



Two new species and new records of the genus *Parachironomus* Lenz, 1921 (Diptera, Chironomidae) from northern Russia

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Abstract

Two new species of the genus *Parachironomus* Lenz, *P. aquilonis* sp. n. from the northern Urals and *P. khatyrka* sp. n. from the Russian Far East, are described and figured based on the morphology of the adult males. Adult males of *P. hazelriggi* Spies, 2000 and *P. subalpinus* (Goetghebuer, 1931) are redescribed and illustrated; both species are recorded for the first time from Russia, *P. hazelriggi* is new for the Palaearctic region.

Key words: Chironominae, new species, *Parachironomus*, taxonomy, morphology, key

Introduction

The genus *Parachironomus* was erected by Lenz (1921) on the basis of the morphology of pupae and larvae. A first brief diagnosis for the adult male stage was given by Edwards (1929: 388), but his systematic grouping, *Chironomus* (*Chironomus*) Group E (*Cryptochironomus*) Series 3 (*Parachironomus*), excluded several recognized species that are placed in *Parachironomus* today while including at least one species now placed in another genus. Members of *Parachironomus* are medium-sized to large non-biting midges. Their larvae can be found in a variety of habitats; some live in soft sediments or on submerged aquatic macrophytes in both, standing and flowing waters, others are ecto- or endoparasites on snails or consume the spawn of frogs (Shilova 1968, 1969a; Vallenduuk & Schiffels 2015). In Russia, the systematics of *Parachironomus* has received relatively little attention. Several papers described the metamorphoses of 5 species (Shilova 1965, 1968, 1969a), and keys were given to the larvae and pupae of 6 species (Pankratova 1983), including an interpretation of *P. pararostratus* (Harnisch, 1927), which has since been treated as an unusable nomen dubium by most authors. Shilova (1969b) gave a key to males of three of the 10–13 species considered at the time as occurring in the Soviet Union, and Rodova (1978) keyed the adult females of 8 species. In addition, various individual species were mentioned in taxonomic lists for various lakes and streams of Russia (e.g., Konstantinov 1950; Shilova 1976; Shilova & Zelentsov 2003). In the Russian Far East, 9 species of *Parachironomus* were recorded prior to the present study (Zorina & Makarchenko 2000; Zorina 2003; Makarchenko *et al.* 2005; Zorina 2006; Orel (Zorina) 2016). The fauna of non-biting midges of the subfamily Chironominae in the northern Urals is poorly known (Loskutova *et al.* 2010; Pozdeev 2011). In summary, a total of 14 *Parachironomus* species have been reported from the extensive territory of Russia (Shilova 1968, 1969; Pankratova 1983; Zorina & Makarchenko 2000; Zorina 2003; Makarchenko *et al.* 2005; Zorina 2006; Sæther & Spies 2013; Orel (Zorina) 2016). The present paper describes two new species found in waterways of the northern Urals and the Chukotka Peninsula, respectively. In addition, adult males of *P. hazelriggi* Spies and *P. subalpinus* (Goetghebuer, 1931) are redescribed and illustrated from the Chukotka Autonomous Region. These latter species are recorded for the first time from the Palaearctic region and Russia, respectively.

Material and methods

Material was fixed in 70% ethanol and mounted in Fora-Berlese solution. Morphological terminology follows

Sæther (1980). Abbreviations: AR—length of terminal flagellomere 11 divided by combined length of preceding flagellomeres 1–10; VR—length of wing vein Cu divided by length of M; P_{1–3}—foreleg, midleg, hindleg, respectively; LR—length of tarsomere 1 divided by length of tibia; SV—combined length of femur and tibia divided by length of tarsomere 1; BV—combined length of femur, tibia and tarsomere 1 divided by combined length of tarsomeres 2–5; BR—length of longest seta on tarsomere 1 divided by minimum width of tarsomere 1 in its distal half; SVo—superior volsella; IVo—inferior volsella; HR—length of gonocoxite divided by length of gonostylus.

The holotypes and paratypes of the new species are deposited in the Federal research center of biodiversity of terrestrial biota East Asia, Far East Branch of the Russian Academy of Sciences, Vladivostok, Russia.

Descriptions

***Parachironomus aquilonis* sp. n.**

(Figs 1–4, 11–16)

Parachironomus ? *hazelriggi* Spies, 2000 sensu Krasheninnikov *et al.* (2015: 416) —misidentification.

Type material. Holotype: male, Arkhangelsk region, Avtonomniy Nenets district, Ugra Peninsula, Pay-Khoy ridge, beach lagoon Amderma, N 69°45'05,6", E 61°34'00,2", 0 m above sea level, 25.vii.2013, leg. A. Krasheninnikov.

Etymology. The species is named for the northern region of Russia in which the material was collected. The epithet is the genitive singular form of the Latin noun *aquilo*, a North wind, i.e. a noun in apposition for the purposes of nomenclature.

Diagnostic characters. The adult male of *P. aquilonis* sp. n. is distinguished by the following combination of features: frontal tubercles absent; wing length 2.30 mm; AR 2.63; LR_{p1} 1.31; wing without cell setae; tergite IX without longitudinal anal tergite band, anal point without dorsal setae on base, longer than superior volsella, in lateral view wide with base much higher proximally than distally and distal dorsal contour distinctly angled towards ventral, bare part of anal point occupying about half of total point length; SVo with apical subacute to acute lamellar lobe usually as wide as apex of volsella; IVo with shallow distal lobe at least to posterior; gonostylus curved to medial in proximal half, in lateral view up to 58 µm high near mid-length.

Adult male (n=1). See also Table 5.

Coloration. Scape brown; ground color of thorax pale yellow, mesonotal stripes and postnotum brown; abdomen brown; legs brown except for lighter proximal parts of f and ta₁.

Head. Frontal tubercles absent. Temporal setae 25. Clypeus with 19 setae. Antenna 1218 µm long. AR 2.63. Maxillary palpomeres 2–4 combined 608 µm long, their individual lengths (in µm): 56; 152; 184; 216. Antenna length/palp length 2.0.

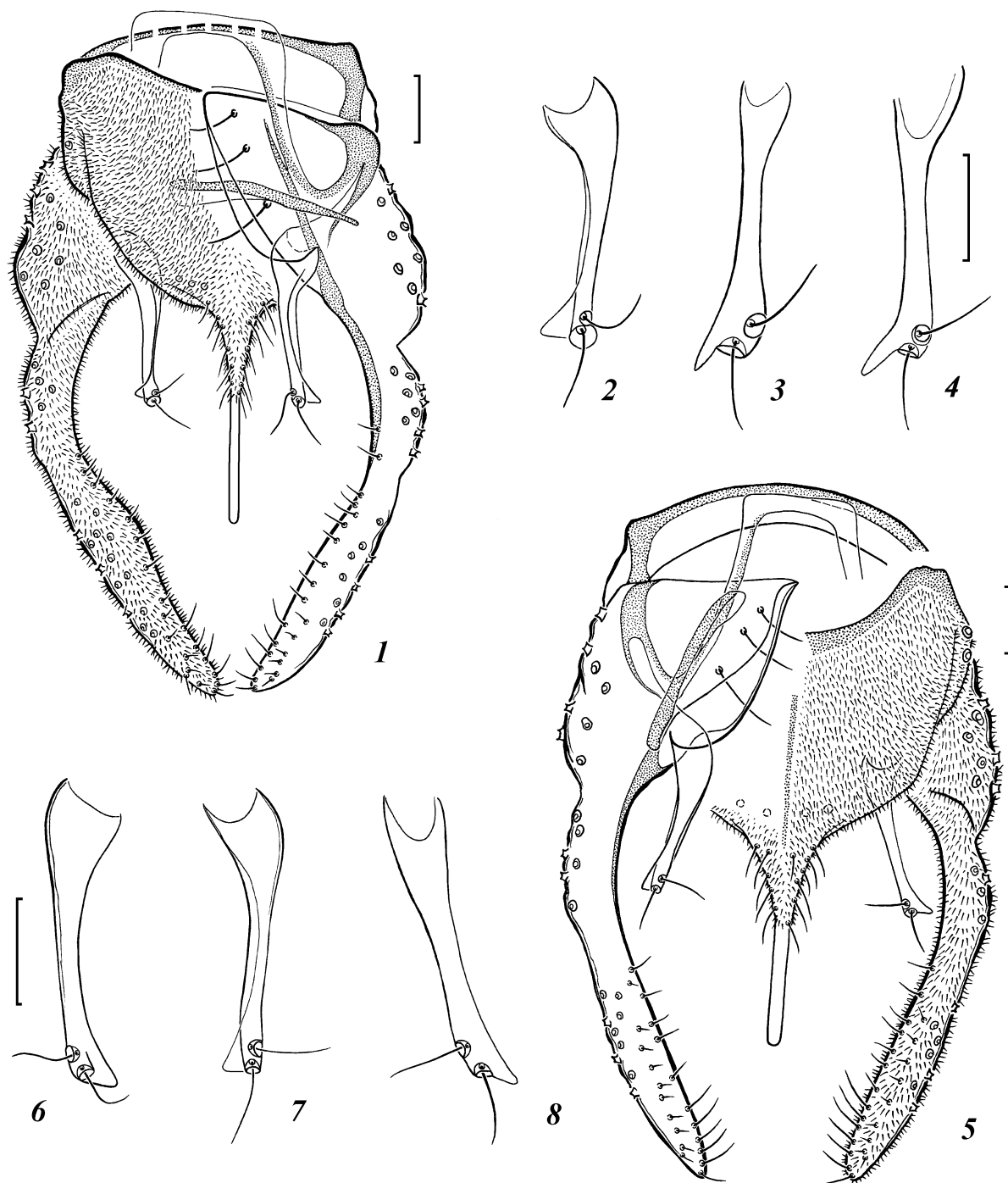
Thorax. Anteprenotals 10, acrostichals 25, dorsocentrals 23–25, prealars 8–10, supraalar 1. Scutellum with 24 setae.

Wing. Length 2.3 mm. VR 1.11. R with 23–26, R₁ with 15–16, R₄₊₅ with 30–35 setae in distal 2/3, M₁₊₂ without setae. Squama with 22 setae.

Legs. See Table 1. Each mid and hind tibia with 2 fused combs and 2 spurs (length 37 µm). BR_{p1} 3.46, BR_{p2} 3.45, BR_{p3} 3.40.

TABLE 1. Lengths (in µm) and proportions of leg segments of *Parachironomus aquilonis* sp. n.

P	fe	ti	ta ₁	ta ₂	ta ₃	ta ₄	ta ₅	LR	SV	BV
P ₁	987	882	1155	609	483	357	179	1.31	1.62	1.86
P ₂	1050	1008	462	294	231	147	126	0.50	4.09	2.93
P ₃	1197	1260	861	483	357	210	147	0.68	2.85	2.77



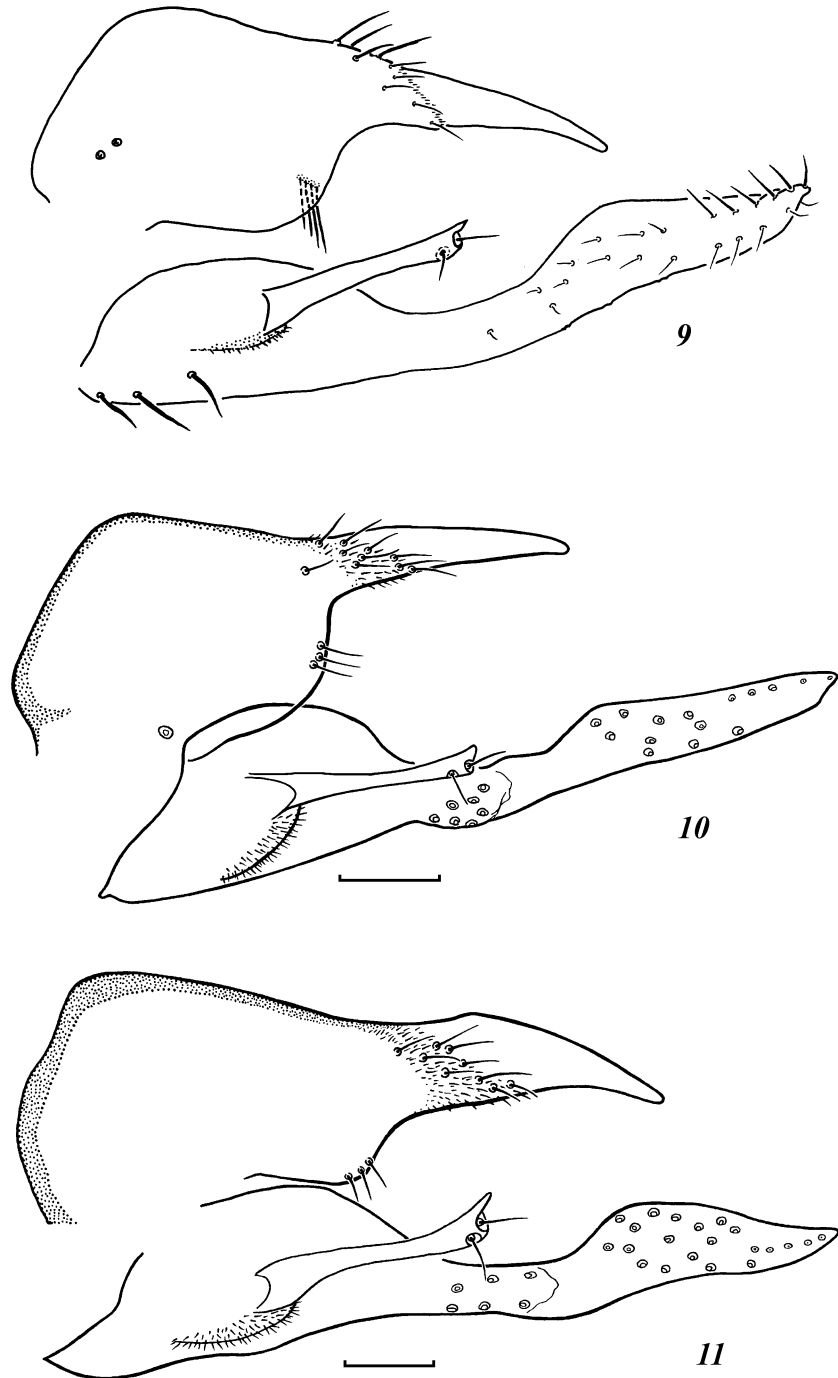
FIGURES 1–8. Adult males of *P. aquilonis* sp. n. (1–4) and *P. hazelriggi*. (5–8). 1, 5—hypopygium, dorsal view; 2–4, 6–8—variations in the structure of the superior volsellae (2, 7–8—dorsal view, 3–4, 6—lateral view). Scale bars 50 µm.

Hypopygium (Figs 1–4, 11–16). Laterosternite IX with 0–1 setae. Anal tergite bands separate, median longitudinal part absent. Anal point (in dorsal view length 163 µm, at about apex width 6.8 µm; in lateral view the base width 45 µm, at about apex width 6.8 µm) with wider, tapering basal half (length 78 µm) that carries microtrichia and 9–10 lateral setae, and with parallel-sided bare distal half (length 85 µm). Portal setae (see Spies 2000) 3–4 on each side, these are separated by distances at last equal to the diameter of their bases. Transverse sternapodeme 109 µm long. Phallapodeme 139 µm long. Superior volsella (116 µm long) in dorsal view straight, in lateral view slightly curved and expanded in the apical part, little to moderately expanded at the base, apically with lamellar lobe (17 µm) usually as wide as apex of volsella, with 1 terminal (44–48 µm long) and 1 medial (44 µm)

seta located in pits as wide as the volsella, distance between them 10 μm (Figs 1–4). Inferior volsella with shallow prominence at least to posterior, its microtrichia not elongate. Gonostylus 289 μm long, in dorsal and lateral views slightly curved, in the proximal part expanded and bears 8 latero-ventral setae, in dorsal view usually slightly expanded in distal half, in lateral view gonostylus more extended (58 μm) at about middle and gradually tapers to the top, with a row of 6–7 distal-median setae (Fig. 11). HR 0.59.

Female, pupa and larva unknown.

Remarks. The adult male of *P. aquilonis* **sp. n.** is most similar to that of the Holarctic species *P. hazelriggi* Spies, 2000, but can be distinguished by the relatively shorter bare section of the anal point, and by the higher base of the anal point in lateral view (Figs 9–11; Table 5).



FIGURES 9–11. Hypopygium in lateral view of *P. hazelriggi* (from Spies 2000) (9), *P. hazelriggi* (our data) (10) and *P. aquilonis* **sp.n.** (11). Scale bars 50 μm .



12



14



13



15



16

FIGURES 12–16. Details of hypopygium structure of *P. aquilonis* sp.n. (12, 14—dorsal view; 13—ventral view; 15–16—lateral view). Scale bars 500 µm.

***Parachironomus hazelriggi* Spies, 2000**
(Figs 5–10, 17–21)

Parachironomus hazelriggi Spies, 2000: 133, figs 5, 11.

Material. Four males, Russia, Chukotka Autonomous Region, Chaunskaya Guba, Chaun River, 17.vii.1978, leg. E. Makarchenko.

Male imago (n=1 to 4). See also Table 5.

Total length 4.8–5.2 mm.

Coloration. Scape brown; ground color of thorax pale yellow, mesonotal stripes and postnotum brown; abdomen and legs brown.

Head. Frontal tubercles absent. Temporal setae 30–35. Clypeus with 25–30 setae. Antenna 1218–1302 μm long, AR 2.63–2.81. Maxillary palpomeres 2–4 combined 664–704 μm long, their individual lengths (in μm): 64–72; 160–192; 184–200; 232–256. Antenna length/palp length 1.76–2.09. Palp length/head width 1.09–1.17.

Thorax. Anteprenotals 9–14, acrostichals 21–25, dorsocentrals 20–34, prealars 8–12, supraalars 1. Scutellum with 23–33 setae.

Wing. Length 2.60–2.64 mm. VR 1.09–1.13. R with 24–31, R_1 with 21–25, R_{4+5} with 25–35 setae in distal 2/3, M_{1+2} without setae. Squama with 23–31 setae.

Legs. See Table 2. Each mid and hind tibia with 2 fused combs and 2 spurs (length 34–37 μm). BR_{p1} 3.33–3.75, BR_{p2} 3.43–3.70. Hind tarsomeres lost from all 4 specimens.

TABLE 2. Lengths (in μm) and proportions of leg segments of *Parachironomus hazelriggi* Spies.

P	fe	ti	ta ₁	ta ₂	ta ₃	ta ₄	ta ₅
P ₁	945–1008	882–945	1155–1176	588	462–483	336	168–189
P ₂	1008–1092	966–1029	462–525	294	231	168	126–147
P ₃	–	–	–	–	–	–	–

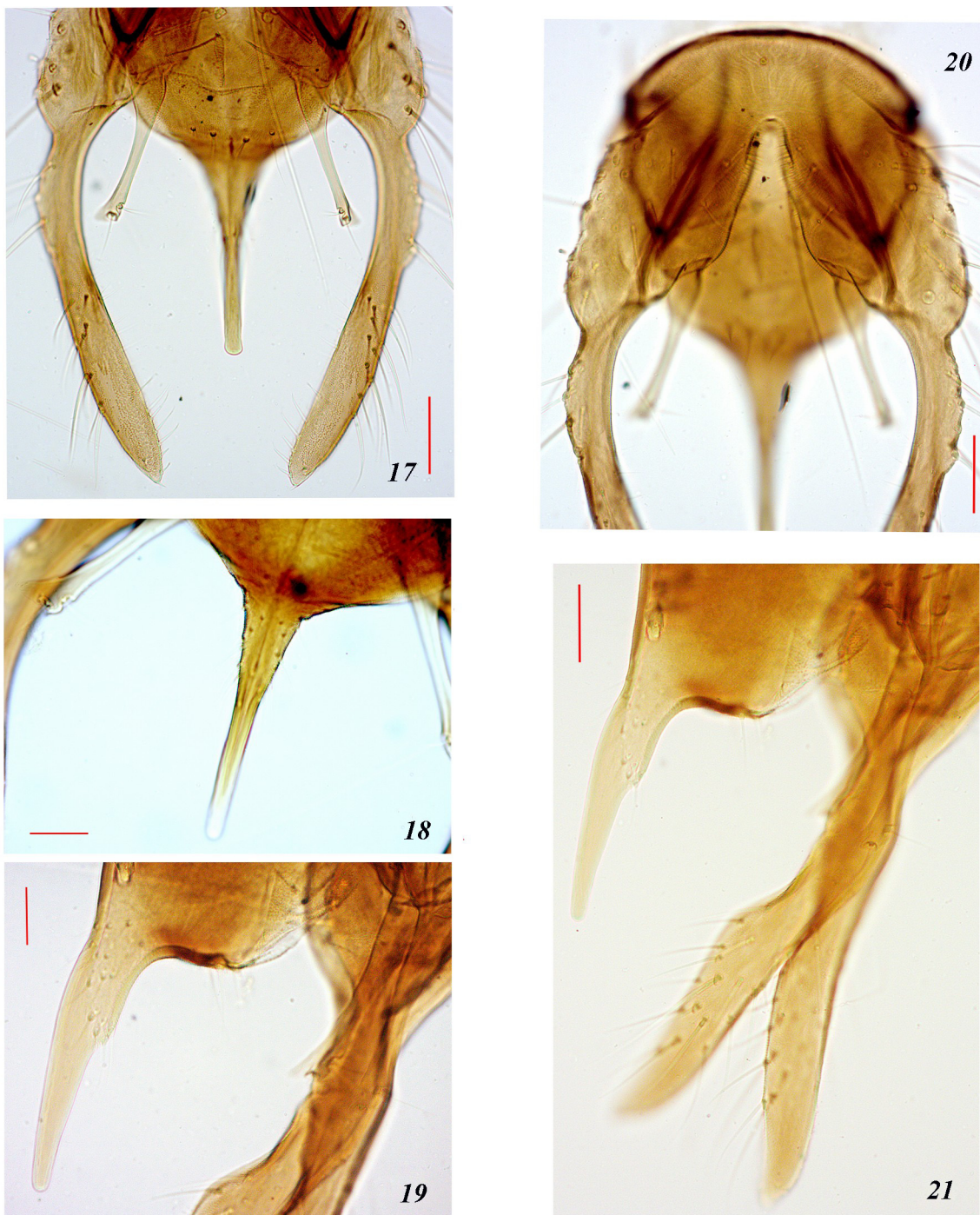
continued.

P	LR	SV	BV
P ₁	1.24–1.31	1.58–1.66	1.89–1.99
P ₂	0.46–0.51	4.04–4.55	2.93–3.23
P ₃	–	–	–

Hypopygium (Figs 5–10, 17–21). Laterosternite IX with 3–4 setae. Anal tergite bands separate, with median longitudinal part. Anal point in dorsal view length 156–177 μm , at about apex width 14 μm ; anal point in lateral view straight and narrow, the base width 37 μm , at about apex width 14 μm with wider, tapering basal half (length 68–78 μm) that carries microtrichia and 9–13 lateral to dorsal setae (from 4 specimens only 1 with 1–2 dorsal setae), and with parallel-sided, bare distal half. Portal setae (see Spies 2000) 2–4 on each side; if >2 setae, these are separated by distances at last equal to the diameter of their bases, if only 2 setae, the distance between them is 3–4 times the diameter of the bases. Transverse sternapodeme 95 μm long. Superior volsella (119–126 μm long) straight both in the dorsal and lateral views, little to moderately expanded at the base, apically with lamellar projection (10–14 μm) as wide as apex of volsella, with 1 terminal (44–51 μm) and 1 medial (34–54 μm) setae located in pits usually as wide as the volsella, the distance between them 6.8–14 μm (Figs 5–8). Inferior volsella without distinct prominence to median or posterior, its microtrichia not elongate. Gonostylus 306–313 μm long, in dorsal and lateral views slightly curved, in the proximal part expanded (37–41 μm) and bears 8–15 latero-ventral setae, in dorsal view usually slightly expanded (34–41 μm) in distal half, in lateral view gonostylus more expanded (44 μm) at about middle and gradually tapers to the top, with a row of 7–8 distal-median setae (Fig. 10). HR 0.54–0.60.

Remarks. Far Eastern Palaearctic males of *P. hazelriggi* have AR 2.63–2.81, LR_{p1} 1.24–1.31, whereas the reported Nearctic ranges are AR 2.13–2.56, LR_{p1} 1.33–1.66 (Spies 2000). All other morphological differences observed (Table 5) are consistent with the respective body size ranges.

Distribution. Holarctic species. The new record from the Chaun River, Chukotka Peninsula (Russian Far East) is the first one from the Palaearctic region.



FIGURES 17–21. Details of hypopygium structure of *P. hazelriggi* (our data) (17, 18—dorsal view; 20—ventral view; 19, 21—lateral view). Scale bars 500 μ m.

***Parachironomus subalpinus* (Goetghebuer, 1931)**
(Figs 22–30)

Cryptochironomus subalpinus Goetghebuer, 1931; Lehmann (1970: 105–151, fig. 16); Oliver & Dillon (1997: 625); Langton & Pinder (2007: 112, fig. 221 D).

Parachironomus spissatus Brundin, 1949: 54, figs 84–84.

Material. male, Russia, Chukotka Autonomous Region, basin of Khatyrka River, Myssovye Lakes, 27.vii.1980, leg. E. Makarchenko.

Male imago (n=1). See also Table 5.

Total length 4.2 mm.

Coloration. Scape brown; ground color of thorax brown, mesonotal stripes and postnotum dark brown; abdomen and legs brown.

Head. Frontal tubercles absent. Temporal setae 18/20. Clypeus with 20 setae. Antenna lost. Maxillary palpomeres 2–4 combined 605 μm long, their individual lengths (in μm): 51; 163; 173; 218.

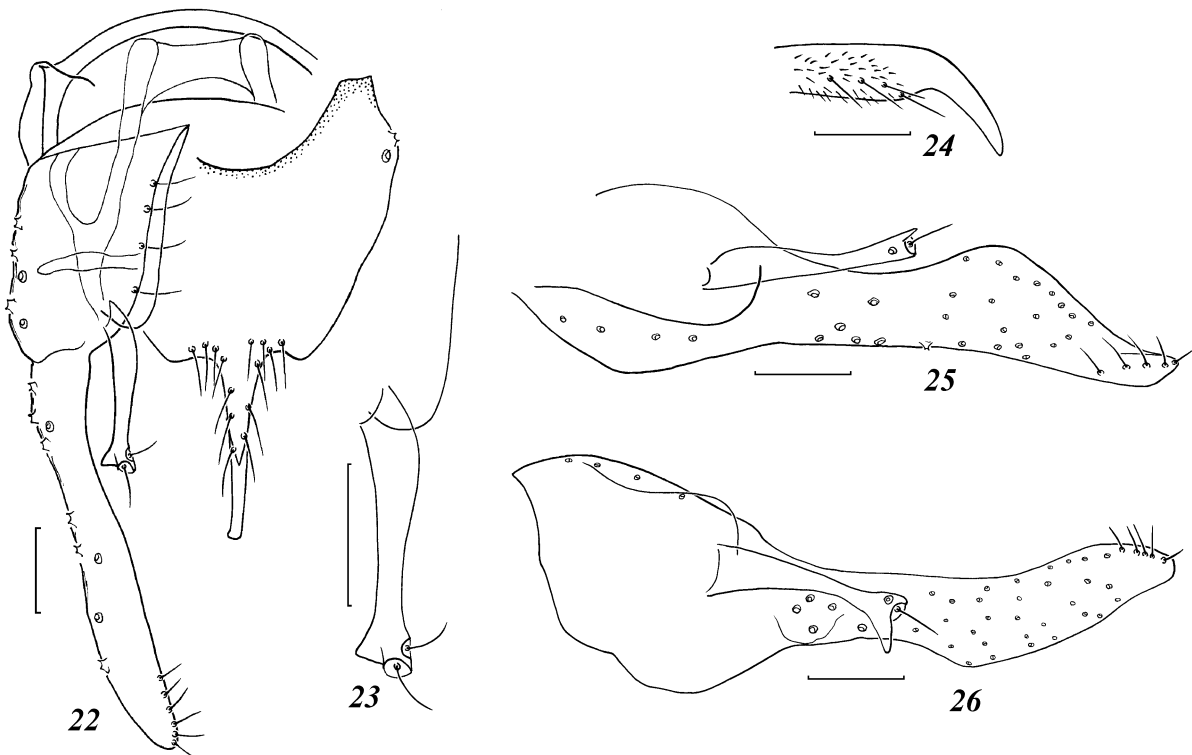
Thorax. Anteprenotals 8/9, acrostichals 16, dorsocentrals 22/25, prealars 6, supraalars 1. Scutellum with 23 setae.

Wing. Length 2.28 mm, without microtrichia. VR 1.10. R with 23, R_1 with 21, R_{4+5} with 25 setae in distal 2/3, M_{1+2} with 8 setae. Squama with 12 setae.

Legs. See Table 3. Each mid and hind tibia with 2 fused combs and 2 short spurs (length 10 μm). BR_{p2} 3.5. Fore and hind tarsomeres lost from the specimen.

TABLE 3. Lengths (in μm) and proportions of leg segments of *Parachironomus supalpinus* Goetgh.

P	fe	ti	ta ₁	ta ₂	ta ₃	ta ₄	ta ₅	LR	SV	BV
P ₁	882	756	1071	—	—	—	—	1.42	1.53	—
P ₂	882	882	441	273	210	147	126	0.50	4.00	2.93
P ₃	1050	1134	—	—	—	—	—	—	—	—



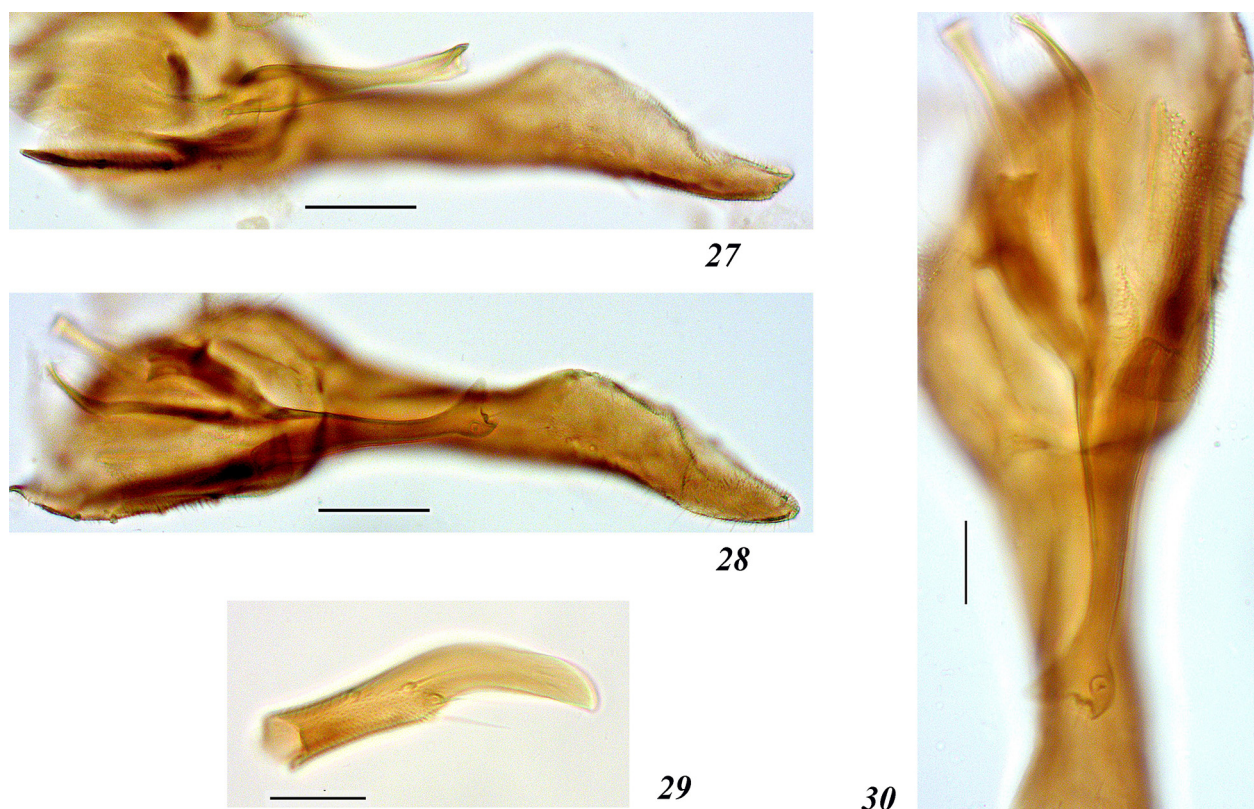
FIGURES 22–26. Details of hypopygium structure of *P. subalpinus*. 22—dorsal view of hypopygium; 23—superior volsella in lateral view; 24—anal point in lateral view; 25–26—gonocoxite and gonostylus in lateral view. Scale bars 50 μm .

Hypopygium (Figs 22–30). Laterosternite IX with 2/3 setae. Anal tergite without median longitudinal band, but with well developed triangular ventrolateral shoulders on posterior margin. Anal point in dorsal view length 99 μm , apical parallel-sided free section length 41 μm ; in lateral view the base is narrow (17 μm), carries microtrichia and 3–4 lateral setae, and 6–7 lateral setae at the base of the anal point, apical part narrow and angled to ventral. Portal setae 3 on each side. Gonocoxite 153 μm long, with 4 setae on inner margin. Transverse sternapodeme 98 μm long. Phallapodeme 119 μm long. Superior volsella (112–116 μm long) straight in both, dorsal and lateral views, little to moderately expanded at the base, apically with lamellar projection (14 μm) as wide as apex of volsella, with 1

terminal seta (23 μm) located in 10–14 μm wide pit and 1 medial seta (24 μm) located in 8.5–10 μm wide pit, distance between setae 10 μm . Inferior volsella with small prominence to median or posterior, its microtrichia not elongate. Gonostylus 218 μm long, in dorsal view almost straight, proximal part bears 6 latero-ventral setae, distally adjacent section narrower and bare or with 1 seta; in lateral view gonostylus strongly expanded in the middle (up to 54 μm high) and gradually tapering, with a row of 6 distal-medial setae. HR 0.69.

Remarks. Far Eastern specimens of *P. subalpinus* do not appear to differ from western European specimens in hypopygium structure or morphometric indices.

Distribution. Holarctic species. Previously known from western Europe (Austria, Finland, Germany, Ireland, and Sweden; Sæther & Spies 2013) and from Canada (Yukon Territories; Oliver & Dillon 1997). Recorded for the fauna of Russia for the first time here.



FIGURES 27–30. Details of hypopygium structure of *P. subalpinus*. 27, 28—gonocoxite and gonostylus in lateral view; 29—anal point in lateral view; 30—superior and inferior volsellae in lateral view. Scale bars 500 μm .

Parachironomus khatyrka sp. n.

(Figs 31–41)

Type material. Holotype: male, Russia, Chukotka Autonomous Region, basin of Khatyrka River, Myssovye Lakes, 27.vii.1980, leg. E. Makarchenko. Paratypes: 3 males, same data.

Etymology. From the Latin *khatyrka*, named for the Khatyrka River basin in which the material was collected.

Diagnostic characters. The adult male of *P. khatyrka* sp. n. is distinguished by the following combination of features: frontal tubercles present; wing length 2.7–2.9 mm; AR 3.18; LR_{p1} 1.33; tergite IX with longitudinal anal tergite band; anal point shorter than superior volsella, in lateral view its dorsal contour weakly curved; SVo with long apical projection in the form of a cap; IVo with prominence to median; gonostylus in dorsal view slightly curved, in lateral view expanded in the middle.

Adult male (n=3). See also Table 5.

Total length 5.0–5.5 mm.

Coloration brown.

Head. Frontal tubercles small, 6.8 μm long and 5.1 μm wide. Temporal setae 25–28. Clypeus with 26–33 setae. Antenna 1336 μm long. AR 3.18. Maxillary palpomeres 2–4 combined 724–802 μm long, their individual lengths (in μm): 68; 221–238; 197–224; 238–272. Antenna length/palp length 1.67.

Thorax. Anteprenotals 6–10, acrostichals 16–25, dorsocentrals 25–28, prealars 6–8, supraalars 1–2. Scutellum with 22–24 setae.

Wing. Length 2.7–2.9 mm, without microtrichia. VR 1.08. R with 25–29, R_1 with 18–20, R_{4+5} with 26–27 setae in distal 2/3, M_{1+2} without setae. Squama with 17–21 setae.

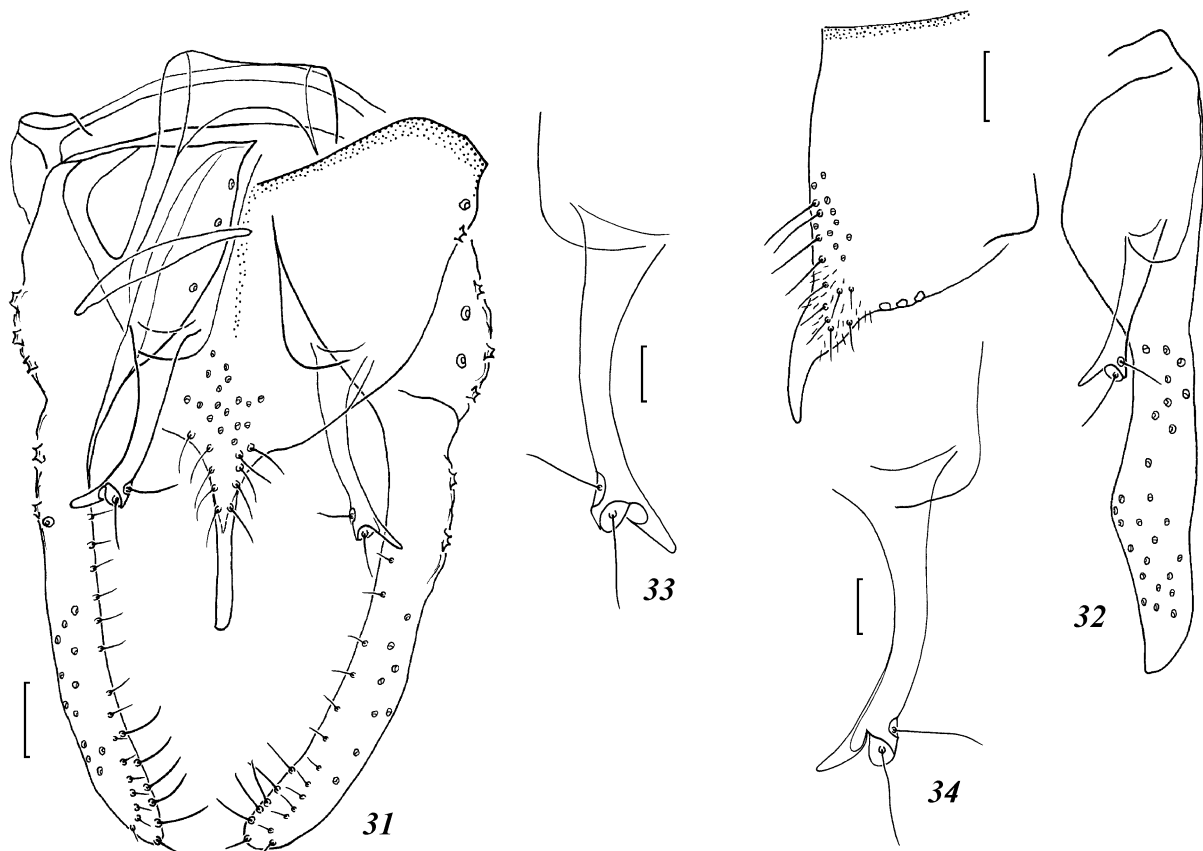
Legs. See Table 4. Each mid and hind tibia with 2 fused combs and 2 spurs (length 40 μm). BR_{p1} 9.3, BR_{p2} 4.2, BR_{p3} 9.0.

TABLE 4. Lengths (in μm) and proportions of leg segments of *Parachironomus khatyrka* sp. n.

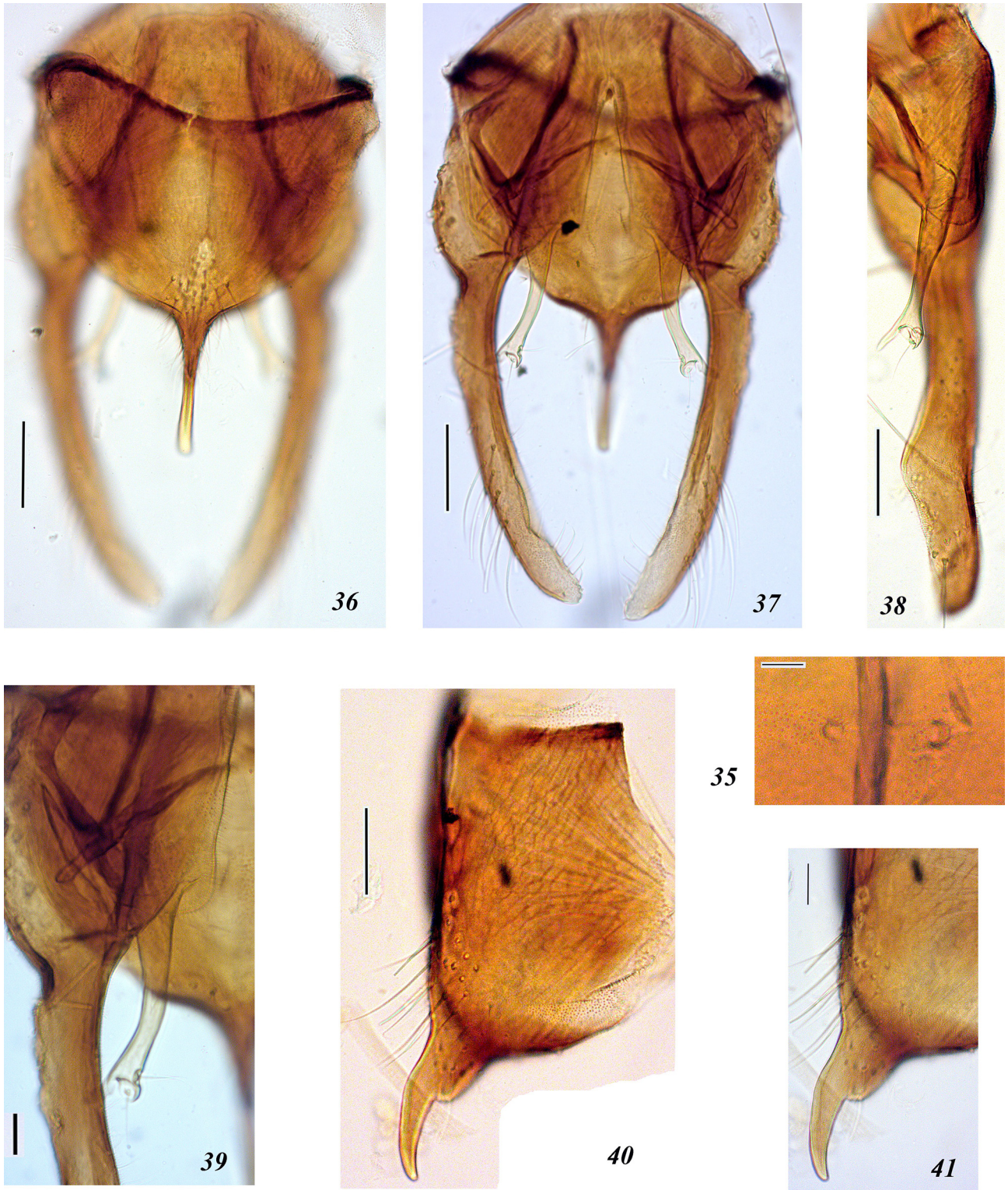
P	fe	ti	ta ₁	ta ₂	ta ₃	ta ₄	ta ₅
P ₁	1050	945–1050	1260	714	567	378	189
P ₂	1113–1155	1050–1134	567	357	273–294	189	147
P ₃	1260–1323	1407–1470	903–945	525–546	420	231	147

continued.

P	LR	SV	BV
P ₁	1.33	1.58	1.76
P ₂	0.51–0.54	3.81–4.0	2.83–2.87
P ₃	0.64–0.66	2.91–2.95	2.66–2.79



FIGURES 31–34. Details of hypopygium structure of *P. khatyrka* sp.n. 31—hypopygium in dorsal view, 32—tergite IX, gonocoxite, gonostylus and volsellae in lateral view; 33, 34—superior and inferior volsellae in lateral view. Scale bars 50 μm



FIGURES 35–41. Adult male of *P. khatyrka* **sp.n.** 35—frontal tubercles; 36—hypopygium in dorsal view; 37—hypopygium in ventral view; 38—gonocoxite, gonostylus and volsellae in lateral view; 39—superior and inferior volsellae in ventral view; 40–41—tergite IX and anal point in lateral view. Scale bars 500 μ m.

TABLE 5. Comparison of morphometric data for adult males of the genus *Parachironomus*.

Character	<i>P. aquilonis</i> sp.n. (n=1)	<i>P. subalpinus</i> Goetghebuer (our data) (n=1)	<i>P. hazelriggi</i> (our data) (n=1 to 4)	<i>P. hazelriggi</i> (data from Spies 2000)	<i>P. gillesspieae</i> (data from Spies 2000)	<i>P. khatyrka</i> sp.n. (n=1 to 3)	<i>P. paradigialis</i> (holotype and paratype – personal comment Spies)
Wing length [mm]	2.30	2.28	2.60–2.64 (n=3)	1.44–2.54 (n=16)	2.16–2.60 (n=10)	2.7–2.9 (n=3)	2.32–2.76
Temporal setae	25	18–20	30–35	17–30	21, 26	25–28	c. 20
Frontal tubercle, LxW [µm] where applicable	absent	absent	absent	rudimentary to 8x6	5x5 to 8x6	7x5	absent
Eye extension, ommatidia pattern	5 per lat. diagonal	5 per lat. diagonal	5 per lat. diagonal	5 per lat. diagonal	5 per lat. diagonal	5 per lat. diagonal	5 per lat. diagonal
Antennal ratio	2.63	–	2.63–2.81	2.13–2.56	2.36–2.65	3.18	1.69–2.25
Clypeus setae	19	20	25–30	13–30	21, 22	26–33	23
Palpomere 2 length [µm]	56	51	64–72	30–45	45–55	68	45
Palpomere 3	152	163	160–192	100–165	150–155	221–238	160
Palpomere 4	184	173	184–200	120–175	175	197–224	165
Palpomere 5	216	218	232–256	170–230	230–235	238–272	210
Anteprepronotals	10	8–9	9–14	5–11	8, 9	6–10	?
Acrostichals	25	16	21–25	13–26	16, 17	16–25	12–15
Dorsocentrals	23–25	22–25	20–34	9–25	13–19	25–28	12–15
Prealars	8–10	6	8–12	4–8	5–6	6–8	7
Supraalars	1	1	1	1	1	1–2	1
Scutellars	24	23	23–33	11–23	20, 21	22–24	13–14
VR	1.11	1.10	1.09–1.13	1.11–1.19	1.09–1.18	1.08	1.12
R setae	23–26	23	24–31	16–34	26, 30	25–29	28–29
R ₁	15–16	21	21–25	14–26	22, 26	18–20	22–25
R ₄₊₅	30–32	25	25–35	20–34	37, 40	26–27	37
M ₁₊₂	0	8	0	0–7	17–32	0	0
Squamal setae	22	12	21–31	8–24	15	17–21	13–23

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TABLE 5. (Continued)

Character	<i>P. aquilonis</i> sp.n. (n=1)	<i>P. subalpinus</i> Goetghebuer (our data) (n=1)	<i>P. hazelriggi</i> (our data) (n=1 to 4)	<i>P. hazelriggi</i> (data from Spies 2000)	<i>P. gillespieae</i> (data from Spies 2000)	<i>P. khadyrka</i> sp.n. (n=1 to 3)	<i>P. paradigitalis</i> (holotype and paratype – personal comment Spies)
LR _{P1}	1.31	1.42	1.24–1.31	1.33–1.66	1.37–1.58	1.33	1.78
LR _{P2}	0.46	0.50	0.46–0.50	0.45–0.51	0.49–0.52	0.50–0.54	0.50
LR _{P3}	0.68	–	–	0.63–0.67	0.65, 0.67	0.64–0.66	0.69
BR _{P1}	3.5	setae lost	3.33–3.75	?	?	9.3	beard absent
Sensilla chaetica on mid ta ₁	9	4	8–13	7–18	3–6	7–9	4–6
Anal point length [μm]	163	99	156–177	105–145	90–120	99–119	65
Proportion of bare part of anal point	50 %	<50 %	> 50 %	> 50 %	50 %	>50 %	>50 %
Strong dorsal setae at base of anal point	absent	absent	absent	absent	absent	18–23	10–13
Shoulders on posterior margin of anal point	absent	well developed	absent	absent	absent	weakly developed	indistinct
SVo length [μm]	116	112–116	119–126	80–115	90–110	122–136	85–90
Lateral projection or spur on SVo	lamellar projection usually as long as volsella width	lamellar projection usually as long as volsella width	lamellar projection as long as volsella width	lamellar projection usually shorter than distal volsella width	partially sclerotized spur often longer than distal volsella width	long apical projection narrow triangular with pointed tip	dorsolateral lamella, widely triangular with rounded tip
IVo	without median or posterior lobe	with small prominence to median or posterior	without median or posterior lobe	without median or posterior lobe	with a distal lobe at least to median	broadly rounded, with small prominence to median	broadly rounded, with shallow lobe to posterior

TABLE 6. Comparison of morphometric data for adult males of two species from *Parachironomus*.

Character	<i>P. khatyrka</i> sp. n. (n=1 to 3)	<i>P. paradigitalis</i> (holotype and paratype—personal comment Spies)
Wing length [mm]	2.7–2.9 (n=3)	2.32–2.76
Temporal setae	25–28	c. 20
Frontal tubercle, LxW [μ m] where applicable	7x5	absent
Eye extension, ommatidia pattern	5 per lat. diagonal	5 per lat. diagonal
Antennal ratio	3.18	1.69–2.25
Clypeus setae	26–33	23
Palpomere 2 length [μ m]	68	45
Palpomere 3	221–238	160
Palpomere 4	197–224	165
Palpomere 5	238–272	210
Anteprenotals	6–10	?
Acrostichals	16–25	12–15
Dorsocentrals	25–28	12–15
Prealars	6–8	7
Supraalars	1–2	1
Scutellars	22–24	13–14
VR	1.08	1.12
R setae	25–29	28–29
R ₁	18–20	22–25
R ₄₊₅	26–27	37
M ₁₊₂	0	0
Squamal setae	17–21	13–23
LR _{p1}	1.33	1.78
LR _{p2}	0.50–0.54	0.50
LR _{p3}	0.64–0.66	0.69
BR _{p1}	9.3	beard absent
Sensilla chaetica on mid ta ₁	7–9	4–6
Anal point length [μ m]	99–119	65
Proportion of bare part of anal point	>50 %	>50 %
Shoulders on posterior margin of anal point	weakly developed	indistinct
Strong dorsal setae at base of anal point	18–23	10–13
Portal setae	3–4	2?
SVo length [μ m]	122–136	85–90
Projection on SVo	long apical projection in the form of cap, narrow triangular with pointed tip	a dorsolateral lamella, widely triangular with rounded tip
IVo shape	broadly rounded, with small prominence to median	broadly rounded, with shallow lobe to posterior
Gonostylus shape	mid-section expanded to dorsal in ventral view	mid-section slightly expanded to dorsal in ventral view

Hypopygium (Figs 31–41). Laterosternite IX with 1–4 setae. Anal tergite with median longitudinal band, ventrolateral shoulders on posterior margin weakly developed. Anal point in dorsal view length 99–119 µm, parallel-sided free section length 54–58 µm; in lateral view the base carries microtrichia and 6–12 lateral and 18–23 dorsal setae at the base of the anal point, apical part narrow and slightly crescent-shaped (Fig. 32). Portal setae 3–4 on each side. Gonocoxite 197–204 µm long, with 4 setae on inner margin. Transverse sternapodeme 116 µm long. Phallapodeme 112–136 µm long. Superior volsella (126–136 µm long) slightly curved, little to moderately expanded at the base, apically with long apical projection in the form of a cap (17–27 µm), with 1 terminal seta (51 µm) located in 17–20 µm wide pit and 1 medial seta (34 µm) located in 8.5–10 µm wide pit, distance between setae 10 µm. Inferior volsella broadly rounded, with prominence to median, its microtrichia not elongate. Gonostylus 272–296 µm long, in dorsal view slightly curved, the proximal part 41 µm wide with 8–13 latero-ventral setae, distally adjacent section narrower and bare or with 1 seta; in lateral view gonostylus expanded in the middle (up to 58–65 µm high), distally gradually tapering, with a row of 6 distal-median setae. HR 0.69–0.73.

Female, pupa and larva unknown.

Remarks. The adult male of *P. khatyrka* sp. n. is most similar to that of *P. paradigmatis* Brundin, 1949 but can be distinguished by the presence of small frontal tubercles, AR 3.18, Ac 16–25, Dc 25–28, Scts 22–24, LR_{pl} 1.33, and by the superior volsella with a long apical projection that is narrow triangular with pointed tip (see Table 6).

Distribution. Known only from the basin of Khatyrka River (Russia, Chukotka Autonomous Region).

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