

Chironomids of *Prosmittia* Brundin (Diptera: Chironomidae: Orthocladiinae) from the Russian Far East

Хирономиды рода *Prosmittia* Brundin (Diptera: Chironomidae: Orthocladiinae) с российского Дальнего Востока

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КЛЮЧЕВЫЕ СЛОВА: Chironomidae, Orthocladiinae, *Prosmittia*, новый вид, российский Дальний Восток.

ABSTRACT. The male imagines of *Prosmittia tuiensis* sp.n. is described and figured, the male of rare species *P. rectangularis* Tuiskunen, 1985 is redescribed and new information on taxonomy and distribution of *P. kamiqurta* (Sasa et Hirabayashi, 1991) is adduced by materials from the Russian Far East. A key to the males of the *Prosmittia* species occurring in the Russian Far East is provided.

РЕЗЮМЕ. По материалу с российского Дальнего Востока приведены иллюстрированное описание имаго самца нового для науки вида хирономид *Prosmittia tuiensis* sp.n., а также переописание самца редкого вида *P. rectangularis* Tuiskunen, 1985 и новая информация по таксономии и распространению *P. kamiqurta* (Sasa et Hirabayashi, 1991). Дана определительная таблица по самцам известных с Дальнего Востока России видов *Prosmittia*.

Introduction

The genus *Prosmittia* was erected by Brundin [1956] for *Prosmittia jemtlandica* (originally *Pseudosmittia jemtlandica* Brundin, 1947) and includes about 18 Palaearctic species [Sæther et al., 2000; Yamamoto, 2004]. Most species of the genus were described from Japan and only two species, *P. jemtlandica* (Brundin) and *P. rectangularis* Tuiskunen, are known for Europe. However, descriptions and figures of some Japanese species are not so clear and a revision is desirable. Pupae and larvae for all known species are unknown.

During the preparation of a key to the chironomids of the Russian Far East we discovered 2 species of *Prosmittia* – *P. kamiqurta* (Sasa et Hirabayashi) and *P. rectangularis* Tuiskunen [Makarchenko & Makarchenko, 2006]. The first species was recorded for Sakhalin and Kurile

Islands, the second ones was reported only for Chukotka region. After published of chironomid key book we collected males of both species in a new regions of the Far East and found new species — *P. tuiensis* sp.n.

The description of *P. tuiensis* sp.n. and additional new information for *P. kamiqurta* and *P. rectangularis* are adduced below. A key to the males of the *Prosmittia* species occurring in the Russian Far East is provided.

Materials and Methods

The morphological nomenclature follows Sæther [1980]. Material at first was fixed by 70% ethanol or Udemans solution, later mounted on slides following the procedure outlined by Makarchenko [1985].

Holotype of a new species and other examined material are deposited in the Institute of Biology and Soil Sciences, Far East Branch of the Russian Academy of Sciences, Vladivostok, Russia.

Taxonomy

Prosmittia kamiqurta (Sasa et Hirabayashi, 1991) (Figs 1–8)

Shinanoyusurika kamiqurta Sasa & Hirabayashi, 1991: 116 [Holotype N A203: 61; Japan, Honshu, Nagano Prefecture, Kamikochi, 18.V. 1990 (M. Sasa, K. Hirabayashi); investigated].

Prosmittia kamiqurta: Sæther et al., 2000: 183; Makarchenko & Makarchenko, 2004: 219, 2006: 352; Yamamoto, 2004: 77.

MATERIAL. Sakhalin Island: 4♂♂, Leonidovka River, about 16 km upper of Leonidovo Village of Poronaysky district, Poronai River basin, light trap, 3–5. VIII.2001, leg. E. Makarchenko; 1♂, Sukharny Stream, Smidt Peninsula, Okhinsky district, 12.VIII. 2003, leg. E. Makarchenko; Kurile Islands: 3♂♂, Kharimkotan Island, pond in about 2–3 km from Severgin Bay, 8.VIII. 1996, leg. V. Teslenko; 1♂, Paramushir

Table 1
Length (μm) and proportions of leg segments of *Prosmittia rectangularis*, male (n=2)
Таблица 1
Длина члеников ног (мкм) и их индексы самца *Prosmittia rectangularis* (n=2)

P	f	t	ta ₁	ta ₂	ta ₃	ta ₄	ta ₅	LR	SV	BV
P ₁	576–640	720–784	320–352	224–256	144–160	64–80	56–64	0.44–0.45	4.03–4.05	3.17–3.31
P ₂	608–664	640–704	288–320	160–176	128	64	56	0.45	4.27–4.33	3.76
P ₃	656–736	704–752	352–400	192–224	160–192	64–80	56–64	0.50–0.53	3.72–3.86	3.37–3.63

Island, unnamed stream of Bolshaia River basin, 3.VIII. 1996, leg. V. Teslenko; 1♂, Onekotan Island, unnamed stream near Subbotin Cape, 5.VIII. 1996, leg. P. Oberg; 25♂♂, Ekarma Island, near Shpilov Cape, 10.VIII. 1996, leg. V. Teslenko; 1♂, Shiashkotan Island, unnamed stream of Pikovaia Mount, 12.VIII. 1996, leg. V. Teslenko; Khabarovsk Territory: 1♂, Tshernaia River, branch of Psyu River, Tatarsky Bay basin, Ul'chsky district, 3.VIII. 2005, leg. E. Makarchenko.

DIAGNOSIS. Male imago. Total length 2.15–2.9 (2.64) (n=9) mm. Wing length 1.88–2.18 mm. AR 0.81–1.21 (0.97) (n=9); for males from Sakhalin Island AR 1.0–1.21; for males from Kuril Islands AR 0.81–0.90; for males from Khabarovsk Territory AR 1.19–1.21. Antennal subapical seta length 40–48 mm. Pronotum with 1–2 lateral setae. Dorsocentrals 6–10, acrostichals absent, prealars 3. Scutellum with 4–8 setae in one row. Anal lobe of wing reduced, squama with 1–2 setae. LR₁ 0.49–0.54; SV₁ 3.21–3.53; BV₁ 2.79–3.26. Anal point length 24–60 mm, covered by microtrichia and with short setae (about 8 mm long) in apical part (Figs 2–7). Tergite IX with 14–18 short setae, which mostly distributed around anal point. Inferior volsella of gonocoxite with pronounced roundish-angled dorsal lobe (Fig. 1). Gonostylus more wide in basal half, with megaseta and apical crista dorsalis (Figs 1, 8). HR 2.04–2.18.

REMARKS. Redescription of this species was published by materials from Sakhalin and Kurile Islands [Makarchenko & Makarchenko, 2004]. Finding of *P. kamiqarta* in continental part of the Far East is for the first time.

DISTRIBUTION. Japan: Honshu Island [Yamamoto, 2004]. Russian Far East: Sakhalin and Kurile Islands, Khabarovsk Territory (Tatarsky Bay basin).

Prosmittia rectangularis Tuiskunen, 1985
(Figs 9–11)

Prosmittia rectangularis Tuiskunen, 1985:55; Sæther et al., 2000: 183; Makarchenko & Makarchenko, 2006: 352.

MATERIAL. 3♂♂, stream of Amguema River basin, 105 km of route from Evvekinot Village to Iultin Village, Chukotsky Peninsula, 30.VIII. 1976, leg. E. Makarchenko; 1♂, Chegdomynka River, branch of Bureia River (Amur River basin), Chegdomyn district, Khabarovsk Territory, 24.IX. 2005, leg. E. Makarchenko; 1♂, Chernaia River, branch of Psyu River, Tatarsky Bay basin, Ul'chsky district, Khabarovsk Territory, 3.VIII. 2005, leg. E. Makarchenko; 2♂♂, Takantsy River, branch of Bureia River (Amur River basin), Chegdomyn district, Khabarovsk Territory, 19–20.IX. 2006, leg. E. Makarchenko.

DESCRIPTION. Male imago (n=2). Total length 2.5–2.6 mm. Total length/wing length 1.56–1.63. Coloration dark brown.

Head. Eyes naked, without dorsomedial elongation. Temporal setae 7–9, including 3–4 verticals and 4–5 postorbital. Clypeus with 5–7 setae. Antenna with 13 flagellomeres and well developed plume; AR 1.12–1.20. Lengths (μm) of palpomeres – 16 : 38 : 88 : 80 : 100. Head width/palp length 1.24.

Thorax. Anteprotum with 1–2 lateral setae. Acrostichals 0, dorsocentrals 5–8, prealars 3. Scutellum with 4 setae.

Wing. Length 1.58–1.64 mm. Anal lobe slightly reduced. Squama without setae. R with 2–3 setae, R₁ and R₄₊₅ without setae.

Legs. BR₁ 2.8, BR₂ 3.0, BR₃ 3.0. Spur of front tibia 48 μm long. Spurs of middle tibia 24 μm and 26 μm long, of hind tibia 48 μm and 20 μm long. Hind tibial comb with 12 setae. Length (μm) and proportions of legs as in Table 1.

Hypopygium (Figs 9–11). Tergite IX with 16–18 short setae and triangle in view from above (Figs 10–11) or nose-shaped in side view (Fig. 9) dark brown anal point 28–30 μm long; laterosternite IX with 3 setae. Transverse sternapodeme arched, 104 μm long. Virga with 2 spines 18–32 μm long. Gonocoxite 224 μm long. Dorsal part of inferior volsella right-angled, ventral part like rounded elongate lobe covered by short setae (Figs 9, 11). Gonostylus 88 μm long, enlarged in distal half, without crista dorsalis. HR 2.6.

DIAGNOSIS. The male of *P. rectangularis* is separated from other known species of *Prosmittia* by rectangular shape of dorsal part of inferior volsella and by shape of gonostylus which enlarged in distal half, without crista dorsalis.

REMARKS. *P. rectangularis* was described by single male imagines from Finland [Tuiskunen, 1985] and long time had not any records in another regions of Palaearctic. We found some males of this species at first in Chukotsky Peninsula of the northern part of the Far East but specimens were in bad condition. Finding of males in Khabarovsk Territory is permit to redescribe of *P. rectangularis* and more detail to study of hypopygium structures.

DISTRIBUTION. Finland: Finnish Lapland. Russian Far East: Chukotsky Peninsula, Amur River basin, Tatarsky Bay basin.

Prosmittia tauiensis Makarchenko et Makarchenko,
sp.n.
(Figs 12–14)

MATERIAL. Holotype: ♂, Khayandzha River, Taui River basin, Okhotsk Sea coast of Magadan region, Russian Far East, 5.IX. 2002, leg. E. Khamenkova.

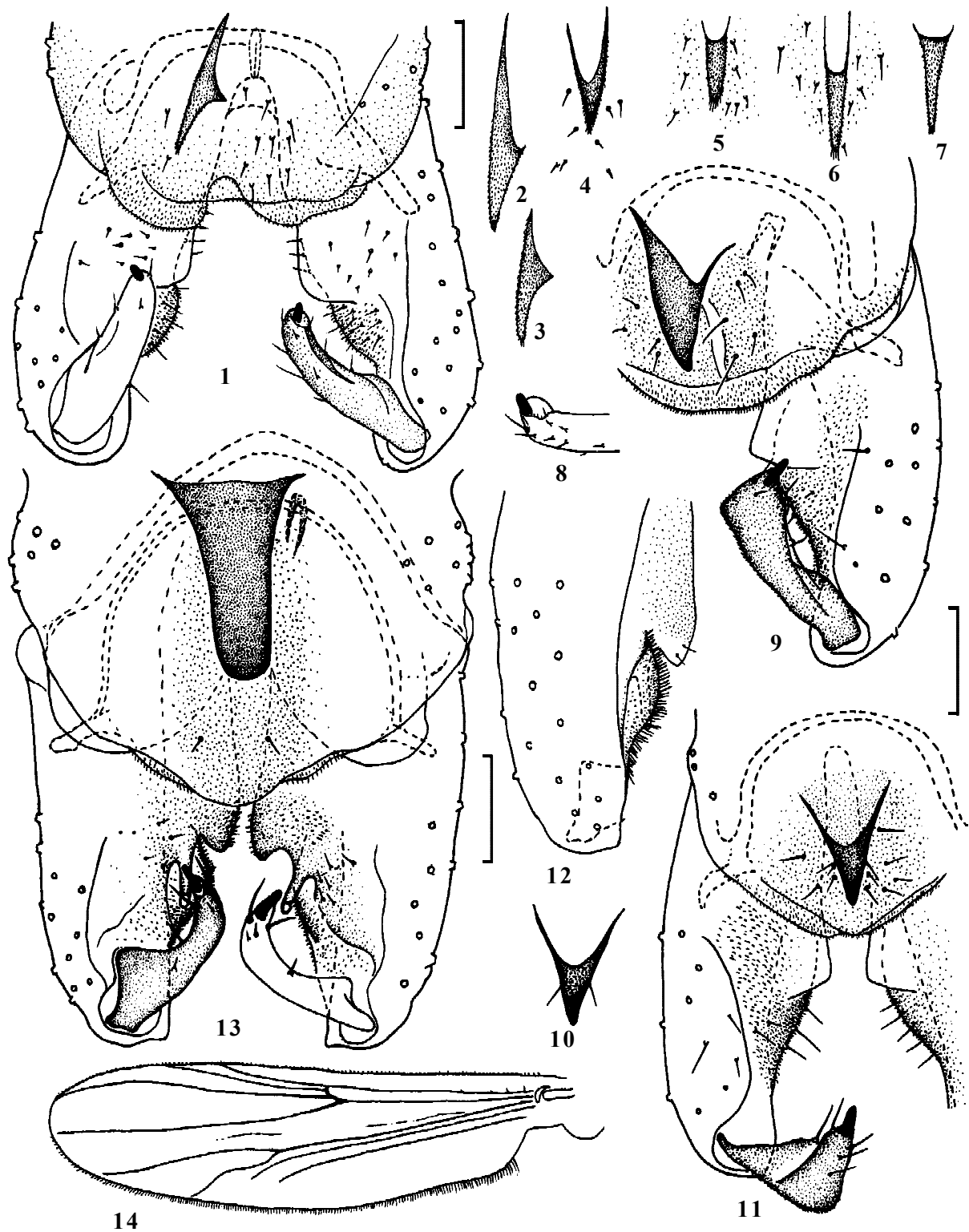
DESCRIPTION. Male imago. Total length 2.8 mm. Total length/wing length 1.31. Coloration dark brown.

Head. Eyes naked, without dorsomedial elongation. Temporal setae 9, including 5 verticals, 4 postorbital. Clypeus with 7 setae. Antenna with 13 flagellomeres and well developed plume; AR 1.48–1.50. Lengths (μm) of palpomeres — 28 : 63 : 125 : 113 : 163. Head width/palp length 1.04.

Thorax. Anteprotum without lateral setae. Acrostichals 0, dorsocentrals 8–9, prealars 3. Scutellum with 4 setae.

Wing. Typical for genus (Fig. 14). Length 2.13 mm. Anal lobe slightly reduced. Squama without setae. R with 4 setae, R₁ without setae, R₄₊₅ with 1 setae in the end.

Legs. BR₁ 3.0, BR₂ 2.86, BR₃ 4.5. Spur of front tibia 60 μm long. Spurs of middle tibia 28 μm and 30 μm long, of hind tibia 53 μm and 23 μm long. Hind tibial comb with 16 setae. Length (μm) and proportions of legs as in Table 2.



Figs 1-14. Details of males imagines of *Prosmittia kaniquarta* (1-8), *Prosmittia rectangularis* (9-11) and *Prosmittia tuiensis* sp.n. (12-14): 1, 9, 11, 13 — total view of hypopygium, dorsal view; 2-3 — anal point, lateral view; 4-7, 10 — anal point, dorsal view; 8 — distal part of gonostylus; 12 — gonocoxite with IVo, ventral view; 14 — wing. Scale bars — 50 μ m.

Рис. 1-14. Детали строения самцов *Prosmittia kaniquarta* (1-8), *Prosmittia rectangularis* (9-11) и *Prosmittia tuiensis* sp.n. (12-14): 1, 9, 11, 13 — общий вид гипопигия, сверху; 2-3 — анальный отросток, сбоку; 4-7, 10 — анальный отросток, сверху; 8 — дистальная часть гоностила; 12 — гонококсит с нижним придатком, снизу; 14 — крыло. Масштабные линейки — 50 мкм.

Table 2
Length (μm) and proportions of leg segments of *Prosmittia tauiensis* sp.n., male (n=1)
Таблица 2
Длина члеников ног (мкм) и их индексы самца *Prosmittia tauiensis* sp.n. (n=1)

P	f	t	ta ₁	ta ₂	ta ₃	ta ₄	ta ₅	LR	SV	BV
P ₁	760	950	420	300	180	90	70	0.44	4.07	3.33
P ₂	860	850	410	210	170	80	70	0.48	4.17	4.0
P ₃	880	940	475	270	230	90	70	0.51	3.83	3.48

Hypopygium (Figs 12–13). Tergite IX with long (92 μm) and wide (48–52 μm) dark brown to black anal point covered by microtrichia and with 2 short setae; laterosternite IX with 9–10 setae. Transverse sternapodeme arched. Virga horse-shoe-shaped, 58 μm long. Gonocoxite 232 μm long. Inferior volsella consists of dorsal and ventral parts; dorsal part with nose-shaped proximal lobe and finger-shaped distal lobe 32 μm long (Fig. 13); ventral part like rounded elongate lobe covered by short setae (Fig. 12). Gonostylus 68–76 μm long, curved, in basal part enlarged. Megaseta 16 μm long. HR 3.1–3.4.

DIAGNOSIS. The male of *P. tauiensis* sp.n. is separated from other known species of *Prosmittia* by long and wide anal point, by structure and shape of inferior volsella which consists of dorsal and ventral parts; dorsal part with nose-shaped proximal lobe and finger-shaped distal lobe; ventral part like rounded elongate lobe covered by short setae.

ETYMOLOGY. The name of this species refers to Taiu River basin.

DISTRIBUTION. Known only from type locality – Taiu River basin, Okhotsk Sea coast of Magadan region of the Russian Far East.

KEY TO SPECIES OF *PROSMITTIA* BRUNDIN OF THE RUSSIAN FAR EAST (MALES)

- 1 Dorsal part of inferior volsella double, with nose-shaped proximal lobe and finger-shaped distal lobe. Anal point long and wide (Figs 12–13) *P. tauiensis* sp.n.
- Dorsal part of inferior volsella simple, roundish-angled or right-angled. Anal point more short and different shape 2
- 2 Dorsal part of inferior volsella roundish-angled. Gonostylus enlarged in basal half and with apical crista dorsalis (Figs 1–8) *P. kamicuarta* (Sasa et Hirabayashi)
- Dorsal part of inferior volsella right-angled. Gonostylus enlarged in distal half, without crista dorsalis (Figs 9–11) *P. rectangularis* Tuiskunen

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