or rounded-triangular. Dorsal part of inferior volsella rounded-triangular, ventral part long and flat . . . . . *H. sikhotealinensis* Makarchenko *et* Makarchenko, 2006
- Gonostylus completely covered with microtrichiae, crista dorsalis short and rounded-triangular. Dorsal part of inferior volsella with finger-like projection, ventral part short and rounded. . . . . *H. monodentatus* Makarchenko *et* Makarchenko, 2005
12. Anal point wide and low, with a slightly concave apex. Inferior volsella large and rounded . . . . *H. septentrionalis* Makarchenko *et* Makarchenko, 2005
- Anal point narrow and triangular. Inferior volsella different structure 13
13. Inferior volsella weakly developed and as two low tuberculate projections. . . . . *H. parvacaudatus* Makarchenko *et* Makarchenko, 2009
- Inferior volsella well developed ... 14
14. Dorsal part of inferior volsella with finger-like or rounded apical projection (Figs. 30–33). AR 0.9–1.2. . . . . *H. jacuticus* Makarchenko *et* Makarchenko, 2011
- Dorsal part of inferior volsella triangular or rounded, without projection. AR > 1.2. 15
15. AR 1.47–1.60. Anal point short (16–20 μm), with subapical pore. Dorsal part of inferior volsella rounded . . . . . *H. siricus* Makarchenko *et* Makarchenko, 2005
- AR 2.0. Anal point more long (28 μm), without subapical pore. Dorsal part of inferior volsella triangular . . . . . *H. maladistinctus* Makarchenko *et* Makarchenko, 2009

Pupae

1. Fringe of setae at lateral margin of anal lobe absent 2
- Fringe of anal lobe present 4
2. Thoracic horn in distal part with swelling. Segment VI with 1 pair of hair-like lateral setae and 2 pairs of taeniate setae . . . . . *H. jacuticus* Makarchenko *et* Makarchenko
- Thoracic horn without swelling in distal part. Segment VI with 4 pairs of lateral setae 3
3. Thoracic horn 20–28 μm wide and strongly pointed apex. Segments VII–VIII with 4 pairs of hair-like lateral setae (Figs. 10–11, 19, 21) . . . . . *H. distinctus* (Makarchenko *et* Makarchenko)
- Thoracic horn 28–44 μm wide and gradually narrowed to apex. Segments VII–VIII with 4 pairs of taeniate setae . . . . . *H. monodentatus* Makarchenko *et* Makarchenko
4. Anal lobe fringe located around lateral edge to base of megasetae. Thoracic horn length 260–360 μm 5
- Anal lobe fringe located in the anterior two-thirds of anal lobe and do not reach to base of megasetae. Thoracic horn length 344–416 μm. 7
5. Thoracic horn with rounded apex. Anal lobe fringe with 15–23 setae 30–85 μm long . . . . . *H. maladistinctus* Makarchenko *et* Makarchenko
- Thoracic horn with pointed apex. Anal lobe fringe with varies number of setae 120–250 μm long 6
6. Tergites V–VI with 3 pairs of hair-like lateral setae. Tergite II with posterior hooklets in 6–7 rows. . . . . *H. sikhotealinensis* Makarchenko *et* Makarchenko
- Tergites V–VI with 4 pairs of taeniate lateral setae. Tergite II with simple spinules (not hooklets) in 3–4 rows . . . . . *H. kisosecundus* Sasa *et* Kondo
7. Pupa 3.5–3.9 mm long (males). Anal lobe fringe located in the anterior one-third of anal lobe. Segment V with 2 pairs of hair-like lateral setae and 2 pairs of taeniate lateral setae. Segment VIII with 4 pairs of lateral taeniate setae . . . . . *H. conformis* (Holmgren, 1869)
- Pupa 4.2–4.8 mm long (males). Anal lobe fringe located in the anterior two-thirds of anal lobe. Segment V with 4 pairs of hair-like lateral setae, sometimes setae of one pair may be taeniate. Segment VIII with 4–5 pairs of lateral taeniate setae 8
8. Segment VI with 2 pairs of hair-like and 2 pairs of taeniate lateral setae. Segment VIII with 5 pairs of taeniate lateral setae.

Genital sheath of male with dark papilla. Tip of anal lobe smooth. . . . . *H. fisistylus* (Goetghebuer, 1933)

- Segment VI with 1 pair of hair-like and 3 pairs of taeniate lateral setae. Segment VIII with 4 pairs of taeniate lateral setae. Genital sheath of male without papilla. Tip of anal lobe rugulosity . . . . . *H. biwaquartus* Sasa *et* Kawai

Larvae of fourth instar

1. Head capsule light-yellow. Labral setae S_1 palmate, with 12–14 more or less equal branches. Mentum with 2 median and 5 pairs of lateral teeth (Figs. 22–23, 27–28) . . . . . *H. distinctus* (Makarchenko *et* Makarchenko)
- Head capsule from light-yellow to dark brown. S_1 plumose or coarsely plumose, with various numbers of branches. Mentum with 1–2 median and 6 pairs of lateral teeth 2
2. Mentum with 2 median teeth. 3
- Mentum with 1 median tooth 7
3. Head capsule dark brown. Median tooth of mentum lower than or equal to height of first lateral tooth . . . . . *H. jacuticus* Makarchenko *et* Makarchenko
- Head capsule brownish-yellow. Median tooth of mentum higher of first lateral tooth 4
4. Median teeth of mentum divided by small notch. S_1 with 6–8 unequal branches. . . . . *H. conformis* (Holmgren, 1869)
- Median teeth of mentum well divided. S_1 plumose, with equal or unequal branches 5
5. One median tooth of mentum 2.8–3 times wider than first lateral tooth . . . *H. maladistinctus* (Makarchenko *et* Makarchenko)
- One median tooth of mentum 1.5 times wider than first lateral tooth 6
6. S_1 with more or less equal branches. Sa/An 0.23–0.25. Procercus 40–44 µm long . . . . . *H. fusistylus* (Goetghebuer, 1933)
- S_1 with unequal branches. Sa/An 0.84. Procercus 56–64 µm long . . . . . *H. biwaquartus* Sasa *et* Kawai
7. Median tooth of mentum brown, as well as all lateral teeth, with rounded top . . . . . *H. sikhotealinensis* Makarchenko *et* Makarchenko
- Median tooth of mentum lighter than lateral teeth, with rounded or straight top 8
8. Median tooth of mentum with straight top, 4–4.5 times wider than the first lateral tooth. AR 2.7–2.8. Larva 4.8–5.2 mm long . . . . . *H. kisosecundus* Sasa *et* Kondo
- Median tooth of mentum with rounded top, 2–2.3 times wider than the first lateral tooth. AR 1.1–1.3. Larva 3.1–3.3 mm . . . . . *H. monodentatus* Makarchenko *et* Makarchenko

Descriptions and taxonomic notes

Hydrobaenus distinctus (Makarchenko *et* Makarchenko), comb. n.

(Figs. 1–29)

Bryophaenocladius distinctus Makarchenko *et* Makarchenko, 2006a: 7.

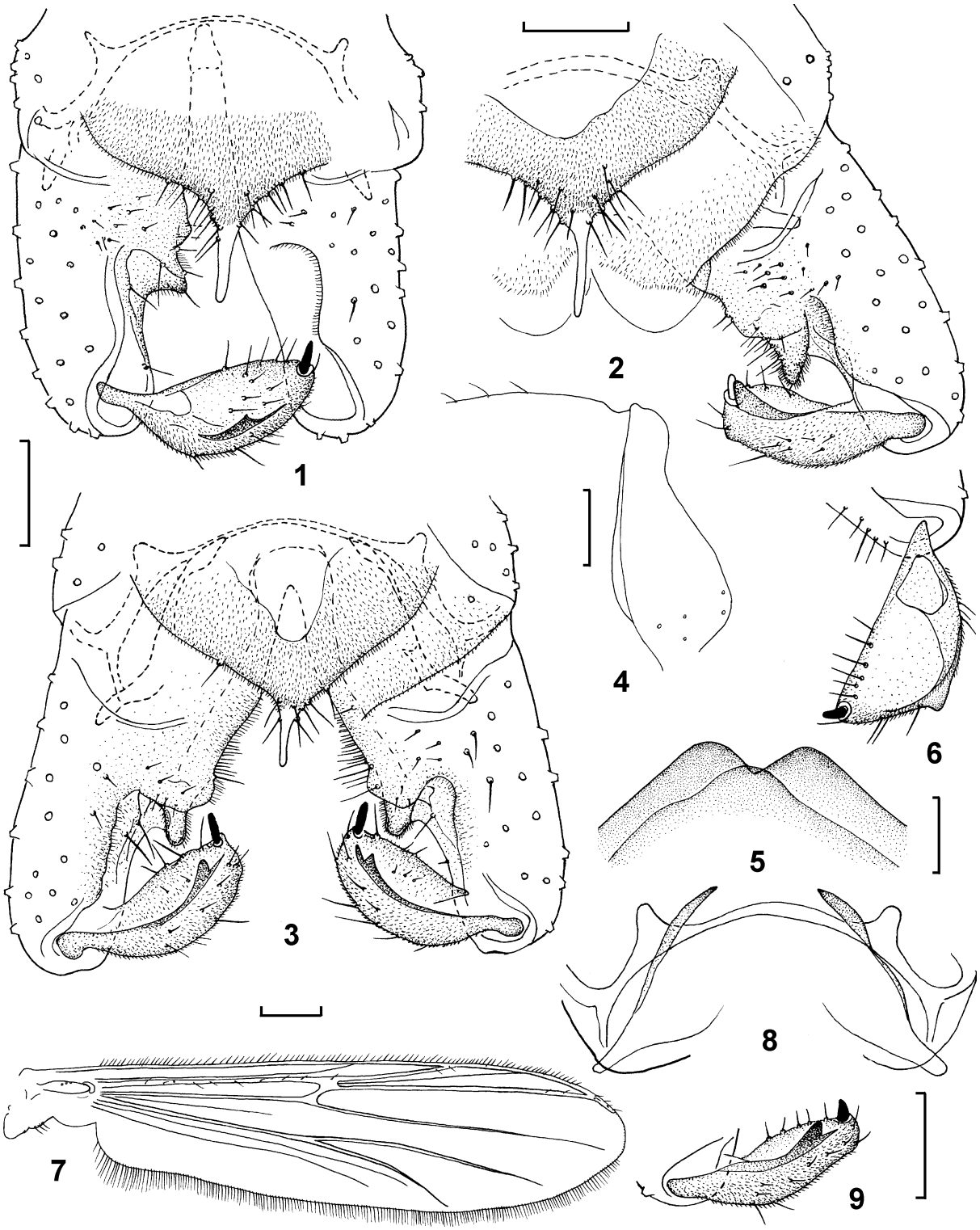
Material. ***Far East of Russia.*** Khabarovsk Territory: 5 males, Michurinsk Lake near Khabarovsk City, 5.V. 2009, leg. N. Yavorskaya. Primorye Territory: 2 males, Gribnaya River near Chernigovka Village, 25.IV. 2011, leg. T. Tiunova; 1 mature pupa reared from larva , 1 larva, unnamed stream, Mountain-Taiga Station of the Far Eastern Branch Russian Academy of Sciences, Gornotaezhnoe Village, Ussuryisky Region, N 43°41'675", E 132°09'293", 6.V. 2012, leg. E. Makarchenko; 1 male, reared from pupa, 1 pupal exuviae, 1 pupa reared from larva, 1 male, 1 mature pupa, 5 larvae, same data as previous except 6.V. 2013, E. Makarchenko & T. Tiunova; 1 male, same data as previous except 16.V. 2013, leg. E. Makarchenko; 3 males, same data as previous except 27.V. 2013, leg. E. Makarchenko & M. Makarchenko.

Description. ***Adult male*** (n = 4). Total length 2.2–2.6 mm. Wing length 1.68–1.96 mm. Total length/wing length 1.30–1.52. Coloration brown, wings grey.

Head. Eyes with short dorsomedian prolongations. Temporal setae including (from one side) 3 inner verticals, 1 outer vertical and 2–5 postorbitals. Clypeus with 5–7 setae. AR 0.97–1.07. Lengths (µm) of palpomeres 1–5: 32, 52–56, 96, 84, 116–128.

Thorax. Antepronotal lobes with V-shaped notch (Fig. 5) and with 2–3 lateral setae. Acrostichals 12–17, beginning close to antepronotum (1 specimen) or some distance from antepronotum (3 specimens) (Fig. 4), dorsocentrals 8–12, prealars 3–4. Scutellum with 6–9 setae.

Wing. R with 11–15 setae, R_1 with 3–5 setae, R_{4+5} with 2–5 setae subapically. Costa extension 56–68 µm. Anal lobe rounded. Squama with 3–5 setae (Fig. 7).

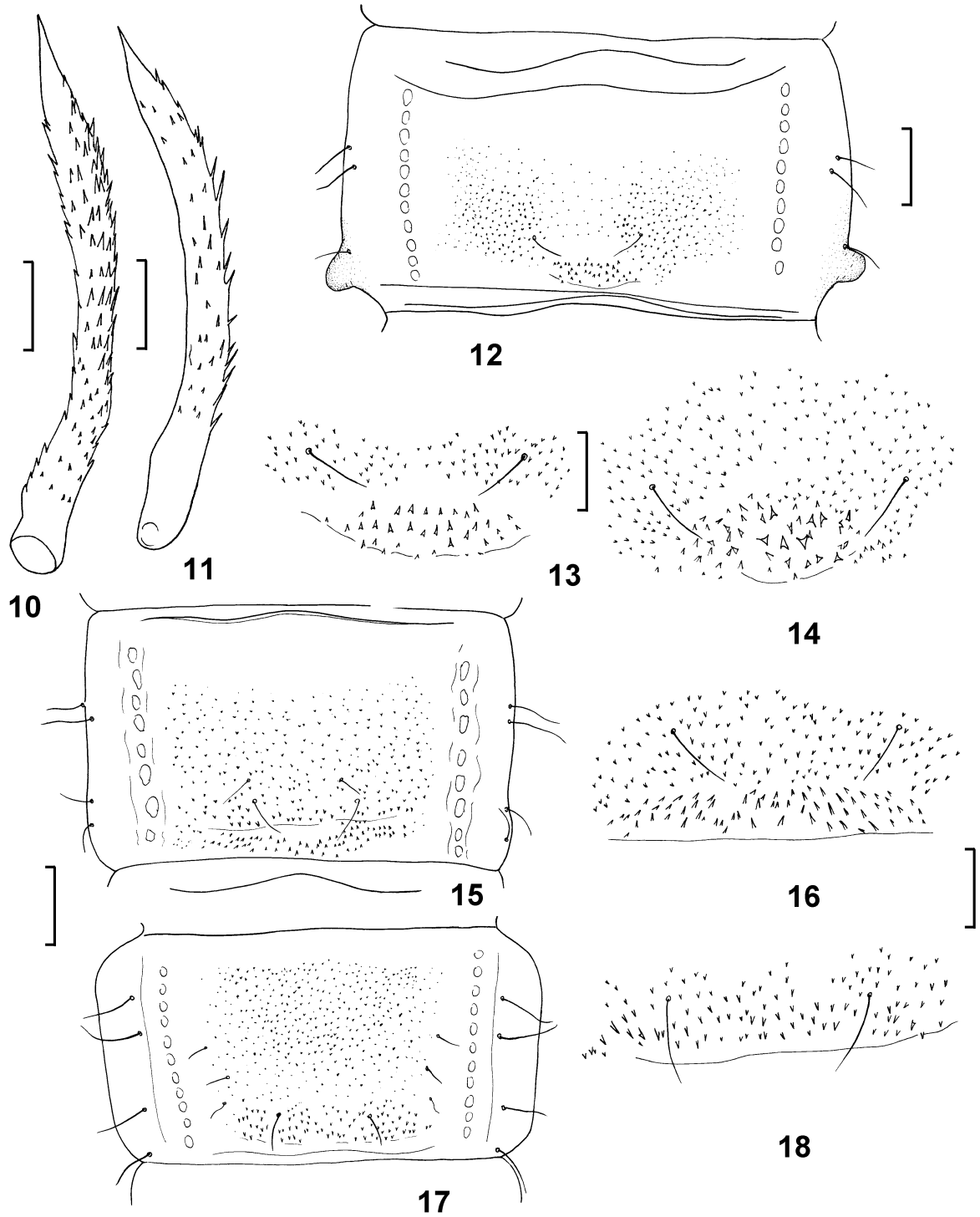


FIGURES 1–9. *Hydrobaenus distinctus* (Makarchenko *et* Makarchenko), male. **1–3,** hypopygium in dorsal view; **4,** anteropronotum and anterior part of scutum from one side; **5,** anterior part of antepronotum in dorsal view; **6, 9,** gonostylus; **7,** wing; 8, transverse sternapodeme, and phallapodemes. Scale bars are as follows: Figs. 1–6, 8, 9—50 μm; Fig. 8—200 μm.

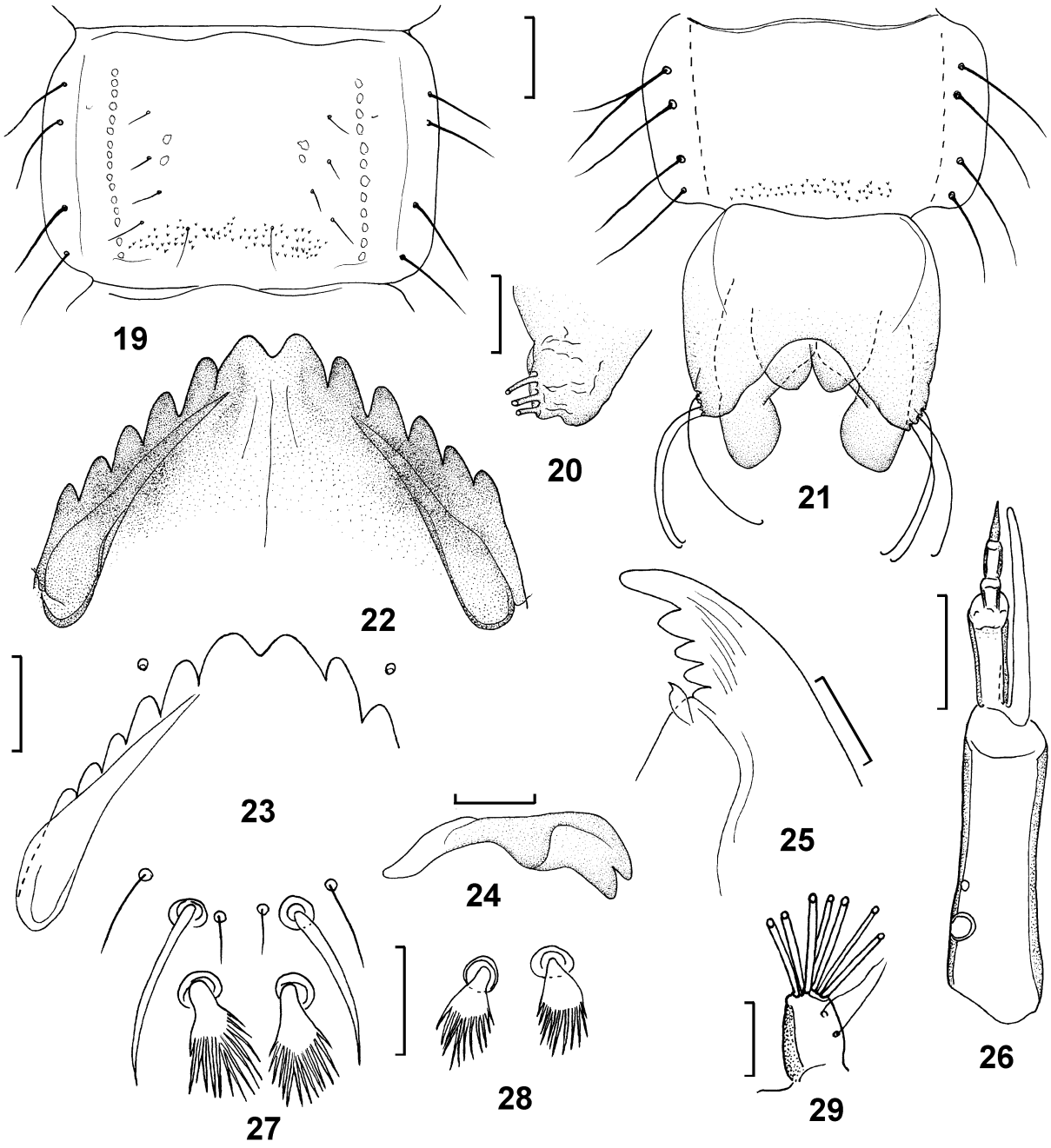
Legs. Spur of front tibia 48 μm. Spurs of mid tibia about 20 μm long, of hind tibia 48–52 μm and 16–20 μm long. Hind tibial comb with 9–11 setae. Pseudospurs on ta_1 on all legs absent. Length and proportions of leg segments as in Table 1.

TABLE 1. Lengths (in µm) and proportions of leg segments of *Hydrobaenus distinctus* (Makarchenko *et* Makarchenko), male (n = 3).

	fe	ti	ta_1	ta_2	ta_3	ta_4	ta_5	LR	BV	SV
P_1	640–688	800–880	448–512	272–288	192–208	128	96	0.56–0.58	2.66–2.84	3.06–3.21
P_2	656–720	720–768	336–360	176–192	144	96	88–96	0.45–0.47	3.40–3.55	4.09–4.28
P_3	704–752	832–864	480–512	256–272	192–224	128–136	96	0.57–0.59	2.90–3.09	3.16–3.27



FIGURES 10–18. *Hydrobaenus distinctus* (Makarchenko *et* Makarchenko), pupa. **10–11,** thoracic horn; **12,** tergite II; **13–14,** spinules in middle part of posterior shagreen of tergite II; **15,** tergite V; **16,** spinules of posterior shagreen of tergite V; **17,** tergite VI; **18,** spinules of posterior shagreen of tergite VI. Scale bars: Figs. 10–11—50 µm; Figs. 12, 15, 17—200 µm; Figs. 13–14, 16, 18—50 µm.



FIGURES 19–29. *Hydrobaenus distinctus* (Makarchenko *et* Makarchenko), pupa (19–21) and fourth instar larva (22–29). **19,** tergite VII; **20,** distal part of anal lobe with macrosetae; **21,** tergite VIII and anal segment of male; **22–23,** mentum; **24,** premandible; **25,** mandible; **26,** antenna; **27,** labral setae; **28,** S_1 of labrum; **29,** procercus. Scale bars: Figs. 19, 21– 200 µm; Fig. 20—50 µm; Figs. 22–29—40 µm.

Hypopygium (Figs. 1–3, 6, 8–9). Tergite IX with 16–21 setae along posterior margin and on base of anal point. Anal point without microtrichia, parallel-sided and narrow, 28–40 µm long. Laterosternite IX with 6–9 setae. Transverse sternapodeme 112–136 µm long; oral projections rod-shaped or rounded triangular (Fig. 8). Gonocoxite 192–212 µm long, with double inferior volsellae as in Figs. 1–3. Gonostylus 88–96 µm long, with acutely triangular crista dorsalis (Fig. 9); megaseta 16 µm long.

Pupa (n = 2). Total length 2.8–3.5 mm. Coloration brownish. Exuviae transparent. Abdomen with brown or dark brown apophyses.

Cephalothorax. Frontal apotome with 72 µm long setae. With two median and two lateral antepronotal setae, all thin and hair-like. Precorneal setae lengths (in µm): Pc_1—88, Pc_2—120, Pc_3—80. Distance between Pc_1 and Pc_2

6–8 μm; distance between Pc_2 and Pc_3 6–12 μm. Thoracic horn 260–300 μm long, 20–28 μm wide, with strongly pointed apex, covered by teeth in apical 2/3, spines absent or rarely present in basal 1/3 (Figs. 10–11). Dorsocentrals thin and hair-like; Dc_1 48–56 μm long, Dc_2 56 μm long, Dc_3 20–28 μm long, Dc_4 32–56 μm long; distance between Dc_1 and Dc_2 32–40 μm; between Dc_2 and Dc_3 44–84 μm; between Dc_3 and Dc_4 12–36 μm.

Abdomen. Tergite I without shagreen. Tergite II without shagreen or with few spinules in anterior half and with fine shagreen in posterior half; posteriomedian shagreen with group of simple spinules in 3–4 rows which larger than other spinules and with apex pointed orally (Figs. 12–14). Tergites III–IV with more intensive shagreen, posterior part with more wide group of spinules pointed orally (Figs. 15–16). Tergites V–VI with shagreen as on previous two tergites but posterior rows of spinules pointed caudally (Figs. 17–18). Tergites VII–VIII with posterior transverse band of 3–4 rows of spinules, sometimes tergite VII with some small spinules medially (Figs. 19, 21). Tergite IX without shagreen. Segment I with 1–2 pairs of lateral setae. Segment II with 3–4 pairs of lateral setae. Segments III–VI with 4 pairs of lateral seta. Lateral setae of segments I–VI hair-like, 40–80 μm long. Segments VII–VIII with 4 pairs of long, strong but not taeniate lateral setae, 92–100 μm long on tergite VII and about 120 μm long on tergite VIII; some lateral setae on tergite VIII might be bifid (Figs. 19, 21). Anal lobe 252–300 μm long, without fringe. Male genital sac overreaching anal lobe. Anal macrosetae 180–224 μm long, situated little outer of anal lobe apex (Fig. 20), with folded apical part.

Fourth instar larva (n = 6). Coloration yellowish-brown. Total length 4.7–5.0 mm.

Head. Head capsule 320 μm long and 260 μm wide; light yellow, postoccipital margin dark yellow. Labral setae S_I palmate, with 12–14 unequal sized branches; S_{II} long and large, S_{III}–S_{IV} short and hair-like (Figs. 27–28); pecten epipharingis consisting of 3 elongated scales with rounded apex. Premandible distally with 2 teeth (Figs. 24). Antenna with 5 segments. Length of antennal segments (in μm): 52, 20, 6, 8, 6. AR 1.3–1.4. Lauterborn organs well developed at apex of second segment and ending at apex of third segment; antennal blade ending near mid to apex of fifth segment (Fig. 26). Mandible dark brown, apical tooth subequal of combined width of inner teeth; seta interna with 7 plumose branches, seta subdentalis with beak-shaped apex (Fig. 25). Mentum with 2 median and 5 lateral pairs of teeth; median teeth with V-shaped notch, slightly lighter than all lateral teeth, 3–6 times wider and slightly higher than first lateral tooth. Ventromental plates extend beyond the last lateral tooth (Figs. 22–23).

Abdomen. Procercus sclerotized posteriorly, 20–28 μm long, 16–28 μm wide, with 7 anal setae 220–240 μm long and 2 thin lateral setae 28–56 μm long (Fig. 29). Supraanal setae 100–120 μm long. Posterior parapods 100–180 μm long, 80–84 μm wide, in basal ventral part with pair of hair-like setae. Anal tubules shorter than posterior parapods.

Remark. *H. distinctus* is good separated from all known species of the genus by features adduced in key above.

Distribution and biology. Species is known only from the south part of the Russian Far East, namely from the Amur River basin and Primorye Territory. Pupae and larvae were collected in detritus with old grass of an unnamed stream near Mountain-Taiga Station of the FEB RAS in the southern part of Primorye Territory. The water temperature was 9.7–11.6°C, Ph 6.6–6.9 and the depth 5–15 cm at the time of collection in 2013.

Hydrobaenus jacuticus Makarchenko *et* Makarchenko
(Figs. 30–33)

Hydrobaenus jacuticus Makarchenko *et* Makarchenko, 2011: 392, Figs. 3–4.
Hydrobaenus kotsuki Makarchenko *et* Makarchenko, 2012: 121, Figs. 33–47; **syn. n.**

Material. ***Far East of Russia.*** Sakha (Yakutia) Republic: 1 male, Neryungrinsky District, Gorbyllakh River, 1.VIII. 2010, leg. E. Makarchenko; 1 male, same data as previous except Chulman River, 2.VIII.2010, leg. T. Tiunova. Amurskyi Region: 1 male, extracted from mature pupa, 2 mature pupae, 1 pupa with larval skin, 4 larvae, Selemdzhinskyi District, Northern part of Zlatoustovsk Village, Kazachenskyi Stream (Zeya River basin), 25.VII.2008, leg. D. Kotsuk. Magadanskyi Region: 1 male, extracted from mature pupa, 2 mature pupa, 1 mature larva, Tenkinskyi District, environs of Sibit-Tyellakh Village, Olen' Stream (Kolyma River basin), 24.VII.1977, leg. E. Makarchenko.

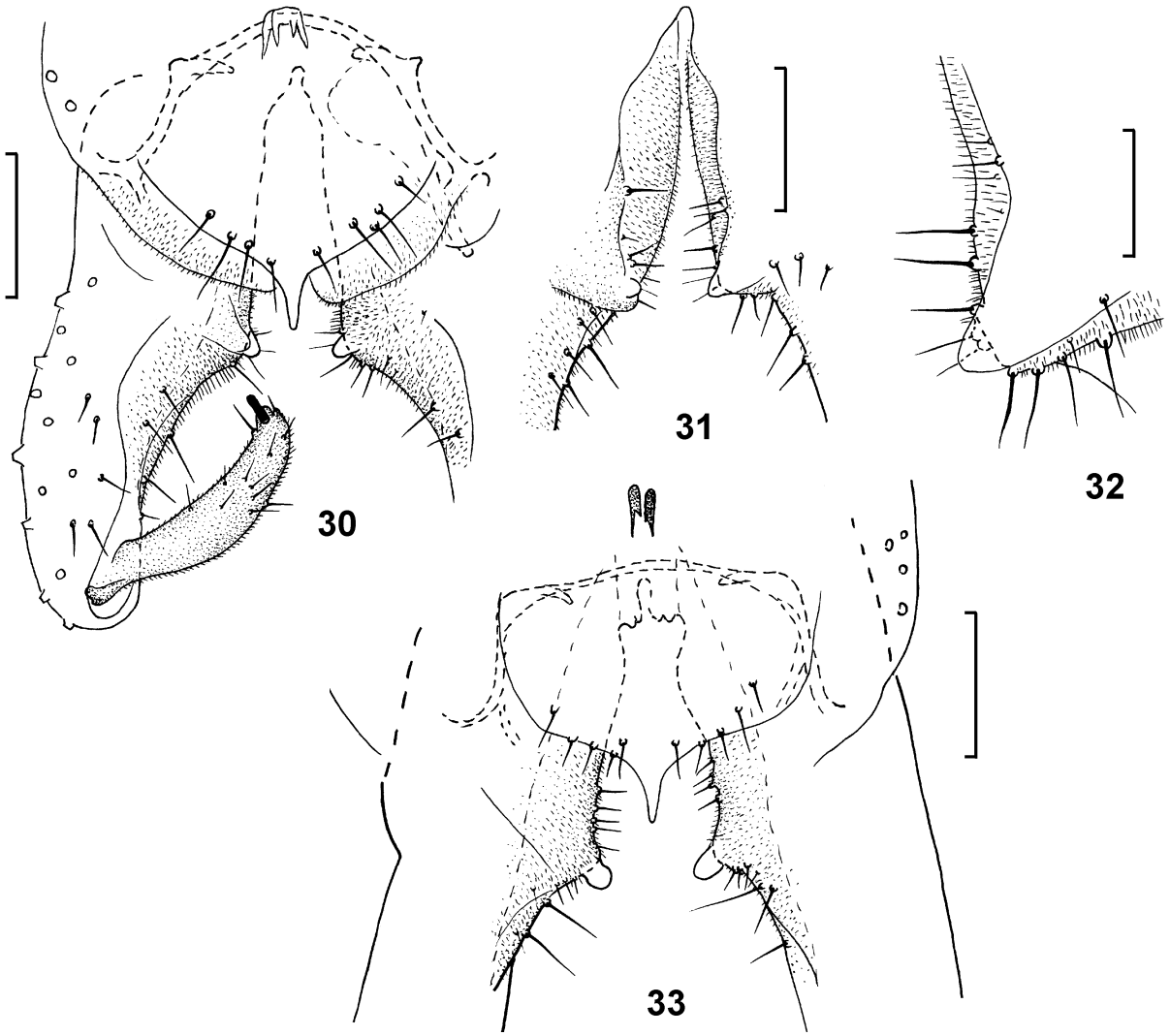
Remarks. This species was described by a single adult male from South Yakutia (Makarchenko &

Makarchenko 2011). Later, from the Amur Region has been described a new species *H. kotsuki* Makarchenko *et* Makarchenko, 2012 by adult male, extracted from the mature pupae, as well as by pupa and larva. After comparing of this species with additional material from the Kolyma River basin, it became clear that the new species was described incorrectly and *H. kotsuki* should be synonymized with *H. jacuticus*. Below we present diagnosis of the male adult of this species by all materials from the Russian Far East.

Diagnosis. ***Adult male*** (n = 4). Total length 2.3–2.5 mm. Eyes with short dorsomedian prolongations, pubescent. Temporal setae including (from one side) 3–4 inner verticals, 1–2 outer verticals and 2–5 postorbitals. Clypeus with 4–6 setae. AR 0.93–1.22. Antepronotal lobes with 2–3 lateral setae. Acrostichals 5–6 (situated in middle of scutum), dorsocentrals 4–5, prealars 2–3. Scutellum with 6 setae. Wing length 1.7–1.8 mm. Costa extension 12 μm. Anal lobe well developed. Squama with 6–8 setae. LR_1 0.64–0.72.

Hypopygium (Figs. 30–33). Tergite IX with 10–14 setae and nacked anal point, tapering to the top, 16–22 μm long. Transverse sternapodeme 80 μm long; oral projections roundish or roundish triangular. Dorsal part of inferior volsella with nacked and finger-shaped projection; ventral part roundish and covered by microtrichia and some setae. Gonostylus slightly curved, without crista dorsalis; megaseta 12 μm long. Virga consists of 2–4 black spines.

Distribution. Known from Amur and Kolyma River basins and south part of Sakha (Yakutia).



FIGURES 30–33. *Hydrobaenus jacuticus* Makarchenko *et* Makarchenko, male. 30—hypopygium in dorsal view (South Yakutia); 31–32—inferior volsellae (Amur River basin); 33—part of hypopyium in dorsal view (Kolyma River basin). Scale bars: Figs. 30–31, 33—50 μm; Fig. 32—20 μm.

Acknowledgments

We are grateful to Dr. T.M. Tiunova, Institute of Biology and Soil Sciences of the FEB RAS, Dr. N.M. Yavorskaya, Institute of Water and Ecological Problems of the FEB RAS and Dr. D.V. Kotsuk, Pacific Research Fisheries Center, Khabarovsk Branch for making material available to us.

Investigation was partly supported by grants from the Presidium Far East Branch of the Russian Academy of Sciences N 14-III-D-06-001 and N 12-I-P30-01.

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