



**A systematic review of the genus *Constempellina* Kieffer
(Diptera: Chironomidae) from the Russian Far East,
with description of a new species**

OKSANA V. ZORINA

Institute of Biology and Soil Sciences, Russian Academy of Sciences, Far East Branch, 100 let Vladivostoku Avenue 159, Vladivostok 690022, Russia. E-mail: zorina@ibss.dvo.ru

Abstract

A new species of the genus *Constempellina* Brundin, 1947, *C. tokunagai* sp. n., from the Russian Far East is described and figured as male, pupa and larva. The male and pupa of *C. brevicosta* (Edwards 1937) are redescribed and figured. Consequently, the generic diagnosis is emended. Keys to the males, pupae and larvae of Russian *Constempellina* are also given.

Key words: Chironomidae, Tanytarsini, *Constempellina*, new species, key, Russian Far East

Introduction

The genus was erected by Brundin in 1947 for *Tanytarsus* (*Phaenopelma*) *brevicosta* Edwards, 1937, and later placed in the subtribe Stempellina (Shilova 1976; Spies 2005) of the tribe Tanytarsini, subfamily Chironominae (Sæther 1977). Brundin (1948) presented the first thorough morphological analysis of the all life stages and combined the genera *Stempellina* Thienemann *et* Bause, 1913 with *Constempellina* into the *Stempellina*-group, morphologically different from the *Zavrelia*-group. Species of the genus *Constempellina* Brundin, 1947, are small non-biting midges with immature stages living in standing and flowing waters. The larvae construct small transportable cases of sand grain.

The genus *Constempellina* includes one Holarctic species, *C. brevicosta* (Edwards, 1937). Up to present time two species, *C. brevicosta* and *C. bita* Konstantinov, 1948 (nomina dubia) (Ashe & Cranston 1990) have been recorded from Russia (Pankratova 1983). However, during studies of the chironomid fauna in the Russian Far East, a new species was found, and herein is presented. Additionally, *C. brevicosta* is redescribed, and the keys to males, pupae and larvae of Russian *Constempellina* are given.

Material and methods

The material was preserved in 70% ethanol and 4% formalin and slide-mounted in Fora-Berlese solution. Morphological terminology and abbreviations follow Sæther (1980). The measurements are given as ranges. The following additional abbreviations are used: PL-male = associated larva, pupa, and adult male; PL-female = associated larva, pupa, and adult female; P-male = associated pupa and male; P-female = associated pupa and female; L = larva. Larvae are associated with pupae on the larval head capsules skins remaining on the pupae. Pupae are associated with adult males on the prepared from mature pupae genitals.

The holotype and paratypes of the new species are deposited in the Institute of Biology and Soil Sciences, Far East Branch of the Russian Academy of Sciences, Vladivostok, Russia (IBSS FEBRAS).

Systematics

Constempellina Brundin

Constempellina Brundin, 1947: 82.

Type species: *Tanytarsus (Phaenopelma) brevicosta* Edwards, 1937: 146.

Other included valid species: *Constempellina tokunagai* new species.

Emended diagnosis. Male: as in Cranston *et al.* (1989: 369) with the following emendations: wing length 1.5–2.7 mm, AR 0.57–1.26, acrostichals 0–4, apical part of anal point conical or parallel-side, base of superior volsella with or without microtrichia.

Pupa: as in Pinder and Reiss (1986: 313) with the following emendations: thoracic horn onion- or fusiform, anteprenotals 2–3, pedes spurii B weakly developed or absent, sternite IV, rarely V, with two longitudinal rows of pale spines, anal lobe with 8–19 taeniate setae.

Fourth instar larva: as in Pinder and Reiss (1983: 206) with the following emendations: pedestal of antenna with 1–7 apical projections.

Constempellina tokunagai sp. n.

(Figs 1–30)

Type material. Holotype male, RUSSIA: 1 PL-male, Kamchatka Peninsula, Kol' River, 8.vi.2005, T. Travina. Paratypes: 11 males, Primorye Territory, Sikhote-Alin Nature Reserve, Kolumbe River near "Ust'-Prokhnodnaya" field station, 9.viii.2005, O. Zorina; 1 male, Samarga River at about 2.5 km upstream of the mouth of Kuksy Stream, 3.viii.2006, O. Zorina; 1 male, Lazovskiy Nature Reserve, Perekatnaya River about 500 m of "America" field station, 6–7.vii.2007, O. Zorina; 1 male, Lazovskiy Nature Reserve, basin of Praymushka River, Kaplanov Stream, 10.vii.2007, O. Zorina; 1 male, Khabarovsk Territory, basin of Amur River, Khingan River at about 2 km of Obluch'e Village, 25.vi.2004, T. Arefina-Armitage; 3 males, Pravyy Khingan River, 31.vii.2003, O. Zorina; 1 male, stream at about 5 km of Briakan Village, 21.vii.2006, E. Makarchenko; 1 male, Khakubera River, 4–5.viii.2005, E. Makarchenko; 2 males, Chernaya River, 29.vi.2005, T. Tiunova; 1 P-male, 1 PL-male, 8 L, Sushchevskiy Stream, 12.viii.2004, S. Zolotukhin; 1 male, Amur Territory, basin of Arkhara River, Solokachy, 26.vii.2003, O. Zorina; 1 PL-female, Zeya River near Sokhatino Village, 19.vii.2006, T. Tiunova; 1 P-male, same data, 16.vi.2001, S. Kocharina; 4 males, PL-male, P-female, L, Magadan Territory, Tauy River, 17.vii.2011, S. Kocharina; 6 males, Sakhalin Island, Uskovka River, 6–7.viii.2001, V. Teslenko; 10 males, Tym' River ca. 15 km of Palevo Village, 8.viii.2001, V. Teslenko; 3 males, Avgustovka River ca. 13 km of Boshnaykovo Village, 23.vii.2003, E. Makarchenko; 2 males, Orlovka River, 25.vii.2003, E. Makarchenko; 1 male, Schmidt Peninsula, Sukharnyy Stream, 8–12.viii.2003, E. Makarchenko; 4 males, lake and stream in the "Three brothers" mountain system, 12.viii.2003, E. Makarchenko; 1 P-male, 4 P-females, same data, 18.vi.2005, T. Travina; 5 P-males, 9 P-females, same data, 2005 years, T. Travina; 2 PL-males, Zabaykalsk Territory, Kadalinka River, 10.vi.2007, N. Saltanova.

Etymology. Named in honour of the Japanese entomologist Professor Masaaki Tokunaga from Kyoto Imperial University.

Diagnostic characters. WL 1.10–1.35; AR 0.57–0.73; anal point with long and narrow apical part; basal part of superior volsella oval form without tubercle. Pupa with narrow and long thoracic horn (width 15–21 μ m); tergite IV without posterolateral patches of spines; segment VIII with anal spurs (2–5) of different length. Larva with setae SIII usually simple sometimes bifurcate; AR 1.12–1.41; pedestal with 2–7 apical tubercles; blade of antenna usually not extend far beyond apex of 5th segment.

Male (n=15). Total length 2.2–2.7 mm; wing length 1.10–1.35 mm. Total length / wing length 1.61–1.88.

Colouration. Adult males characterize by following pattern of body coloration:

Antenna, thorax, abdomen and legs brown.

Mesonotal stripes and postnotum brown or dark brown, ground colour and scutellum yellowish-brown; abdomen yellowish-brown or brown; legs yellowish with brown distal third of femora, proximal third and distal end of tibiae, ta_{1–5} gradually darkened toward ends, tibiae sometimes brown.

Mesonotal stripes and postnotum brown or dark brown, ground colour of thorax and scutellum yellowish-brown or brown; abdomen yellowish with brown longitudinal band; legs yellowish, ta_{1-5} gradually darkened toward ends.

Mesonotal stripes and postnotum dark brown, ground colour and scutellum yellowish; abdomen brown; legs yellowish with brown spots on proximal and distal ends of femora and tibiae and proximal end of ta_1 .

Head. Frontal tubercles well-developed, 15–18 μm long, 9–12 μm wide. Antenna 640–760 μm long; ultimate flagellomere 240–320 μm long; AR 0.57–0.73. Verticals 6–10. Clypeus with 9–11 setae. Maxillary palp 276–315 μm long; length of palpomeres 2–5 (in μm): 39, 60–69, 69–87, 108–126. Palp length / head width 0.86–0.74; antenna length / palp length 2.22–2.32.

Thorax chaetotaxy. Acrostichals 0–4, dorsocentrals 5–8, prealars 1. Scutellum with 2 setae.

Wing 0.36–0.44 mm wide (Fig. 1). Veins $R+R_1$ with 13–20 setae, R_{4+5} with 2–6, M_{1+2} with 12–24, M_{3+4} with 13–22, Cu_1 with 0–5, Cu_2 with 0–10 and An with 0–5 setae. Cell r_{4+5} with about 50 setae, m_{1+5} with 14–25, m_{3+4} with 4–15 setae. VR 1.3–1.6.

Legs. Lengths and proportions of legs as in Table 1.

TABLE 1. Lengths (in μm) and proportions of legs of *Constempellina tokunagai* sp. n., male (n=14).

	fe	ti	ta_1	ta_2	ta_3	ta_4	ta_5
p_1	420–560	340–480	340–440	200–280	160–200	100–160	70–80
p_2	420–580	360–520	160–220	120–160	100–140	70–100	60–80
p_3	500–700	440–600	240–320	170–220	140–180	80–100	70–80

TABLE 1. (Continued)

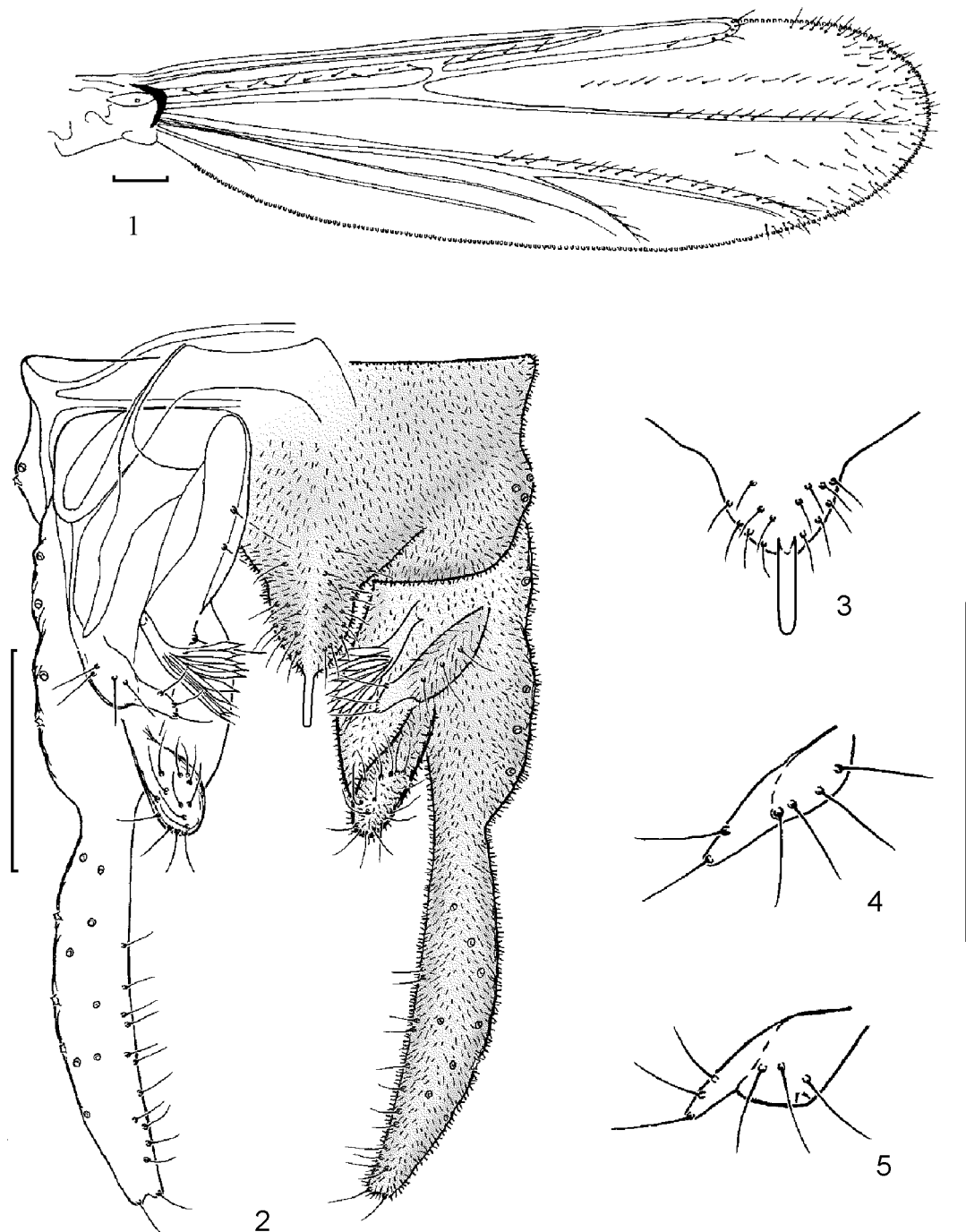
	LR	SV	BV
p_1	0.89–1.00	2.18–2.53	1.91–2.18
p_2	0.40–0.48	4.36–5.63	2.55–2.80
p_3	0.50–0.59	3.63–4.25	2.42–2.79

Hypopygium (Figs 2–5). Laterosternite IX with 1–4 strong setae. Anal point with parallel-sided apical part (length 15–21 μm , width 3 μm) and with broad triangular base (21–36 μm long) bearing 7–15 lateral setae. Gonocoxite 90–120 μm long, with 2–4 setae on inner margin. Superior volsella 24–42 μm long with digitiform apical part (12–15 μm long) bearing 2–4 setae, and with broad basal part bearing 2–5 setae and usually densely covered with microtrichia, sometimes number of microtrichia lower, reduced to 0–5. Median volsella 36–45 μm long with dense clump of subulate setae. Inferior volsella 54–75 μm long, with 15–20 setae. Gonostylus 75–105 μm long, 18–24 μm wide at about middle, apically pointed or rounded. HR 1.03–1.40.

Pupa (n=9, males). Total length 2.60 mm.

Cephalothorax (Figs 6–8). Cephalic tubercle conical, 24–39 μm long. Spine-like frontal setae 78–90 μm long. Thoracic horn narrow, 168–240 μm long, 15–21 μm wide, covered with sparse small spines. Precorneals 3 (1st 120–165 μm long, 2nd 105–204 μm long, 3rd 96–210 μm long), anteprenotals 2–3 (1 median 165–225 μm long and 1–2 lateral 105 μm long), dorsocentrals 4 (Dc_1 120–195 μm long, Dc_2 180–320 μm long, Dc_3 60–165 μm long, Dc_4 48–81 μm long); distance between Dc_2 and Dc_3 54–90 μm . Wing sheath usually with a well-developed “nose”, rarely “nose” absent.

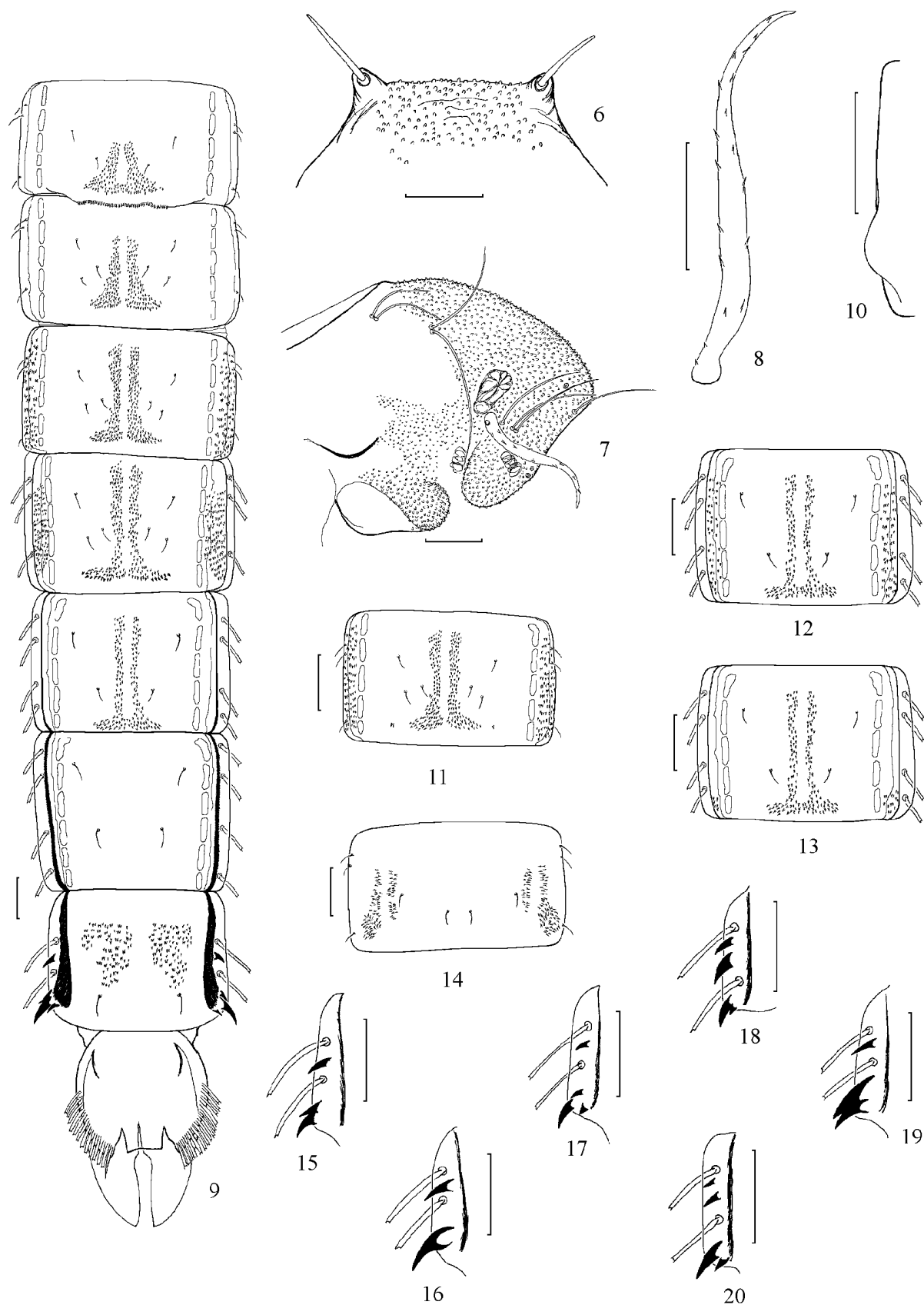
Abdomen (Figs 9–20) 1.7–2.6 mm long. Tergites II–VI with a pair of longitudinal bands of shagreen, broadened posterolaterally. Tergite VII without shagreen. Tergite VIII medially with paired patches of very fine shagreen. Hook row 180–225 μm long with 96–115 spines. Pleura of segments IV–V, sometimes VI, with longitudinal areas of shagreen (Figs 11–12). Pedes spurii B weakly developed or absent (Fig. 10). Sternites IV with a pair of longitudinal bands of pale spines laterally (Fig. 14), rarely sternite V with a pair of lateral bands. Lateral margin of segment VIII with 2–5 strong anal spurs different in length (Figs 15–20). Segments II–IV with weak L seta, V with 3 LS, VI–VII with 4 LS, VIII with 2 LS setae. Anal lobe with 8–19 taeniate setae.



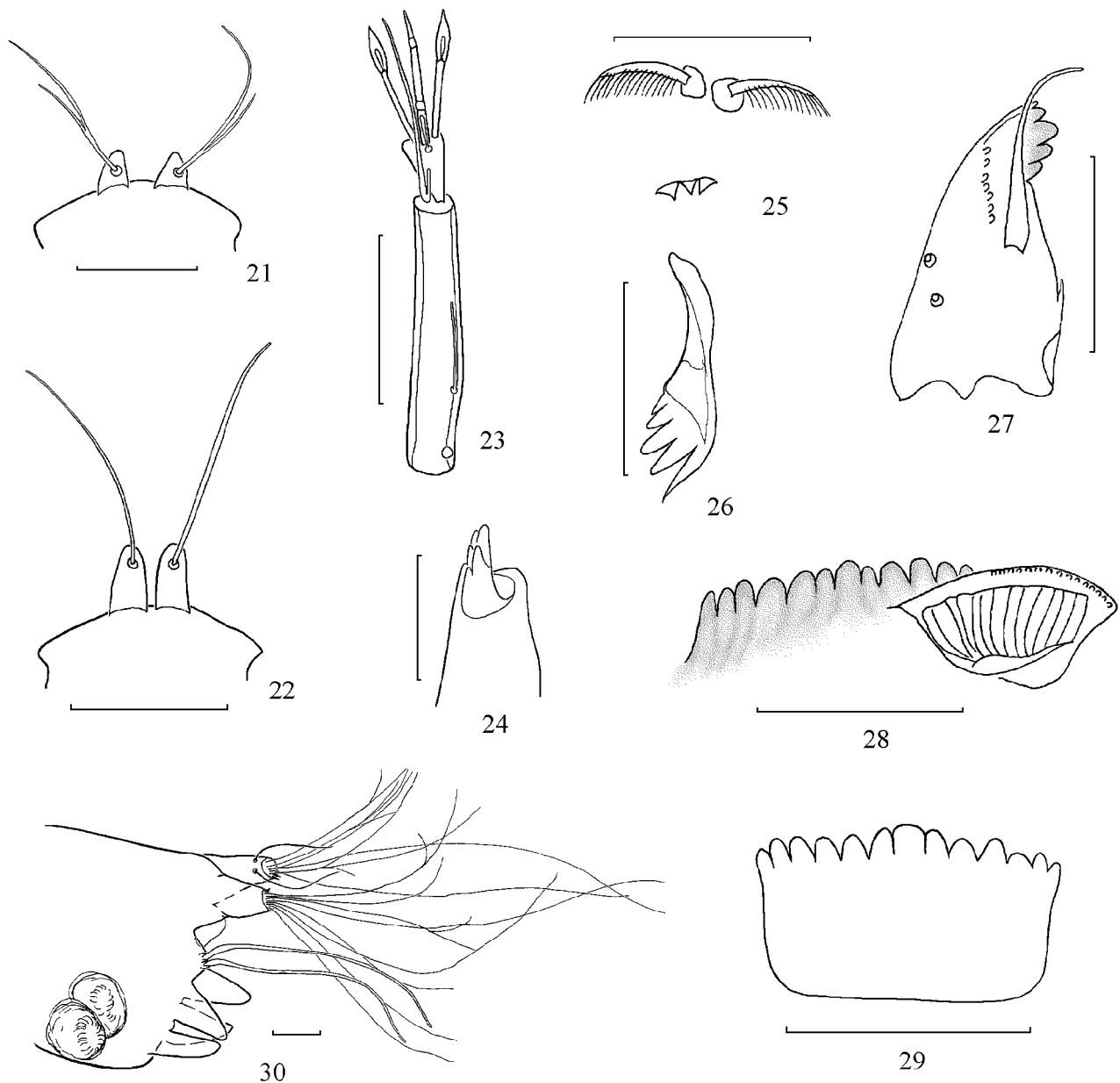
FIGURES 1–5. Adult males of *Constempellina tokunagai* sp.n. 1—wing; 2—hypopygium, dorsal view; 3—anal point; 4, 5—superior volsella. Scale bar 100 μ m.

Fourth instar larva (n=8). Colouration. Green (in formaldehyde).

Head. Setae SIII usually simple sometimes bifurcate (Figs 21–22). Antenna 96–123 μ m long (Fig. 23), length of segments (in μ m): 51–72, 15–18, 9, 12–15, 9. AR 1.12–1.41. Pedestal with 2–7 apical projections (Fig. 24). Basal segment with ring organ at base and single 27–30 μ m long seta. Blade 45–54 μ m long, usually not extend far beyond apex of antenna, accessory seta 9–12 μ m long. Lauterborn organ 30 μ m long, not extend beyond antennal apex. Style 9 μ m long. Seta SI comb-like 21–24 μ m long (Fig. 25), SII 30–36 μ m long. Premandible 45–63 μ m long, with 5 teeth (Fig. 26). Mandible 66–102 μ m long, 45–57 μ m wide; seta subdentalis 45–57 μ m long; mola with 1 spine; dorsal teeth, apical and 2 inner teeth brownish (Fig. 27). Maxillary palp 12–24 μ m long. Mentum 60–75 μ m long, median tooth yellowish, 6th pair of lateral teeth brownish (Figs 28–29). Ventromental plate 48–60 μ m wide, 27–33 μ m high; distance between ventromental plates 24 μ m.



FIGURES 6–20. Pupa of *Constempellina tokunagai* sp.n. 6—frontal apotome, dorsal view; 7—thorax, lateral view; 8—thoracic horn; 9—tergites II–IX; 10—pedes spurii B on segment II; 11—tergite IV; 12, 13—tergites VI; 14—sternite IV; 15, 16, 17, 18, 19, 20—anal spurs on segment VIII. Scale bar 100 μ m.



FIGURES 21–30. Larva of *Constempellina tokunagai* sp.n. 21, 22—dorsal head setae SIII; 23—antenna; 24—pedestal of antenna; 25—SI and pecten epipharyngis; 26—premandible; 27—mandible; 28—mentum and ventromental plate; 29—mentum; 30—caudal end. Scale bar 50 μ m.

Body. Posterior parapod with 16 yellow simple claws. Anal tubules conical, upper pair 48–63 μ m long, bottom pair 23–27 μ m long. Procercus 45 μ m long, with 8 simple or branched anal setae, and 1–2 dark brown spines (Fig. 30).

Remarks. The male of a new species is very similar to *C. brevicosta* (Edwards) in the shape of the hypopygium, but can be separated by a smaller size of the wing (WL 1.0–1.35) and a lower value of the index of the antenna (AR 0.57–0.73), a long and parallel-sided apical part of the anal point. The male of *C. brevicosta* has wing length 1.5–2.0 mm, AR 1.0–1.26, short and conical apical part of the anal point. The male of *C. tokunagai* sp. n. closely resembles that described by Lindeberg (unpublished data) as *C. arctica*, but *C. tokunagai* has gonostylus widest at mid length, while *C. arctica* has gonostylus widest in the apical third. The new species is also similar to *C. brevicosta* in the pupal stage and can be separated by the presence of a slender and long thoracic horn and by the absence of posterolateral patches of spines on tergite IV. The larva also is close to *C. brevicosta*, but can be easily separated by the presence of 2–7 apical tubercles on pedestal of antenna, and the blade of antenna usually does not extend far beyond apex of 5th segment.

Distribution and ecology. *Constempellina tokunagai* sp. n. was collected in the Primorye, Khabarovsk, Amur, Magadan and Zabaykalsk Territories, Sakhalin Island and Kamchatka Peninsula in the Russian Far East. Probably this species is widely spread in China and Japan. *Constempellina tokunagai* sp. n. has been recorded from many springs, streams and rivers. Larvae construct cases from sand.

Constempellina brevicosta (Edwards, 1937)

(Figs 31–43)

Tanytarsus (*Phaenopelma*) *brevicosta* Edwards, 1937: 146, fig. 2.

Lauterbornia (*Phaenopelma*) *brevicosta* Edwards; Goetghebuer (1940: 57).

Stempellina septentrionalis Tshernovskii, 1949: 47 (synonymized by Shilova 1976).

Stempellina ranota Webb, 1969: 91, figs 15–26 (according to Sæther & Spies 2004).

Phaenopelma brevicosta Edwards; Thienemann (1941: 236, figs 45–47); Goetghebuer (1954: 137).

Constempellina brevicosta Edwards; Brundin (1947: 82, fig. 122); Brundin (1948: 19, figs 2, 7, 10, 15, 17); Shilova (1976: 18); Grimås & Wiederholm (1979: 119); Pankratova (1983: 27, fig. 8); Pinder & Reiss (1983: 306, fig. 10.9 A–E); Pinder & Reiss (1986: 313, fig. 10.10 A, B, D); Cranston *et al.* (1989: 369, fig. 10.11); Langton (1991: 314, figs 129 h–j); Gilka (2011: 33, figs 86–88).

Material. Three males, Sakhalin Island, Leonodovka River ca. 8 km of Leonidovka Village, 08.viii.2001, V. Teslenko; 15 males, same data, basin of Belaya River, stream at about 100 m of fish factory, 27.vi.1985, E. Makarchenko; 4 males, same data, Manuy River, 08.viii.2002, V. Teslenko; 1 male, Kamchatka Peninsula, Azabach'e Lake, 13–14.vii.1996, S. Belyanina; 3 males, same data, 14.vii.1996, R. Kuranishi; 7 males, Magadan Territory, Taui River, 11.vi.2002, S. Kocharina; 2 males, same data, 16.vii.2002, S. Kocharina; 1 P-female, Kamchatka Peninsula, Bol'shaya River, 16.viii.2006, T. Travina; 5 males, Khabarovsk Territory, Nilan River, 23.vii.2006, E. Makarchenko; 1 male, Khabarovsk Territory, basin of Amur River, Kady River, upper reach, 2.vii.2005, E. Makarchenko; 3 males, Khabarovsk Territory, Chertovka River in 6 km of Lazarevo Village, 22.vi.2005, T. Tiunova; 1 male, Primorye Territory, Barabachevka River, 6.v.2003, T. Tiunova; 1 male, Primorye Territory, Sikhote-Alin Nature Reserve, Kolumbe River, 3.x.2005, O. Zorina.

Diagnostic characters. Wing length 1.5–2.0 mm; AR 1.0–1.26; anal point with short and conical apical part; basal part of superior volsella oval or triangular form, sometimes with a small tubercle. Pupa with bulb-shaped thoracic horn; tergite IV with posterolateral patches of spines; segment VIII with 4 strong anal spurs approximately equal length. Larva with setae SIII simple; pedestal with one apical tubercle; blade of antenna extending far beyond apex of 5th segment; AR 1.3 (according to Brundin 1948 and Pankratova 1983).

Male (n=12). Total length 2.3–3.1 mm; wing length 1.5–2.0 mm. Total length / wing length 1.31–1.63.

Colouration. Dark brown midges. Legs dark brown except for yellowish brown proximal half of the femur.

Head. Frontal tubercles well developed 15 µm long, 12 µm wide. Antenna 800–960 µm long; ultimate flagellomere 400–520 µm long; AR 1.0–1.26. Verticals 5–10. Clypeus with 11–17 setae. Maxillary palp 416–472 µm long; length of palpomeres 2–5 (in µm): 72, 104–120, 96–112, 144–184. Palp length / head width 0.96–1.04; antenna length / palp length 2.10–2.22.

Thorax chaetotaxy. Acrostichals 0–3, dorsocentrals 6–12, prealars 1. Scutellum with 2 setae.

Wing 0.4–0.5 mm wide (Fig. 31). Veins R+R₁ with 24–57 setae, R₄₊₅ with 4–34, M₁₊₂ with 17–85, M₃₊₄ with 24–65, Cu₁ with 7–18, Cu with 0–4 and An with 0–64 setae. Cells r₄₊₅, m₁₊₅, m₃₊₄ with setae. VR 1.31–1.38.

Legs. Lengths and proportions of legs as in Table 2.

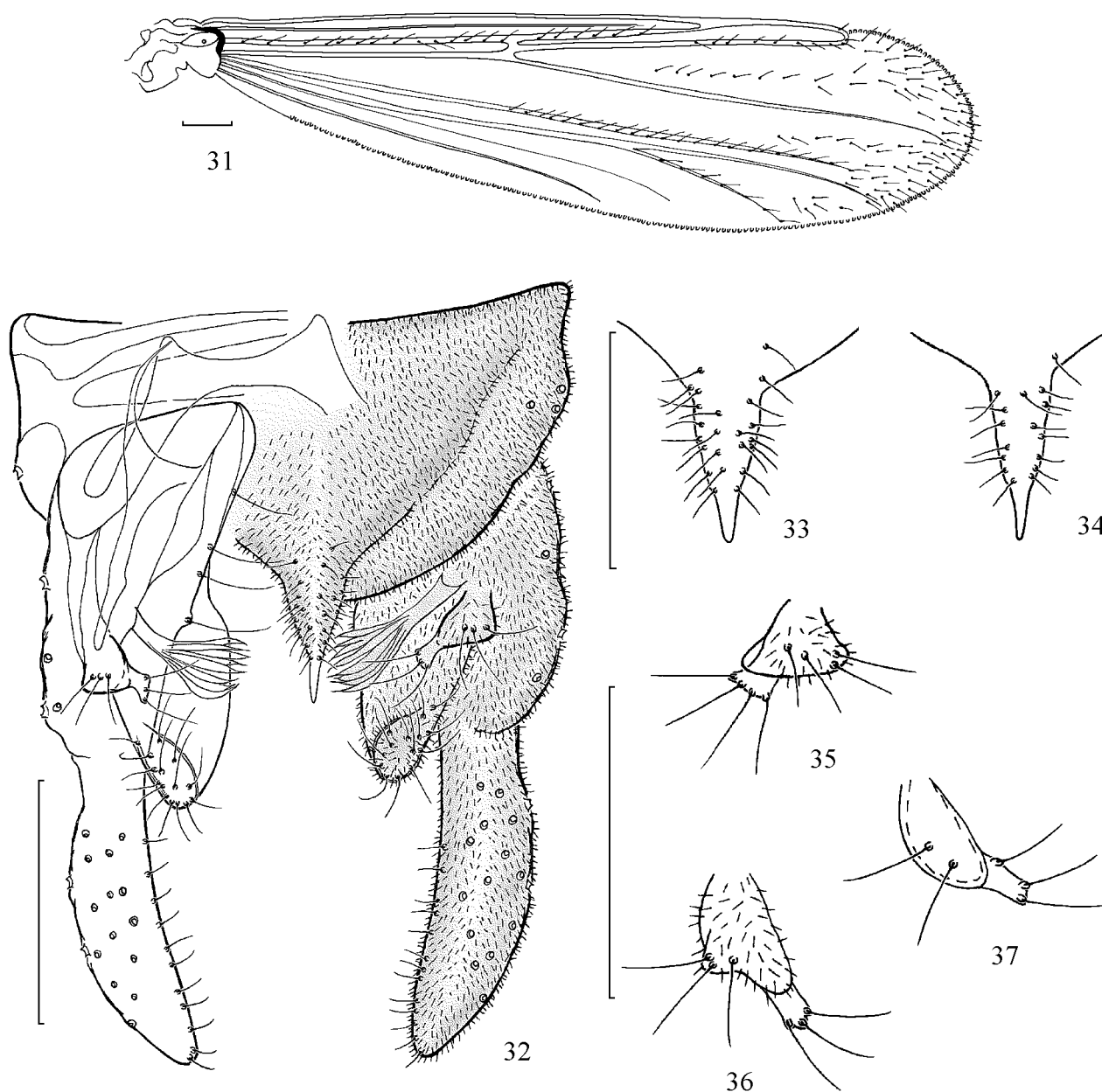
Hypopygium (Figs 32–37). Laterosternite IX with 1–5 strong setae. Apical part of anal point triangular (length 42–72 µm, width 12–15 µm at base), and with broad triangular base bearing 20–32 lateral setae (Figs 33–34). Gonocoxite 120–144 µm long, with 4–5 setae on inner margin. Superior volsella 30–39 µm long, apical part 9–18 µm long and with 3–4 setae, basal part oval (Fig. 37) or triangular form (Fig. 35), sometimes with a small tubercle (Fig. 36), bearing 1–7 setae and densely covered with microtrichia (rarely microtrichia absent Fig. 37). Median volsella 48–60 µm long with a dense clump of subulate setae. Inferior volsella 72–90 µm long, with 17–25 setae. Gonostylus 105–129 µm long, 30–39 µm wide at about middle, apically rounded.. HR 1.05–1.14.

TABLE 2. Lengths (in μm) and proportions of legs of *Constempellina brevicosta* (Edwards), male (n=11).

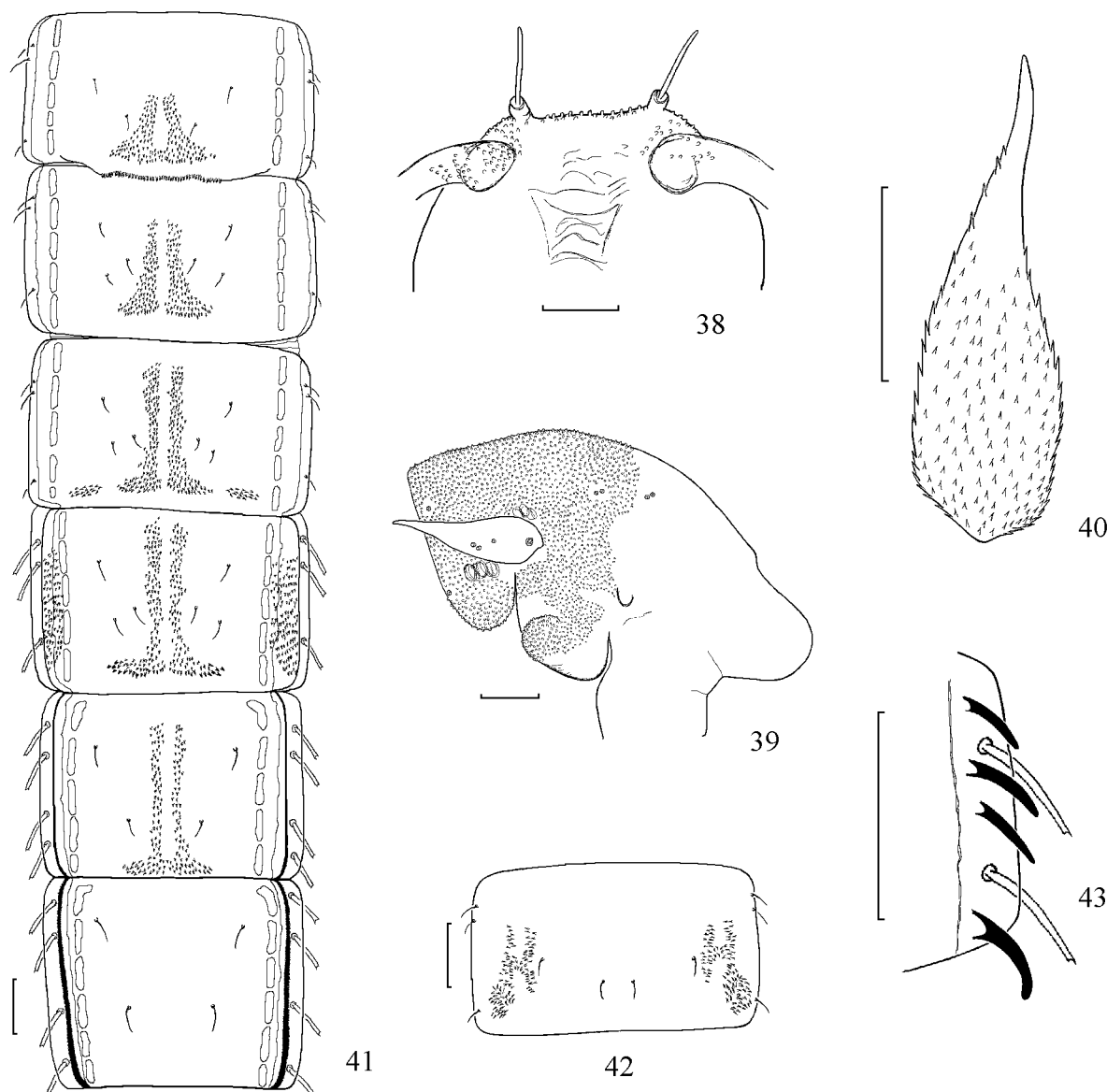
	fe	ti	ta ₁	ta ₂	ta ₃	ta ₄	ta ₅
p ₁	600–780	480–680	500–620	300–360	220–260	140–180	80–100
p ₂	560–740	500–700	220–300	180–240	140–200	100–140	70–100
p ₃	700–940	620–800	340–460	240–320	190–240	120–160	80–100

TABLE 2. (Continued)

	LR	SV	BV
p ₁	0.88–1.04	2.16–2.48	2.10–2.29
p ₂	0.43–0.45	4.60–5.00	2.52–2.80
p ₃	0.55–0.61	3.55–3.88	2.56–2.77



FIGURES 31–37. Adult male of *Constempellina brevicosta* (Edwards). 31—wing; 32—hypopygium, dorsal view; 33, 34—anal point, dorsal view; 35, 36, 37—superior volsella. Scale bar 100 μm .



FIGURES 38–43. Pupa of *Constepellina brevicosta* (Edwards). 38—frontal apotome, dorsal view; 39—thorax, lateral view; 40—thoracic horn; 41—tergites II–VII; 42—sternite IV; 43—anal spurs. Scale bar 100 μ m.

Pupa ($n=1$, female). *Cephalothorax* (Figs 38–40). Cephalic tubercle conical, 36 μ m long. Spine-like frontal setae 84 μ m long. Thoracic horn 216 μ m long, bulb-shaped, broadest basally (maximum width 69 μ m), tapering to pointed apex, covered with small spines. Precorneals 3 (1st 126–144 μ m long, 2nd 150–165 μ m long, 3rd 144–156 μ m long), anteprenotals 2 (1 median 168 μ m long and 1 lateral 105–120 μ m long), dorsocentrals 4 (Dc_1 84 μ m long, Dc_2 60 μ m long, Dc_3 144–150 μ m long, Dc_4 180–204 μ m long); distance between Dc_2 and Dc_3 66 μ m. Wing sheath with a well-developed “nose”.

Abdomen (Figs 21–43) 2.0 mm long. Tergites II–VI with pair of longitudinal bands of shagreen, broadened posterolaterally. Tergite IV in distal part with a pair of lateral patches each consisting of 18 spines. Tergite VII without shagreen. Tergite VIII medially with paired patches of very fine shagreen. Hook row 228 μ m long with 90 spines. Pleura of segments V with shagreen. Pedes spurii B absent on segment II. Sternites IV laterally with paired longitudinal bands of pale spines connected medially. Lateral margin of segment VIII with 4 strong anal spurs approximately equal in length. Segments II–IV with a weak L seta, V–VII with 4 LS, and VIII with 2 LS setae. Anal lobe with 12–13 taeniate setae.

Fourth instar larva is absent in our materials. The brief description and illustrations of larva are given in articles of Brundin (1948), Pinder & Reiss (1983) and Pankratova (1983). Unfortunately, there are still no detailed morphometric descriptions of larvae of this species.

Remarks. The males of *C. brevicosta* are characterized by variability of morphological features such as chaetotaxy of the wing, AR, LR and structure of some parts of the hypopygium. Some variations are related to features of ecology of the species (Grimås & Wiederholm 1979), the other—with the incorrect identification of the species. Gilka (2011) gives a figure of the hypopygium of *C. brevicosta* which possibly most similar to *C. arctica* sp. n. (Lindeberg unpublished data) in the form of anal point and gonostylus. Chaetotaxy of the wing was the most variable feature among the examined far eastern specimens of *C. brevicosta* (see redescription).

The male of *C. brevicosta* is similar to *C. tokunagai* sp. n., but can be separated by having an $AR > 0.9$, anal point with short and conical apical part, basal part of superior volsella oval or triangular, sometimes with a small tubercle. The male of *C. brevicosta* is also similar to *C. monticola* (Lindeberg unpublished data), but it differs in the form of anal point and gonostylus. The pupa of *C. brevicosta* also closely resembles that of *C. tokunagai* sp. n., but may be separated by a bulb-shaped thoracic horn and by the presence of posterolateral patches of spines on tergite IV.

Morphological characteristics of the examined adult males and larvae of *C. brevicosta* agree with previous descriptions (Edwards 1937; Brundin 1947; Brundin 1948; Grimås & Wiederholm 1979; Pankratova 1983; Pinder & Reiss 1983; Cranston *et al.* 1989; Lindeberg unpublished data). The far eastern pupae of *C. brevicosta* have two median patches of shagreen on tergite VIII, while pupae described by Thienemann (1941) and Webb (1969) are characterized by the presence of one median patch of shagreen.

Distribution and ecology. *Constempellina brevicosta* (Edwards) is distributed across the Holarctic Region (Sæther & Spies 2004). This species was so far reported from various localities of the Northern part of European Russia (Zvereva 1969; Kuzmina 2001), Karelia (Zabolotsky 1965; Kulikova *et al.* 2009), Western Siberia (Stepanova 2007; Pozdeev 2010; Palatov & Chertoprud 2012), Eastern Siberia—Zabaikalye and Yakutia Region (Linevich 1981; Kravtsova 2000, 2010; our data), Kazakhstan (Minsarinova & Kiseleva 2007). All the above records are based on larval captures. Adults captures were recorded by Zelentsov (2013) and by Zelentsov & Shilova (1996) from Northern Karelia, by Shilova & Zelentsov (2000) from the North of Eastern Siberia. This species is widely distributed in Russian Far East: Primorye and Khabarovsk Territory, Magadan and Sakhalin Region, Kamchatka Peninsula (Makarchenko *et al.* 2005). It occurs also in China (Wang 2000) and Mongolia (Hayford 2005). The larvae live in the littoral zone of lakes, as well as in streams and rivers, building sand conical houses.

Key to the Russian Far East species of the genus *Constempellina* Brundin

Males

1. Wing length 1.10–1.35 mm. $AR < 0.9$. Anal point with long and parallel-sided apex. Basal part of superior volsella oval, without tubercle (Figs 1–5) *C. tokunagai* sp. n.
- Wing length 1.5–2.0 mm. $AR > 0.9$. Anal point with short conical apex. Basal part of superior volsella oval or triangular, sometimes with small tubercle (Figs 31–37). *C. brevicosta* (Edwards)

Pupae

1. Thoracic horn slender and long. Tergite IV usually without posterolateral groups of spines (sometimes 1–3 spines present). Segment VIII with spurs of different length (Figs 6–20) *C. tokunagai* sp. n.
- Thoracic horn robust, bulb-shaped, broadest at base and tapering to pointed apex. Tergite IV with posterolateral groups of spines. Segment VIII with approximately equal spurs (Figs 38–43). *C. brevicosta* (Edwards)

Fourth instar larvae

1. Pedestal of antenna with 2–7 apical tubercles. Blade usually not extend beyond apex of antenna (Figs 21–30) *C. tokunagai* sp. n.
- Pedestal of antenna with 1 apical tubercle. Blade extend far beyond apex of antenna (Brundin 1948, Figs 2, 7, 10, 15, 17; Pinder & Reiss 1983, Fig. 10.9 A–E). *C. brevicosta* (Edwards)

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