



## Redescription of two little-known Palaearctic species of *Pseudodiamesa* Goetghebuer (Diptera: Chironomidae: Diamesinae)

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During the revision of the genus *Pseudodiamesa* Goetghebuer it turned out that the descriptions of two little-known species, *P.* (s. str.) *gorodkovi* Makarchenko and *P.* (s. str.) *venusta* Makarchenko, made in the 80s of the last century are not detailed enough, are made in Russian, and published in hard-to-reach literary sources (Makarchenko 1983, 1984). Also the several important morphological features were missing in the original descriptions of these species. Therefore, it was decided to redescribe *P.* (s. str.) *gorodkovi* and *P.* (s. str.) *venusta* more thoroughly in accordance with the requirements of modern taxonomy, which is done in this article.

### Material and methods

The material of *Pseudodiamesa* (s. str.) *gorodkovi* Makarchenko originally was pinned as well as *P.* (s. str.) *venusta* Makarchenko was preserved in 70% ethanol. The adult males of both species were slide-mounted in the polyvinyl lactophenol following the recommendations of Moubayed and Langton (2019). The morphological terminology and abbreviations used below generally follow Sæther (1980). For some structures of the hypopygium, however, the terminology of Hansen & Cook (1976) and Oliver (1989) is used. The photographs were taken using an Axio Lab. A1 (Karl Zeiss) microscope, and then stacked using Helicon Focus software. The final illustrations were post-processed for contrast and brightness using Adobe® Photoshop® software.

Holotypes of the both species are deposited at the Zoological Institute of Russian Academy of Sciences, St. Petersburg, Russia (ZIN RAS). Paratypes are placed in the collection of the Federal Scientific Center of the East Asia Terrestrial Biodiversity, Far East Branch of Russian Academy of Sciences, Vladivostok, Russia (FSCEATB FEB RAS).

### Descriptions

#### *Pseudodiamesa* (s. str.) *gorodkovi* Makarchenko

(Figs. 1–5)

*Pseudodiamesa* (s. str.) *gorodkovi* Makarchenko, 1983: 1909; Ashe & O'Connor 2009: 304.

**Material examined.** Holotype: adult male, Russia, Karachay-Cherkess Republic, Caucasus Mountains, Teberda Nature Reserve, alt. 1300 m above sea level, 17.III.1964, leg. K. Gorodkov. Paratypes: 4 adult males, same data as holotype; 1 adult male, same data as holotype, except 25.XII.1959, leg. L. Arens.

#### *Adult male* (n = 3).

Total length 6.1–7.0 mm. Wing length 5.8–6.0 mm. Total length/wing length 1.0–1.16.

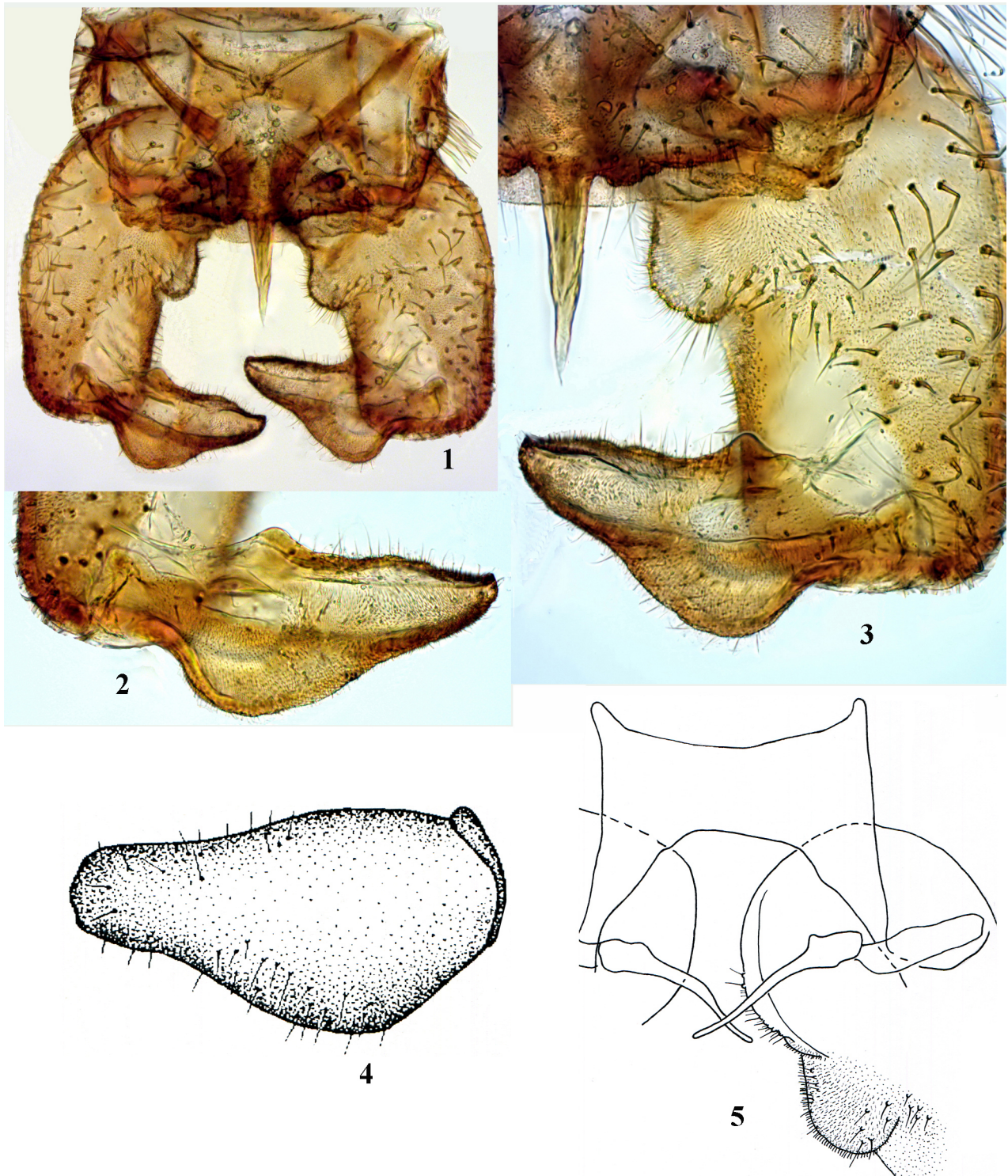
Coloration. Head, thorax, legs, and abdomen dark brown to black; antennae brown to dark brown; wings greyish.

Head. Eyes bare and extended dorsomedially. Temporal setae including 14–16 preoculars, 8–14 verticals and 8–10 postorbitals. Clypeus with 41–48 setae. Antenna with 13 flagellomeres and developed plume, setae of which 525–1689 µm long; pedicel without setae; terminal flagellomere with 1 subapical setae 64–72 µm long; AR 3.96–4.40. Palpomere lengths (in µm): 44–50; 186–193; 294–300; 248–252; 280–290. Palpomere 3 distally with sensilla capitata (diameter 16–20 µm). Palpomeres 1–5 length/head width 1.01–1.11.

Thorax. Antepnotum with 20–22 lateral setae. Acrostichals absent, dorsocentrals 38–43 (in 2 rows in anterior 2/3 and in 3 rows in posterior 1/3), prealars 51–56 (in 2–3 rows), scutellars ca 60–67.

Wing. Length 5.8–6.0 mm; width 1.40–1.44 mm. Membrane without setae. R and R<sub>1</sub> with 9–12 setae, R<sub>4+5</sub> with 2 setae on apex. Costa extension 150–160 µm long. RM length/MCu length 2.0–2.3. Anal lobe developed, outline rounded. Squama with *ca* 80–90 setae, 164–197 µm long, in 2 rows. VR 0.90–0.91.

Legs. Spur of fore tibia 136–172 µm long; spurs of mid tibia 96–113 µm and 92–101 µm; of hind tibia 140–143 µm and 76–101 µm long. Hind tibial comb with 12–16 setae. Lengths and proportions of leg segments as in Table 1.



**FIGURES 1–5.** Male of *Pseudodiamesa* (s. str.) *gorodkovi* Makarchenko. **1, 3**, hypopygium in dorsal view; **2**, gonostylus in dorsal view; **4**, gonostylus in ventral view; **5**, transverse sternapodeme, lateral aedeagal lobes and basal lobe of gonocoxite.

**TABLE 1.** Lengths (in  $\mu\text{m}$ ) and proportions of leg segments of *Pseudodiamesa* (s. str.) *gorodkovi* Makarchenko, male (n=3).

	fe	ti	ta <sub>1</sub>	ta <sub>2</sub>	ta <sub>3</sub>	ta <sub>4</sub>	ta <sub>5</sub>
P <sub>1</sub>	1920–1924	2080–2160	1280–1300	728–760	494–520	312–360	234–240
P <sub>2</sub>	2080	2080–2160	858–1280	520–800	520	234–300	218–240
P <sub>3</sub>	2340–2480	2704–2760	1248–1320	780–840	520–780	300–312	200–260

continued.

	LR	BV	SV	BR
P <sub>1</sub>	0.59–0.63	2.66–3.00	3.00–3.19	3.0–4.9
P <sub>2</sub>	0.41–0.59	2.97–3.78	4.46–4.85	2.1–2.2
P <sub>3</sub>	0.46–0.48	3.33–3.53	3.97–4.12	3.4–4.4

Hypopygium (Figs. 1–5). Tergite IX with 16–28 setae on each side, 56–68  $\mu\text{m}$  long. Anal point wide in basal part, tapering to pointed apex, 168–170  $\mu\text{m}$  long (Figs. 1–3). Laterosternite IX with 16–22 setae. Gonocoxite 520–525  $\mu\text{m}$  long; basal lobe of small size, rounded, with some long setae at inner part (Figs. 1, 3, 5). Gonostylus 358–361  $\mu\text{m}$  long, massive, in dorsal view with large lobe on the outer edge and with small triangular tubercle in the basal part along the inner edge (Figs. 1–3); shape in ventral view as in Fig. 4; apically with small tooth, megaseta absent. HR 1.45–1.63. Transverse sternapodeme 260  $\mu\text{m}$  long and 96–100  $\mu\text{m}$  wide, with short rod-like oral projections, anterior margin slightly concave (Fig. 5). Phallapodeme with lateral aedeagal lobe 184–192  $\mu\text{m}$  long, which more wide in basal 1/4 and narrow in distal 3/4, elongated in rounded apex (Fig. 5).

*Pupa and larva* unknown.

**Remarks.** I include this species in the *nivosa* group. The original description (Makarchenko 1983) did not contain data on the shape and structure of the transverse sternapodeme. Namely, these characters are present only in *P.* (s. str.) *gorodkovi* and are absent in other representatives of the genus. Also, this species differs from the known members of *Pseudodiamesa* by a short massive gonostylus with a large lobe along the outer edge and some other features specified in this redescription.

**Distribution.** Known only from type locality in Teberda Nature Reserve of the North Caucasus.

### *Pseudodiamesa* (s. str.) *venusta* Makarchenko

(Figs. 6–13)

*Pseudodiamesa* (s. str.) *venusta* Makarchenko, 1984: 62; Ashe & O'Connor 2009: 306.

**Material examined.** Holotype: adult male, Mongolian People's Republic, Khubsugul Lake basin, mouth of Khoroo-gol River, neighborhood of the Turtu Village, 3.VIII.1979, leg. E. Erbayeva. Paratypes: 3 adult males, same data as holotype, except 3–6.XIII.1979, leg. E. Erbayeva; 1 adult male, same data as holotype, except 14.XII.1980, leg. E. Erbayeva.

**Adult male** (n = 4).

Total length 6.1–7.3 mm. Wing length 5.4–5.5 mm. Total length/wing length 1.1–1.3.

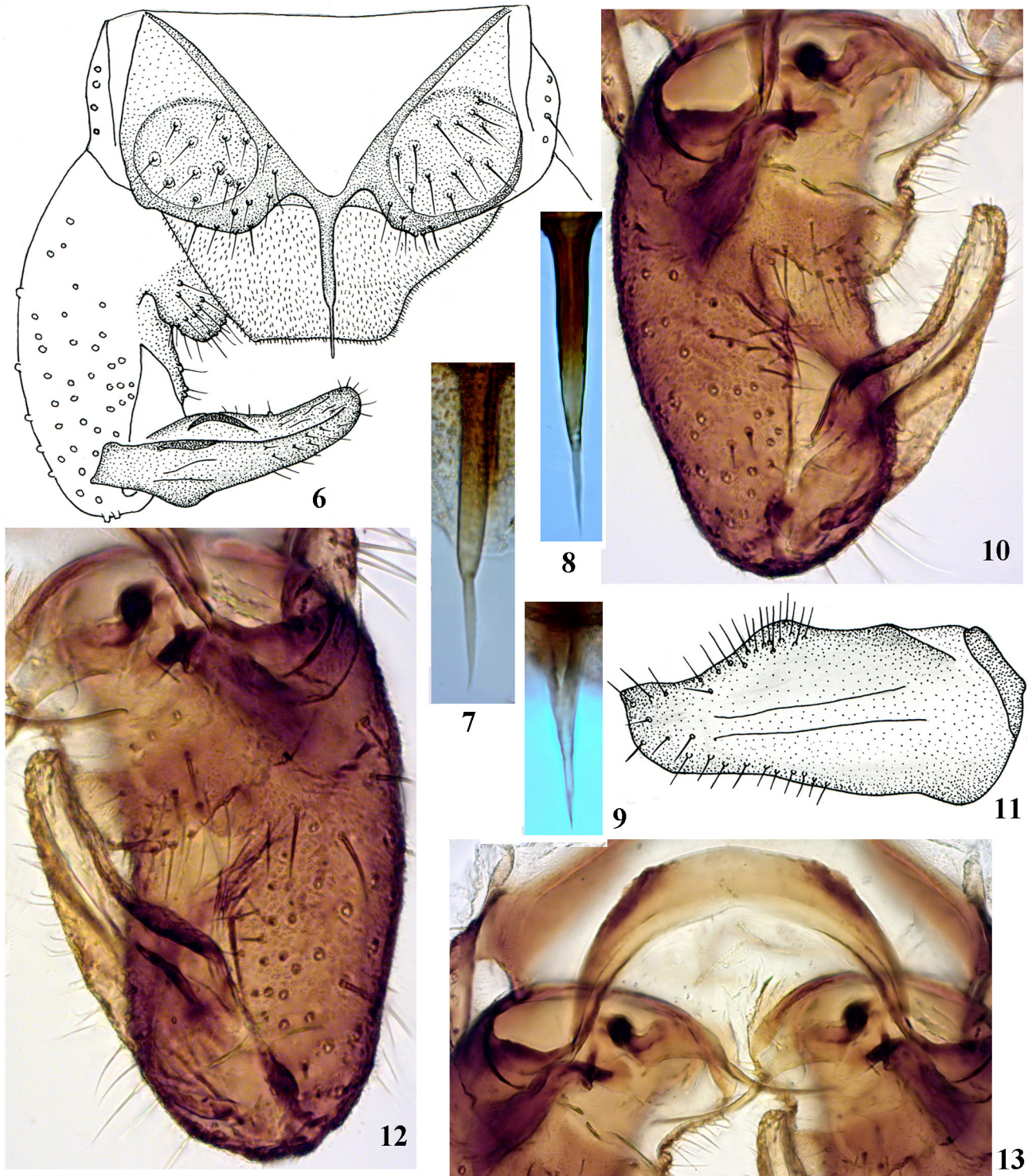
Coloration. Head, thorax, legs, and abdomen dark brown to black; antennae brown to dark brown; wings greyish.

Head. Eyes bare and extended dorsomedially. Temporal setae including 14–20 preoculars, 12–16 verticals and 14–20 postorbitals. Clypeus with *ca* 40–60 setae. Antenna with 13 flagellomeres and developed plume, setae of which 459–1190  $\mu\text{m}$  long; pedicel without setae; terminal flagellomere with 1 subapical setae 58–60  $\mu\text{m}$  long; AR 4.0–4.8. Palpomere lengths (in  $\mu\text{m}$ ): 40–48; 162–189; 232–248; 228–235; 244–252. Palpomere 3 distally with sensilla capitata (diameter 18–20  $\mu\text{m}$ ). Palpomeres 1–5 length/head width 0.94–0.97.

Thorax. Anteprenotum with 26–29 lateral setae. Acrostichals absent, dorsocentrals 52–54 (in 2 rows in anterior 2/3 and in 3–4 rows in posterior 1/3), prealars 40–53 (in 2–3 rows), scutellars *ca* 80–90.

Wing. Length 5.4–5.5 mm; width 1.2–1.3 mm. Membrane without setae. R and R<sub>1</sub> with 11–19 setae; R<sub>4+5</sub> with 0–3 setae on apex. RM length/MCu length 3.1–4.0. Anal lobe developed, outline rounded. Squama with *ca* 60–80 setae, 139–180  $\mu\text{m}$  long, in 2–3 rows. VR 1.0–1.02.

Legs. Spur of fore tibia 152–189  $\mu\text{m}$  long; spurs of mid tibia 96–118  $\mu\text{m}$  and 104–118  $\mu\text{m}$ ; of hind tibia 156–160  $\mu\text{m}$  and 100–109  $\mu\text{m}$  long. Hind tibial comb with 14–18 setae. Lengths and proportions of leg segments as in Table 2.



**FIGURES 6–13.** Male of *Pseudodiamesa* (s. str.) *venusta* Makarchenko. **6**, hypopygium in dorsal view; **7–9**, anal point; **10**, **12**, gonocoxite and gonostylus in dorsal view; **11**, gonostylus in ventral view; **13**, transverse sternapodeme and lateral aedeagal lobes.

Hypopygium (Figs. 6–13). Tergite IX with 30–32 setae on each side, 40–76  $\mu\text{m}$  long. Anal point in most specimens with a narrow seta-like distal part (Figs. 6–8), and in only one male it is wide at the base and tapering to pointed apex (Fig. 9), 140–172  $\mu\text{m}$  long. Laterosternite IX with 12–16 setae. Gonocoxite 376–392  $\mu\text{m}$  long; basal lobe large, rounded, with some long setae on the surface (Figs. 6, 10, 12). Gonostylus 240–292  $\mu\text{m}$  long, in dorsal view wide in basal half, and narrower finger-like in the distal half (Figs. 6, 10, 12); shape in ventral view as in Fig. 11; megaseta absent. HR 1.34–1.57. Transverse sternapodeme arc-shaped, 296–308  $\mu\text{m}$  long and 36–40  $\mu\text{m}$  wide, without oral projections (Fig. 13). Lateral

aedeagal lobe of phallapodeme 220–288 µm long, with wide basal 1/3 and narrow distal 2/3, slightly curved and elongated in rounded apex (Fig. 13).

**TABLE 2.** Lengths (in µm) and proportions of leg segments of *Pseudodiamesa* (s. str.) *venusta* Makarchenko, male (n=4).

	fe	ti	ta <sub>1</sub>	ta <sub>2</sub>	ta <sub>3</sub>	ta <sub>4</sub>	ta <sub>5</sub>
P <sub>1</sub>	1840–1872	2040–2080	1320–1456	760–780	440–494	240–260	234–240
P <sub>2</sub>	2000–2028	2000–2080	988–1000	560–572	320–390	200–208	200–208
P <sub>3</sub>	2280–2288	2652–2680	1456–1520	780–840	468–480	260–280	240–260

continued.

	LR	BV	SV	BR
P <sub>1</sub>	0.65–0.70	2.84–3.06	2.71–2.94	5.0–5.2
P <sub>2</sub>	0.48–0.50	3.70–3.91	4.00–4.06	3.0–3.1
P <sub>3</sub>	0.55–0.57	3.52–3.62	3.26–3.39	5.0–5.3

Hypopygium (Figs. 6–13). Tergite IX with 30–32 setae on each side, 40–76 µm long. Anal point in most specimens with a narrow seta-like distal part (Figs. 6–8), and in only one male it is wide at the base and tapering to pointed apex (Fig. 9), 140–172 µm long. Laterosternite IX with 12–16 setae. Gonocoxite 376–392 µm long; basal lobe large, rounded, with some long setae on the surface (Figs. 6, 10, 12). Gonostylus 240–292 µm long, in dorsal view wide in basal half, and narrower finger-like in the distal half (Figs. 6, 10, 12); shape in ventral view as in Fig. 11; megaseta absent. HR 1.34–1.57. Transverse sternapodeme arc-shaped, 296–308 µm long and 36–40 µm wide, without oral projections (Fig. 13). Lateral aedeagal lobe of phallapodeme 220–288 µm long, with wide basal 1/3 and narrow distal 2/3, slightly curved and elongated in rounded apex (Fig. 13).

**Pupa and larva** unknown.

**Remarks.** I include this species in the *nivosa* group. In the original description (Makarchenko 1984), a mistake was made in indicating the terminal spine on the gonostylus. An analysis of the gonostylus of all available specimens showed that one of the setae near the apex was taken as a short terminal spine. Also, there was no information on the shape and structure of the transverse sternapodeme and there were inaccuracies in the number of setae and measurements of some parts of the male adult. *P.* (s. str.) *venusta* differs from other members of the genus mainly in the structure of the hypopygium, namely in the shape of the gonostylus which is wide in the basal part and finger-shaped in the distal part, as well as in the shape and structure of the gonocoxite, the anal point, and other features given in the redescription.

**Distribution.** Known only from type locality in Khubsugul Lake basin (Mongolia).

## References

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