Zootaxa 4394 (2): 279–287
http://www.mapress.com/j/zt/

Article

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

https://doi.org/10.11646/zootaxa.4394.2.10
http://zoobank.org/urn:lsid:zoobank.org:pub:A343945E-8864-478B-BFAE-778C2649C92F

Three species of *Hydrobaenus* Fries (Diptera: Chironomidae: Orthocladiinae) from Belarus

EUGENYI A. MAKARCHENKO[1,2,3] & MARINA A. MAKARCHENKO[1]

[1]*Federal Scientific Center of the East Asia Terrestrial Biodiversity, Far East Branch of the Russian Academy of Sciences, 100 let Vladivostoku 159, 690022 Vladivostok, Russia. E-mail: makarchenko@biosoil.ru*
[2]*Far Eastern State Technical Fisheries University, Lugovaya 52b, 690087 Vladivostok, Russia*
[3]*Corresponding author*

Abstract

Illustrated descriptions of adult male, pupa and fourth instar larva of *Hydrobaenus molleri* **sp. nov.**, adult male of *H. lvoenskiensis* **sp. nov**. and redescription of adult male *H. pilipes* (Malloch) with taxonomic notes are provided on the basis of materials collected from Belarus.

Key words: Diptera, Chironomidae, *Hydrobaenus*, new species, taxonomy, Belarus

Introduction

At present the genus *Hydrobaenus* Fries, 1830 includes at least 44 species (Ashe & O'Connor 2012). In the Russian Far East, we found 19 species, 14 of which were described as new to science (Makarchenko & Makarchenko 2017). In the last decades new species have been described not only by the features of adult male or female, but also by the characters of the immature stages and in some cases by the use of DNA barcoding (Asari *et al.* 2004; Cranston *et al.* 2007; Makarchenko *et al.* 2009, 2015, 2017; Makarchenko & Makarchenko 2005b, 2010, 2012, 2014; Zerguine & Rossaro 2010).

The chironomid fauna of Belarus is poorly studied, in particular the subfamily Orthocladiinae, for which short information can be found in the paper of Zelentsov & Shilova (1994), where the species list of 26 Chironomidae includes only 8 orthoclads; several species of this subfamily from Belarus indicated also Pillot (2013) in his monograph. All other data on chironomids from this country are published in hydrobiological papers, where determinations are provided only for the larvae—identified to the generic level or species groups at most, thus can not be used in taxonomic studies. Here, we present descriptions of two new species, *Hydrobaenus molleri* **sp. nov.** and *H. lvoenskiensis* **sp. nov.**, and a redescription of *H. pilipes* (Malloch), all the species recorded from Belarus.

Materials and methods

The material was collected by Dr. Henk Moller Pillot in the Republic of Belarus in 2003–2004. The specimens were preserved in 70% ethanol. The larvae were associated with pupae based on larval heads sticking to the mature pupae; the males were associated with pupae based on hypopygia of pharate specimens extracted from their exuviae. The slide-mounting method follows the procedure outlined by Makarchenko (1985). The terminology follows Sæther (1980).

Holotype and paratypes of the new species are deposited in the Federal Scientific Center of the East Asia Terrestrial Biodiversity, Far East Branch of the Russian Academy of Sciences, Vladivostok, Russia (FSCEATB FEB RAS). Some paratypes of *Hydrobaenus molleri* **sp. nov.** are housed in the personal collection of Dr. H.M. Pillot.

Accepted by B. Rossaro: 24 Jan. 2018; published: 14 Mar. 2018

Descriptions

***Hydrobaenus molleri* Makarchenko *et* Makarchenko, sp. nov.**
(Figs. 1–16)

Material. Holotype: adult male, Belarus, Zhytkovichy District of Gomel Region, career near Khlupin Village, 25.IV.2003, nr. 43522/23, leg. H.M. Pillot. Paratypes: 2 adult males, 8 pupae, 4 larvae of forth instar, the same data as holotype.

Etymology. The species is named in honour of the Dutch chironomidologist, Dr. Henk Moller Pillot.

Adult male (n = 3). Colouration brown. Total length 3.7–4.05 mm. Wing length 2.24–2.38 mm. Total length/ wing length 1.65–1.70.

Head. Eyes slightly pubescent, with short dorsomedian extentions. Temporal setae including 4–8 verticals and 6–9 postorbitals. Clypeus with 20–24 setae in central part. Antenna with 13 flagellomeres and well developed plume; 13th flagellomere 624–640 µm long, with 6–8 sensitive white hairs in preapical part. AR 1.56–1.67. Length of palpomeres 2–5 (in µm): 72–76, 128–160, 116–140, 146–164.

Thorax. Dark brown. Antepronotum with 13–16 lateral setae. Acrostichals 11–24 (starting at anterior 1/6 of scutum), dorsocentrals 13–17 on each side, uniserial, prealars 5–9 on each side, scutellum with 16–21setae in one row.

Wing. Light and transparent. R with 9–15 setae, R_1 with 0–1seta, R_{4+5} without setae. R_{4+5} ending distal of apex M_{3+4}. Costa extension 28–80 µm. Cu_1 curved in apical part. Anal lobe well developed, rounded, extended forward. Squama with 25–37 setae.

Legs. BR_1 1.3–1.7, BR_2 1.3–1.7, BR_3 1.6–2.0. Spur of fore tibia 64–76 µm long. Spurs of mid tibia 28–38 µm long. Spurs of hind tibia 60–76 µm and 28 µm long. Hind tibial comb with 9–11setae. Basitarsus of hind leg with 10–16 sensilla chaetica in basal half. Pulvilli like pads coated with small needles. Lengths and proportions of legs as in Table 1.

TABLE 1. Lengths (in µm) and proportions of leg segments of male *Hydrobaenus molleri* **sp. nov.** (n = 3).

	fe	ti	ta_1	ta_2	ta_3
P_1	880–976	1072–1208	688–752	352–416	256–272
P_2	880–992	992–1088	448–480	224–240	176–192
P_3	992–1104	1168–1264	576–640	320–368	256–272

continued.

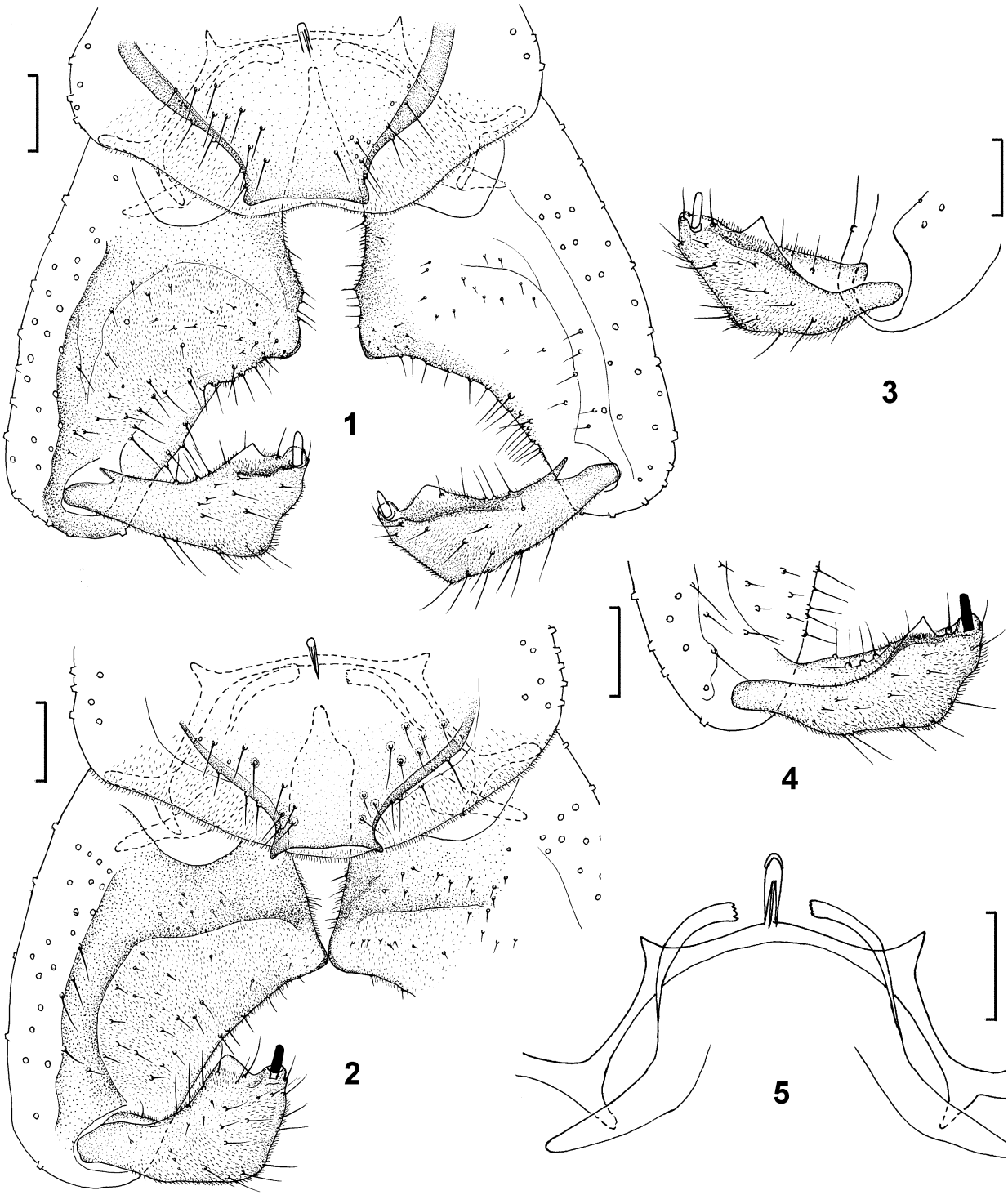
	ta_4	ta_5	LR	BV	SV
P_1	160–192	144–160	0.62–0.64	2.82–2.89	2.80–2.90
P_2	112–144	128–144	0.44–0.47	3.55–3.65	4.14–4.33
P_3	128–160	144–160	0.49–0.51	3.13–3.32	3.63–3.75

Hypopygium (Figs. 1–5). Tergite IX with 21–26 setae, short (*ca* 20 µm) and wide (72–88 µm) anal point, with distinctly protruding horn-like lateral edges (Figs. 1–2). Laterosternite IX with 13–16 setae on each side. Transverse sternapodeme slightly concave,120–140µm long, with narrow-triangular projections (Fig. 5). Virga 24–30 µm long, consisted of 3 setae which sometimes indistinct (Fig. 2). Gonocoxite 336–360 µm long; inferior volsella wide triangular, covered by microtrichia and setae, with bare top (Figs. 1–2). Gonostylus 140–148 µm long, in distal part with outer angle and preapical high triangular crista dorsalis (Figs. 1–4); megaseta 18–20 µm long.

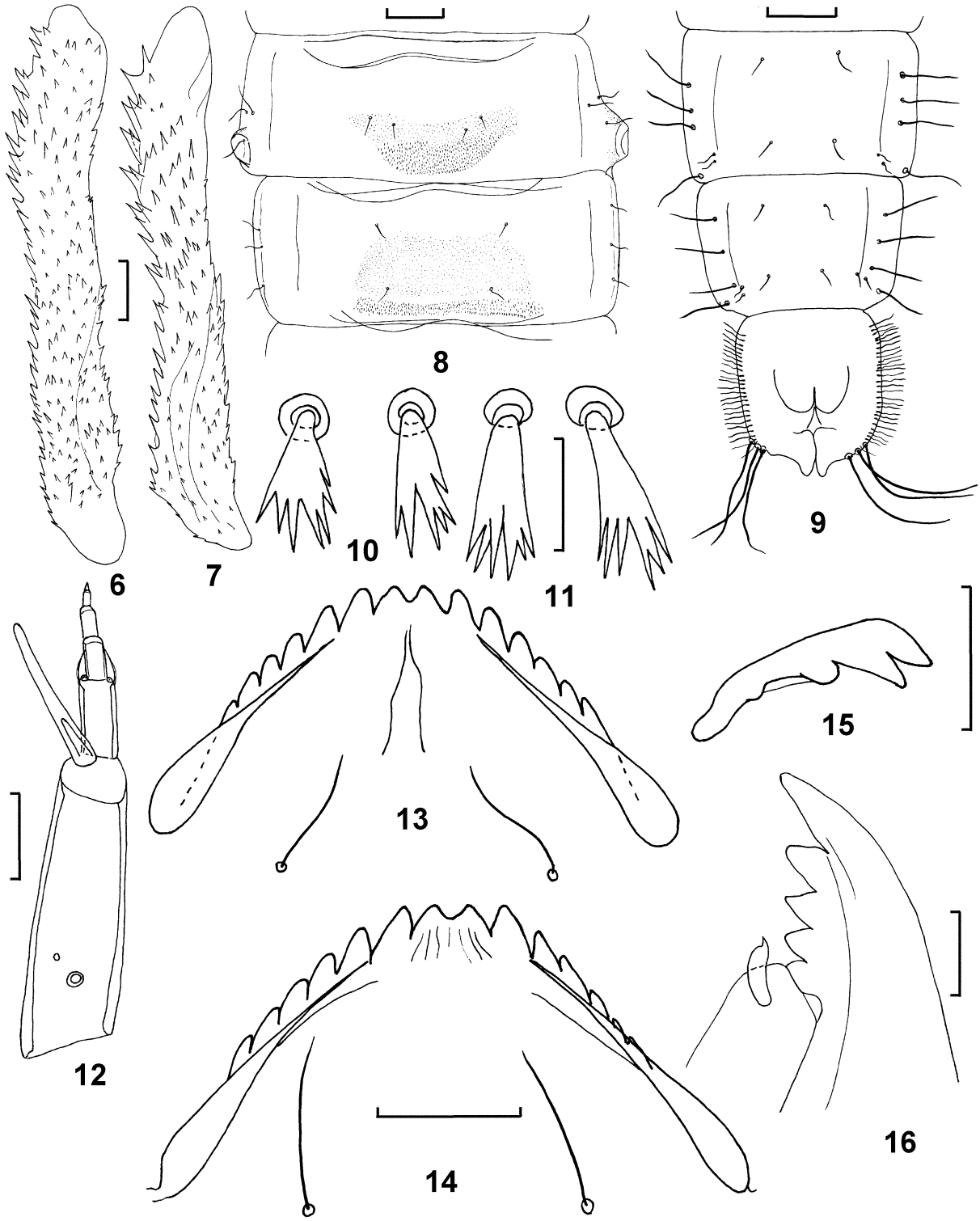
Pupa (n = 4). Colouration brown. Total length 4.0–4.6 mm.

Cephalothorax. Frontal apotome slightly rugose, with 2 setae 68–96 µm long and with well developed warts. Antepronotum with 2 median and 2 lateral antepronotal setae. Surface of mesonotum bumpy. Thoracic horn 432–480 µm long and 44–68 µm wide in basal half, almost of same width, straight, covered with spinules and with bare rounded apex (Figs. 6–7). Precorneal setae lengths (in µm): Pc_1 – 76–96, Pc_2 – 60–96, Pc_3 – 120–128 (n=3).

Precorneal setae lengths of one pupa markedly different, as follows (in μm): Pc_1 – 24, Pc_2 – 100, Pc_3 – 16; and Pc_2 divided in apical quarter. Three pupae with 4 dorsocentrals of following lengths (in μm): Dc_1 – 72–80, Dc_2 – 60–80, Dc_3 – 56–72, Dc_4 – 52–72. Distance between Dc_1 and Dc_2 92–128 μm; between Dc_2 and Dc_3 20–60 μm; between Dc_3 and Dc_4 20–40 μm. One pupa with 3 dorsocentrals of following length (μm): Dc_1 – 72, Dc_2 – 72, Dc_3 – 60. Distance between Dc_1 and Dc_2 120 μm; between Dc_2 and Dc_3 40 μm.



FIGURES 1–5. Adult male of *Hydrobaenus molleri* **sp. nov. 1–2,** hypopygium in dorsal view; **3–4,** gonostylus in varies positions; **5,** TSA, virga and phallapodemes of male extracted from mature pupa. Scale bars 50 μm.



FIGURES 6–16. Pupa (6–9) and larva (10–16) of *Hydrobaenus molleri* **sp. nov**. **6–7,** thoracic horn; **8,** tergites II–III; **9,** tergites VII–VIII and anal segment; **10–11**, S_I; **12,** antenna; **13–14,** mentum; **15,** premandible; **16,** distal part of mandible. Scale bars: Figs. 6–7, 13–15—50 μm; Figs. 8–9—200 μm; Figs. 10–12, 16—20 μm.

Abdomen. Tergite I without shagreen. Tergite II with shagreen of spinules and hooks on convexity in middle of posterior half (Fig. 8). Shagreenation of tergites III–VI as in Fig. 8, spinules at posterior edge larger than in middle part; one transverse row at posterior edge with spinules on tergites III–IV and sometimes on tergite V (only females), with tips directed forward. Tergites VII–IX almost bare, sometimes only with fine shagreen in anterior part (Fig. 9). Sternites without shagreen. Segment II with PSB. Sternites IV–VI with PSA. Segment I with 1 pair of

hair-like lateral setae. Segments II–III with 3 pairs of hair-like lateral setae. Segments III–VI with 4 pairs of hair-like lateral setae. Segments VII with 4 pairs of taeniate lateral setae, exceptionally with 4 pairs of taeniate lateral setae on one side and with 4 taeniate setae plus one simple seta on another side (n = 1). Segment VIII with 4 pairs of taeniate lateral setae or exceptionally with 5 taeniate lateral setae on one side. Tergites II–VIII and Sternites II–VII with apophyses. Apophyses on tergites II–VII, sometimes on tergite VIII and on sternites II–VIII. Anal lobe 368–372 μm long, with fringe of 25–30 setae occupying anal lobe edge until anal macrosetae or placed between macrosetae (Fig. 9). Shortest setae of fringe (40–72 μm) in basal part of anal lobe and longest setae (88–120 μm) in other parts of anal lobe. Male genital sac overreaching anal lobe 44–64 μm. Anal macrosetae 296–340 μm long. Thoracic horn/anal macrosetae length ratio 1.17–1.40.

Fourth instar larva (n = 4). Total length 4.75–6.75 mm.

Head. Yellowish; postoccipital margin, teeth of mentum, mandible and premandible almost black. Head length 440–500 μm, width 400–440 μm. Labral setae S_I coarsely plumose, divided into 6–8 branches (Figs. 10–11); S_{II} strong, S_{III} weak and hair-like, S_{IV} short, tubercle-like. Labral lamella feebly marked. Pecten epipharyngis consisted of 3 long and pointed scales. Premandible distally with 2 long apical teeth and 1 short rounded inner tooth (Fig. 15). Antenna, with 6 segments; AR 1.89–2.67; apex of segment with 2 lauterborn organs ending at apex of 3rd segment; antennal blade ending near apex of 4th segment; one large and one small ring organs in proximal 1/3 of basal segment (Fig.12). Mandible with apical tooth slightly shorter than combined width of inner teeth; seta interna with 6 slightly notched branches, seta subdentalis long, with beak-shaped apex (Fig. 16). Mentum with 2 median teeth and 6 pairs of dark brown or black lateral teeth; middle teeth and first lateral teeth of same height; middle/first lateral tooth width ratio 1.26–1.5. Ventromental plates extending beyond last lateral tooth (Figs. 13–14); maximal width of ventromental plate/first middle tooth of mentum width ratio 1.0–2.0. Maxilla with pecten galearis.

Abdomen. Without setae. Procercus length/width ratio 1.54–2.43, with 7 anal setae 416–640 μm long and 2 thin lateral setae 28–52 μm long. Supraanal setae 220–328 μm long; supraanal/anal setae length ratio 0.46–0.58. Anal tubules elongate, egg-shaped, shorter than posterior parapods. Posterior parapods 240 μm long, with simple hooks on apex.

Diagnostic characters and taxonomic notes. The adult male of *Hydrobaenus molleri* is most closely related to *H. septentrionalis* Makarchenko *et* Makarchenko from Chukchi Peninsula, which has a similarly wide anal point but can be easily separated by several hypopygium characters. Male of *H. molleri* has the large, apically bare and wide triangular inferior volsella, the high triangular crista dorsalis, the higher AR 1.56–1.67, 11–24 acrostichals, 13–17 dorsocentrals, and LR_1 0.63–0.64 [vs. the inferior volsella rounded and covered with microtrichia and short setae, the gonostylus without crista dorsalis, AR 1.11–1.14, 2 acrostichals, 5–6 dorsocentrals, and LR_1 0.71 in *H. septentrionalis* (Makarchenko & Makarchenko 2005a)].

According to the Sæther's key (1976), the pupa of the new species falls into the *distylus* group, since it lacks taeniate lateral setae on segment VI. It is, however, distinguished by the fringe of setae occupying the anal lobe edge until anal macrosetae or even placed among the macrosetae, whereas the fringe of setae in members of the *distylus* group does not reach the anal macrosetae. The pupa of *H. molleri* is also closely related to *H. spinnatis* Sæther, but can be separated from that species by the longer thoracic horn (432–480 μm), the presence of PSA on sternites IV–VI and by the number of lateral setae—1 pair on segment I, 3 pairs on segments II–III [vs. the thoracic horn 310–380 μm long, the PSA present on sternites IV–VII, the lateral setae on segment I—3, on segments II–III – 4 in *H. spinnatis* (Sæther 1976)]. According to the key by Makarchenko & Makarchenko (2014) the pupa of *H. molleri* is most closely related to the Far Eastern species—*H. maladistinctus* Makarchenko *et* Makarchenko, which however, has a much shorter thoracic horn (310–360 μm), and shorter setae of the setal fringe (30–85 μm long) (Makarchenko *et al.* 2009).

The larva of *H. molleri* by the key of Sæther (1976) is most similar to *H. lugubris* Fries and can be separated from the later species by the higher antennal ratio (AR 1.89–2.67) and the length/width ratio of the procercus (1.54–2.43) [vs. AR 1.52–1.77, length/width ratio of procercus *ca.* 1 in *H. lugubris* (Sæther 1976)]. According to the key by Makarchenko *et al.* (2014), the larva of *H. molleri* is closely related to the Far Eastern species *H. biwaquartus* Sasa *et* Kawai, but is well separable by the much higher AR 1.89–2.67 (vs. AR 1.54–1.76 in *H. biwaquartus*), and both the middle and the first lateral teeth of mentum of the same height, while the larva of *H. biwaquartus* has the middle teeth of mentum higher than the first lateral tooth (Sæther 1989).

***Hydrobaenus hvoenskiensis* Makarchenko *et* Makarchenko, sp. nov.**
(Figs. 17–18)

Material. Holotype: adult male, Belarus Zhytkovichy District of Gomel Region, Hvoensk Village, 24.IV.2004, nr. 44539, leg. H.M. Pillot.

Etymology. The species is named after the type locality: the Hvoensk Village.

Adult male (n = 1). Colouration brown. Total length 3.4 mm. Wing length 2.04 mm. Total length/wing length 1.67.

Head. Eyes slightly pubescent, with short dorsomedian extentions. Temporal setae including 6 verticals and 6 postorbitals. Clypeus with 10 setae. Antenna with 13 flagellomeres and well developed plume; 13th flagellomere 576 µm long, with pointed apex, covered by sensitive white hairs in preapical part. AR 1.41–1.50. Length of palpomeres 2–5 (in µm): 40, 160, 128, 152.

Thorax. Antepronotum with 9–11 lateral setae. Acrostichals 15 (located at some distance from the border with pronotum), dorsocentrals 19 in 1–2 rows on each side, prealars 8–10 on each side, scutellum with 17 setae in one row.

Wing. Light. R with 10 setae, R_1 with 0–1 seta, R_{4+5} with 1 seta, Cu with 1–2 setae. R_{4+5} ending distal of apex M_{3+4}. Costa extension 52 µm. Cu_1 curved in apical part. Anal lobe well developed, rounded. Squama with 23 setae.

Legs. BR_1 1.8, BR_2 1.6, BR_3 1.9. Spur of fore tibia 60 µm long. Spurs of mid tibia 28 µm long. Spurs of hind tibia 64 µm and 32 µm long. Hind tibial comb with 11–12 setae. Basitarsus of hind leg with 4 sensilla chaetica in basal half. Pulvilli consist of small hairs. Lengths and proportions of legs as in Table 2.

TABLE 2. Lengths (in µm) and proportions of leg segments of male *Hydrobaenus hvoenskiensis* **sp. nov.** (n = 1).

	fe	ti	ta_1	ta_2	ta_3	ta_4	ta_5	LR	BV	SV
P_1	768	960	544	376	264	160	128	0.57	2.45	3.18
P_2	832	840	368	240	168	120	128	0.44	3.11	4.54
P_3	848	1032	480	304	216	144	128	0.46	2.98	3.92

Hypopygium (Figs. 17–18). Tergite IX with 26 setae and subparallel bare anal point 80 µm long, 8 µm wide. Laterosternite IX with 10 setae on each side. Transverse sternapodeme 120 µm long, with high triangular projections. Virga 40 µm long, consisted of 5 setae. Gonocoxite 328 µm long; inferior volsella oval and situated near middle part of gonocoxite, covered by microtrichia and short setae, with bare anterior angle (Fig. 17). Gonostylus 156 µm long, nearly parallel sided, without crista dorsalis, with rounded apex and short megaseta (Fig. 18).

Pupa and larva unknown.

Diagnostic characters. Adult male of *Hydrobaenus hvoenskiensis* can be easily separated from all known *Hydrobaenus* species by the long subparallel and bare anal point, the large oval inferior volsella and by the low BR values (BR_{1-3} 1.6–1.9).

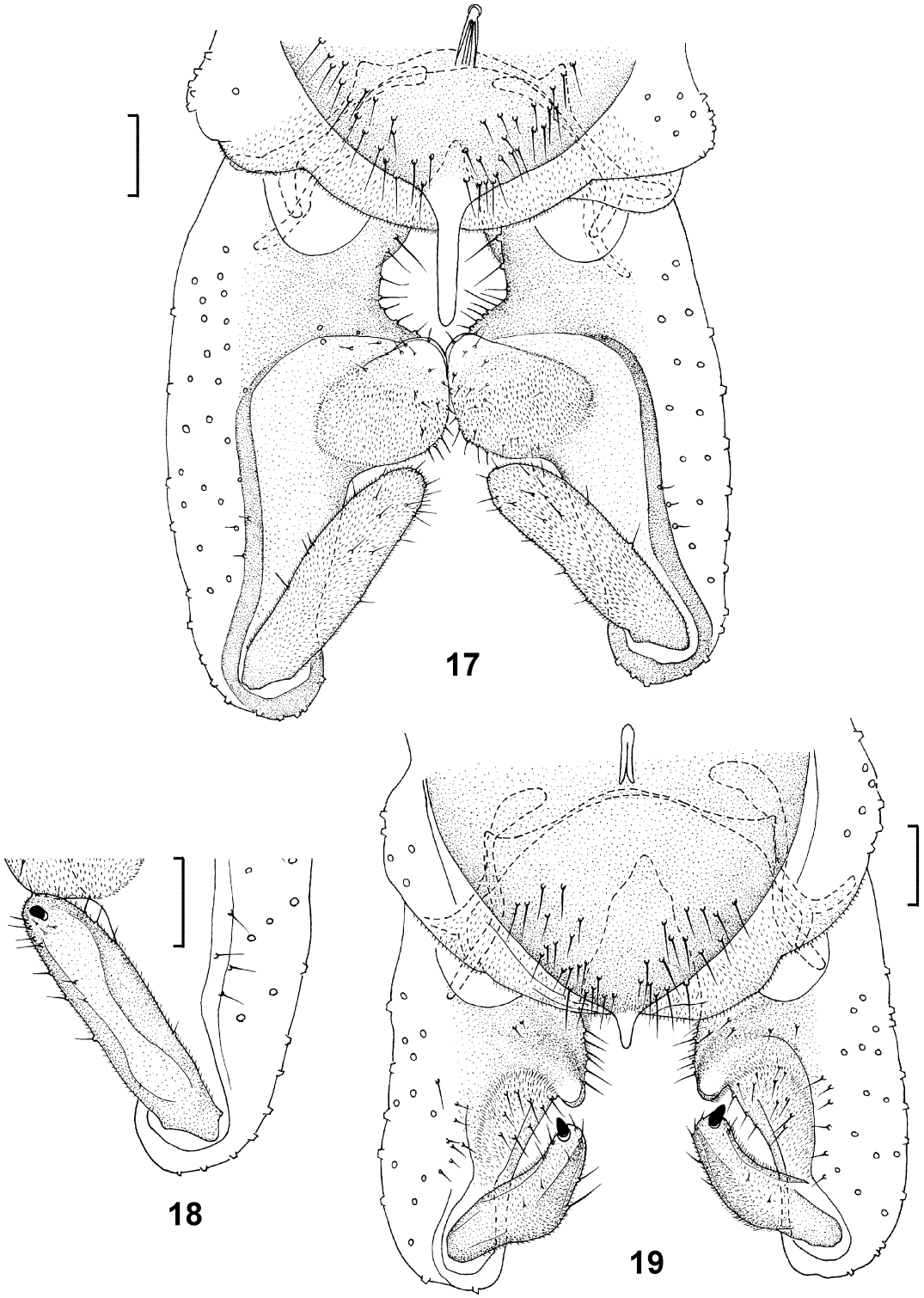
***Hydrobaenus pilipes* (Malloch)**
(Fig. 19)

Orthocladius (*Orthocladius*) *pilipes* Malloch, 1915: 522.
Chaetocladius crassistylus Brundin, 1947: 27.
Hydrobaenus pilipes (Malloch) Johannsen 1952: 23; Sæther 1976: 114; Pillot 2013: 130.

Remarks. It is believed that this Holarctic species is widespread in the Palaearctic region, but nobody except Sæther (1976) did a detailed comparison of the adult male morphology of the European populations with that of North American. Due to distinct morphological variations, also those found in the presently examined specimens, an updated definition of *Hydrobaenus pilipes* and its relatives using both the classic and molecular methods is highly recommended. Thus, we found it advisable to make a redescription of the adult male on the basis of the material from Belarus.

Material: 2 adult males, Belarus, Petrokovskyi District of Gomel Region, Luben' Lake, West of Sniadin Village, 18.IV.2004, nr. 44504, leg. H.M. Pillot.

Adult male (n=1). Colouration brown. Total length 4.5 mm. Wing length 2.84 mm. Total length/wing length 1.58.



FIGURES 17–19. Adult male of *Hydrobaenus hvoenskiensis* **sp. nov**. (17–18) and *H. pilipes* (Malloch) (19). **17, 19,** hypopygium in dorsal view; **18,** gonostylus. Scale bars 50 µm.

Head. Eyes bare, with short dorsomedian extentions. Temporal setae including 4–5 verticals and 9 postorbitals. Clypeus with 21 setae. Antenna with 13 flagellomeres and well developed plume; 13th flagellomere 896 µm long. AR 2.15–2.2. Length of palpomeres 2–5 (in µm): 60, 156, 136, 128.

Thorax. Dark brown. Antepronotum with 15 lateral setae. Acrostichals 17, dorsocentrals 11 in 1 row on each side, prealars 5 on each side, scutellum with 9 setae in one row.

Wing. R with 7 setae, R_1 with 1seta, R_{4+5} without setae, Cu with 1–2 setae. R_{4+5} ending distal of apex M_{3+4}. Costa extension 76 µm. Cu_1 curved in apical part. Anal lobe well developed, rounded. Squama with 32 setae.

Legs. BR_1 2.4–4.6, BR_2 3.75, BR_3 4.28–5.5. Spur of fore tibia 92 µm long. Spurs of mid tibia 32 µm long. Spurs of hind tibia 80 µm and 24 µm long. Hind tibial comb with 10–11 setae. Basitarsus of hind leg with 6–7 sensilla chaetica in basal half. Lengths and proportions of legs as in Table 3.

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

	fe	ti	ta_1	ta_2	ta_3	ta_4	ta_5	LR	BV	SV
P_1	976	1216	912	496	352	208	128	0.75	2.62	2.40
P_2	992	1120	560	304	224	160	128	0.50	3.73	3.77
P_3	1136	1424	768	432	320	192	128	0.54	3.01	3.33

Hypopygium (Figs. 19) (n=2). Tergite IX with 36–40 setae and bare anal point 16–22 µm long, slightly tapering to tip. Laterosternite IX with 8–11 setae on each side. Transverse sternapodeme 152–156 µm long, with triangular projections. Virga 36 µm long, consisted of 2 setae. Gonocoxite 252–276 µm long; inferior volsella with nose-like bare apical part. Gonostylus 92–112 µm long, slightly curved, without crista dorsalis, with rounded apex and megaseta 16 µm long (Fig. 19). HR 2.46–2.74.

Pupa and larva are described by Sæther (1976).

Taxonomic notes. The adult male from Belarus, according to the morphometric measurements, fits the description given by Sæther (1976) based on Holarctic populations. However, the structure of the hypopygium, namely, the shape of the gonostylus, inferior volsella and anal point, resembles that of males from Plön, Germany (Sæther 1976, Fig. 35 C) and Sweden (Brundin 1947, Fig. 53).

Distribution. Holarctic species. In the Palaearctic region known from Austria, Belarus, Denmark, Finland, France, Germany, Hungary, Lebanon, Netherlands, Poland, Russia, Slovakia, Sweden and Turkey (Ashe & O'Connor 2012).

Acknowledgments

We are grateful to Dr. H.M. Pillot for making material available for us and to Dr. Wojciech Giłka for useful comments and editing of English.

References

Asari, H., Kasuya, S., Kobayashi, T., Kondo, S., Nagano, I. & Wu, Z. (2004) Identilication of closely related *Hydrobaenus* species (Diptera: Chironomidae) using the second internal transcribed spacer (ITS2) region of ribosomal DNA. *Aquatic Insects*, 26 (3/4), 207–213.
https://doi.org/10.1080/01650420412331327295

Ashe, P. & O'Connor, J.P. (2012) *A World Catalogue of Chironomidae (Diptera). Part 2. Orthocladiinae*. Irish Biogeographical Society & National Museum of Ireland, Dublin, xvi + 968 pp.

Brundin, L. (1947) Zur Kenntnis der schwedischen Chironomiden. *Arkiv för Zoology*, 39A (3), 1–95.

Cranston, P.S., Benigno, G.M. & Dominguez, M.C. (2007) *Hydrobaenus saetheri* Cranston, new species, an aestivating, winter emerging chironomid (Diptera: Chironomidae) from California. *In*: Andersen, T. (Ed.), *Contributions to the Systematics and Ecology of Aquatic Diptera. A Tribute to Ole A. Sæther.* The Caddis Press, Columbus, pp. 73–79.

Johannsen, O.A. (1952) Family Tendipedidae (= Chironomidae) except Tendipedinae. *In*: Johannsen, O.A. & Townes, H.K. (Ed.), Guide to the insects of Connecticut. VI. The Diptera of true flies. 5. Midges and gnats. Tendipedidae

(Chironomidae). *Bulletin of Connecticut State Geological and Natural History Survey*, 80, pp. 3–26.
Makarchenko, E.A. (1985) *Chironomids of the Soviet Far East. Subfamilies Podonominae, Diamesinae and Prodiamesinae (Diptera: Chironomidae).* DVNC AN SSSR Press, Vladivostok, 208 pp. [in Russian]
Makarchenko, E.A. & Makarchenko, M.A. (2005a) A new species of chironomids (Diptera: Chironomidae) from the Russian Far East. *In*: *Vladimir Ya. Levanidov's Biennial Memorial Meetings. Vol. 3*. Dalnauka Press, Vladivostok, pp. 374–381. [in Russian]
Makarchenko, E.A. & Makarchenko, M.A. (2005b) On the taxonomy of some Orthocladiibae (Diptera: Chironomidae) of the Russian Far East. *Euroasian Entomological Journal*, 4 (1), 69–80. [in Russian]
Makarchenko, E.A. & Makarchenko, M.A. (2010) *Hydrobaenus tiunovi* sp.n. (Diptera: Chironomidae: Orthocladiinae) from Sokhondinsky Dtate Biosphere Reserbe (Zabaikal'sky Territory, Russia). *Euroasian Entomological Journal*, 9 (3), 411–412.
Makarchenko, E.A. & Makarchenko, M.A. (2012) Immature stages of some Far-Eastern Orthocladiinae (Diptera: Chironomidae). *Euroasian Entomological Journal*, 11 (2), 115–128. [in Russian]
Makarchenko, E.A. & Makarchenko, M.A. (2014) On taxonomy of *Hydrobaenus* Fries, 1830 (Diptera: Chironomidae: Orthocladiinae) from the Russian Far East, with a key to species, *Zootaxa*, 3760 (3), 429–438.
https://doi.org/10.11646/zootaxa.3760.3.9
Makarchenko, E.A. & Makarchenko, M.A. (2017) Fauna and distriburion of the Podonominae, Diamesinae, Prodiamesinae and Orthocladiinae (Diptera: Chironomidae) of the Russian Far East and bordering territory. *In*: *Vladimir Ya. Levanidov's Biennial Memorial Meetings. Vol. 7*. Dalnauka Press, Vladivostok, pp. 127–142.
Makarchenko, E.A., Makarchenko, M.A. & Yavorskaya, N.M. (2009) New findings of chironomids (Diptera: Chironomidae: Orthocladiinae) in Far East and bordering territories. VI. *Hydrobaenus* Fries. *Euroasian Entomological Journal*, 8 (Supplement 1), 33–50. [in Russian]
Makarchenko, E.A., Makarchenko, M.A. & Semenchenko, A.A. (2015) Morphological description and DNA barcoding of *Hydrobaenus majus* sp. nov. (Diptera: Chironomidae: Orthocladiinae) from the Russian Far East. *Zootaxa*, 4000 (2), 287–293.
https://doi.org/10.11646/zootaxa.4000.2.7
Makarchenko, E.A., Makarchenko, M.A., Semenchenko, A.A. & Veliaev, O.A. (2017) Morphological description and DNA barcoding of *Hydrobaenus golovinensis* sp. nov. (Diptera: Chironomidae: Orthocladiinae) from the Russian Far East. *Zootaxa*, 4286 (2), 277–284.
https://doi.org/10.11646/zootaxa.4286.2.10
Malloch, J.R. (1915) The Chironomidae, or midges, of Illinois, with particular reference to the species occurring in the Illinois River. *Bulletin of the Illinois State Laboratory of Natural History*, 10, 273–543.
Pillot, H. K. M. (2013) *Chironomidae larvae of the Netherlands and adjacent lowlands. III. Biology and ecology of the aquatic Orthocladiinae, Prodiamesinae, Diamesinae, Buchonomyiinae, Podonominae, Telmatogetoninae*. KNNV Publisher, Zeist, 314 pp.
Sæther, O.A. (1976) Revision of *Hydrobaenus*, *Trissocladius*, *Zalutschia*, *Paratrissocladius*, and some related genera (Diptera, Chironomidae). *Bulletin of the Fisheries Research Board of Canada*, 195, 1–287.
Sæther, O.A. (1980) Glossary of chironomid morphology terminology (Chironomidae, Diptera). *Entomologica scandinavica*, 14 (Supplement), 1–51.
Sæther, O.A. (1989) Two new species of *Hydrobaenus* Fries from Massachusetts, U.S.A., and Japan (Diptera: Chironomidae). *Entomologica scandinavica*, 20, 55–63.
https://doi.org/10.1163/187631289X00492
Zelentsov, N.I. & Shilova, A.I. (1994) On the chironomid fauna of Latvia, Belarus, Ukraine and Moldova (Diptera: Chironomidae), *Informatsionnyi Byulleten Biologia Vnutrennyh Vod*, 97, 24–30. [in Russian]
Zerguine, K. & Rossaro, B. (2010) A new species of *Hydrobaenus* Fries, 1830 (Diptera: Chironomidae) from Algeria. *Zootaxa*, 2507, 37–43.