

## New species and records of *Beckidia* Sæther (Diptera: Chironomidae) from the Russian Far East

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### Abstract

Two new species of *Beckidia* Sæther, *B. biraensis* and *B. connexa*, from the Amur River Basin are described and figured as males. The male of *B. tethys* (Townes) is redescribed and figured and the species is recorded for the first time from Russia. The generic diagnosis is emended and a key to the males of *Beckidia* from the Holarctic Region is given.

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

### Introduction

The genus *Beckidia* Sæther, 1979 (syn. *Beckiella* Sæther, 1977) belongs in the *Harnischia* complex and is represented by two species in the Palaearctic Region, the Holarctic *B. tethys* (Townes, 1945) and the Palaearctic *B. zabolotzskyi* (Goetghebuer, 1938) (Sæther *et al.* 2000). Prior to our investigation of the chironomid fauna of the Russian Far East, only *B. zabolotzskyi* was known as larvae from the Amur River Basin and the Khanka Lake (Konstantinov 1950, 1952). However, as a result of the ongoing study of male imagines of the non-biting midges, three additional species have been found in the Primorye and Khabarovsk regions. Two new species, *B. biraensis* and *B. connexa* were taken in the Amur River Basin and males of *B. tethys* were collected in the Ussury River and in Khanka Lake. The two new species are described below and *B. tethys* (Townes) is redescribed based on the Russian material. A key to the known species of *Beckidia* from the Holarctic Region is given.

**Material and methods**

The material was preserved in 70% ethanol and slide-mounted in Fora-Berlese solution. Morphological terminology and abbreviations follow Sæther (1980). Holotypes and paratypes of the new species are deposited in the Institute of Biology and Soil Sciences FEB RAS, Vladivostok, Russia.

***Beckidia* Sæther**

*Beckidia* Sæther, 1979: 315.

*Beckiella* Sæther, 1977: 119 (preoccupied).

**Type species:** *Harnischia* (*Cladopelma*) *tethys* Townes, 1945, by objective synonymy.

**Other included species:** *Beckidia biraensis* new species, *B. connexa* new species, *B. hirsti* (Freeman, 1957), and *B. zabolotzskyi* (Goetghebuer, 1938).

Emended diagnosis (male)

As in Sæther (1977: 119) and Cranston *et al.* (1989: 364) with the following emendations: Thorax: acrostichals present or absent. Hypopygium: inferior volsella small, without setae, sometimes fully or partly fused with superior volsella.

**Key to Holarctic males of *Beckidia* Sæther**

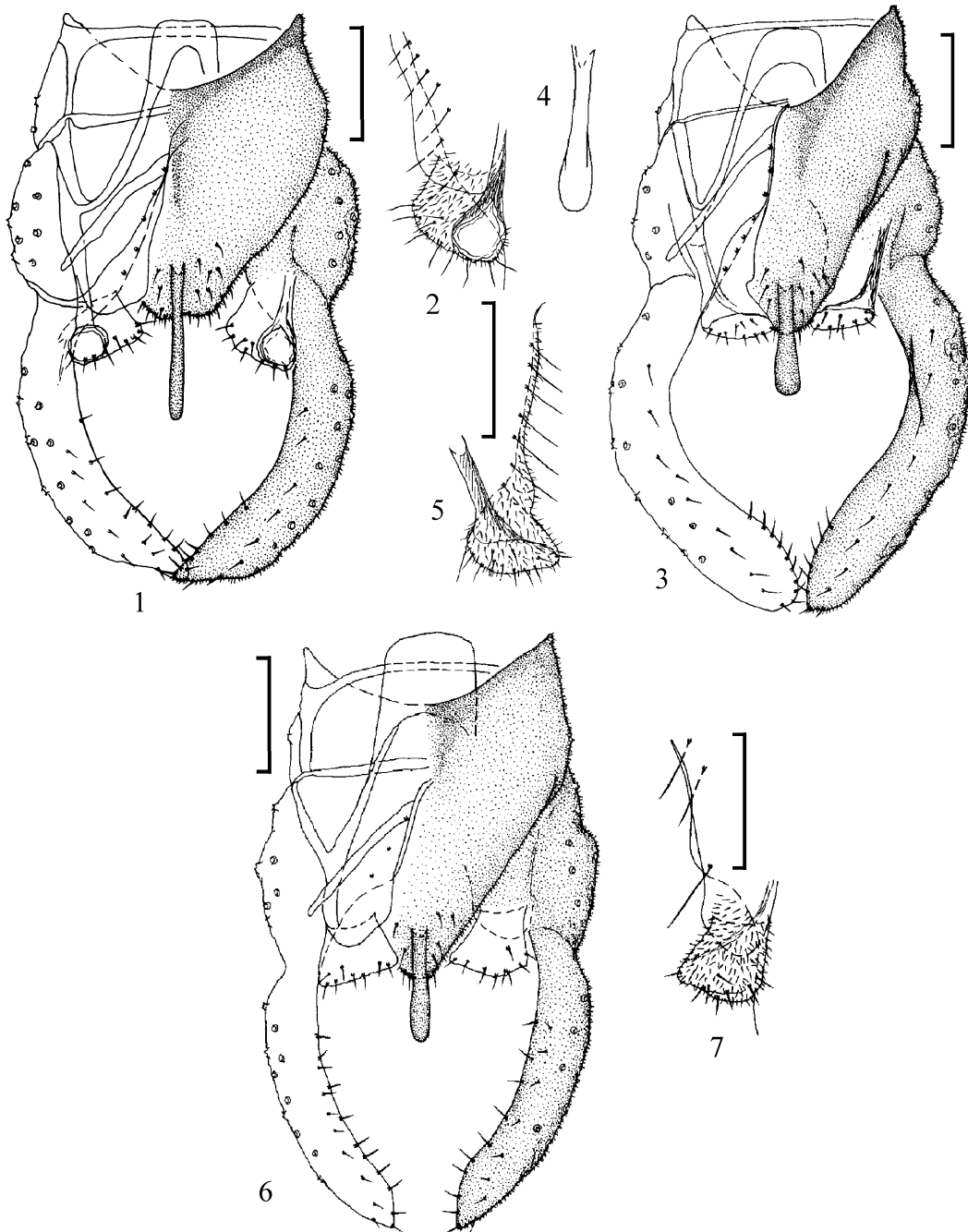
1. Legs green; superior volsella about 3 times as wide at apex as at base .....  
..... *B. zabolotzskyi* (Goetghebuer)
- Legs yellowish brown; superior volsella less than twice as wide at apex as at base .... 2
2. Total length 5 mm; AR 2.71; acrostichals present; dorsolateral part of superior volsella without microtrichia (Figs. 1–2) ..... *B. biraensis* new species
- Total length 3.2–3.5 mm; AR 1.6–1.8; acrostichals absent; superior volsella covered with microtrichia ..... 3
3. Tergites I–IV (V/VI) with brown, transverse band along distal margin; superior volsella fused with inferior volsella; gonostylus widest at about apical one-third (Figs. 3–5) ..... *B. connexa* new species
- Abdomen yellowish; superior volsella partially fused with inferior volsella; gonostylus widest medially (Figs. 6–7) ..... *B. tethys* (Townes)

***Beckidia biraensis* new species**

(Figs. 1–2)

**Type material:** Holotype: male, RUSSIA, Khabarovsk Territory, Amur River Basin, Bira River, 4 km from Zheltyei Jar Village, 12–15.viii.2004, T. Tiunova.

**Etymology:** From the type locality Bira River, and the Latin suffix *-ensis* denoting locality.



**FIGURES 1–7.** Male imagines of *Beckidia biraensis* new species (1–2), *Beckidia connexa* new species (3–5) and *Beckidia tethys* (Townes) (6–7). **1, 3, 6.** Hypopygium. **2, 5, 7.** Superior and inferior volsella. **4.** Anal point. Scale bars: 50  $\mu$ m.

## Diagnostic characters

The new species can be separated from other species of *Beckidia* by the following combination of characters: Total length 5.0 mm; AR 2.71; tergites yellowish; scutum with 4 acrostichals; anal point long, narrow and parallel-sided; dorsolateral part of superior volsella without microtrichia; gonostylus widest medially.

**Male** (n = 1)

Total length 5.0 mm. Wing length 2.5 mm. Total length/wing length 2.0.

*Coloration.* Scapus yellowish brown, flagellomeres dark brown; thorax pale yellow, with mesonotal stripes and two-third of postnotum yellow; front leg yellowish brown except for distal one-third of tibia, distal half of  $ta_1$  and  $ta_{2-5}$  brown; mid and hind leg with femur yellowish brown and  $ta_{1-5}$  gradually darker towards apex; abdomen yellowish.

*Head.* Frontal tubercle absent. Verticals 12–13. Clypeus with 10 setae. Antenna 1482  $\mu\text{m}$  long, AR 2.71. Maxillary palp 554  $\mu\text{m}$  long; lengths of segments II–V (in  $\mu\text{m}$ ): 59, 113, 158, 225. Antenna length/palp length 2.68.

*Thorax.* Anteprenotals 0, acrostichals 4, dorsocentrals 9, prealars 3–4, supraalars 1. Scutellum with 5 setae.

*Wing.* Width 0.74 mm. VR 1.11. R with 2–3 setae,  $R_1$  without setae,  $R_{4+5}$  with 4 apical setae, brachiolum with 2–3 setae. Squama with 5–7 setae.

*Legs.* Combs of mid and hind tibiae each with 2 spurs, 23  $\mu\text{m}$  long. Length and proportions of legs as in Table 1.

*Hypopygium* (Figs. 1–2). Anal tergite bands of Y-type. Anal point long and narrow, 108  $\mu\text{m}$  long, 9  $\mu\text{m}$  wide, placed preapically on tergite IX. Laterosternite IX with 3 setae. Transverse sternapodeme 45  $\mu\text{m}$  long. Gonocoxite 135  $\mu\text{m}$  long, with 6–7 setae. Superior volsella pad-like, 50–54  $\mu\text{m}$  long, 45–54  $\mu\text{m}$  wide, with 13 setae, with microtrichia except in dorsolateral part. Inferior volsella projecting but not lobe-like, 126  $\mu\text{m}$  long. Gonostylus 180  $\mu\text{m}$  long, 41  $\mu\text{m}$  wide, slightly curved, widest medially. HR 0.75.

## Distribution

Known from the type locality only, Bira River in the Amur River Basin.

**TABLE 1.** Length (in  $\mu\text{m}$ ) and proportions of legs of *Beckidia biraensis* new species, male (n = 1).

	fe	ti	$ta_1$	$ta_2$	$ta_3$	$ta_4$	$ta_5$	LR	SV	BV	BR
$P_1$	1045	760	1330	741	570	418	209	1.75	1.36	1.62	2.7
$P_2$	1045	855	608	247	190	133	114	0.71	3.13	3.67	2.8
$P_3$	1121	1159	817	399	380	209	133	0.70	2.79	2.76	3.6

***Beckidia connexa* new species**

(Figs. 3–5)

**Type material:** Holotype: male, RUSSIA, Khabarovsk Territory, Amur River opposite of Khabarovsk, 11.viii.2004, T. Tiunova. Paratypes: 1 male, label as holotype; 2 males, Amur

River Basin, Tunguska River near Nikolaevka Village, 1.viii.2003, O. Zorina; 1 male, Amur River Basin, Bidzhan River near Preobrazhenovka Village, 4.viii.2003, T. Tiunova.

**Etymology:** From Latin *connexa*, fused, referring to the structure of the superior and inferior volsellae.

Diagnostic characters

The new species can be separated from other species of *Beckidia* by the following combination of characters: Total length 3.2–3.5 mm; AR 1.78; tergites I–IV (V/VI) with brown transverse band along distal margin; acrostichals absent; anal point widest at about apical one-third; superior volsella with microtrichia and fused with inferior volsella; gonostylus widest at about apical one-third.

**Male** (n = 4)

Total length 3.2–3.5 mm. Wing length 1.6–1.8 mm. Total length/wing length 2.0–2.06.

**Coloration.** Scapus brown on dorsal side and yellow on ventral side, flagellomeres dark brown; ground color of thorax pale yellow, mesonotal strips yellow, two-third of postnotum yellowish brown; front leg yellowish brown, except for distal two-thirds of ti and ta<sub>1–5</sub> brown; mid and hind legs with yellow femur and tibia, ta<sub>1–5</sub> gradually darker toward apex; abdomen yellowish with brown transverse bands along distal margin of tergites I–IV, sometimes tergites V and VI also with brown bands, tergite IX brownish.

**Head.** Frontal tubercle absent. Verticals 7–9. Clypeus with 9–10 setae. Antenna 950 µm long, AR 1.78. Maxillary palp 509–545 µm long, lengths of segments II–V (in µm): 50, 113, 135–158, 207–225. Palp length/head width 1.03–1.10; antenna length/palp length 1.74–1.80.

**Thorax.** Anteprenotals 0, acrostichals 0, dorsocentrals 7–9, prealars 3–4, supraalars 1. Scutellum with 3–4 setae.

**Wing.** Width 0.51–0.55 mm. VR 1.10–1.15. R and R<sub>1</sub> without setae, R<sub>4+5</sub> with 2 apical setae, brachiolum with 2 setae. Squama with 5–7 setae.

**Legs.** Combs of mid and hind tibiae with 2 spurs, 23 µm long. Length and proportions of legs as in Table 2.

**TABLE 2.** Length (in µm) and proportions of legs of *Beckidia connexa* new species, 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>	LR	SV	BV	BR
P <sub>1</sub>	703– 722	456– 475	798– 855	380– 399	323– 361	247– 266	133– 152	1.75– 1.80	1.38– 1.45	1.75– 1.81	2.2– 2.4
P <sub>2</sub>	665	494– 513	323	152– 171	114– 133	95	76– 86	0.63– 0.65	3.59– 3.65	3.06– 3.39	2.6– 4.0
P <sub>3</sub>	760– 779	741– 760	494	266– 285	228– 266	152– 162	114	0.65– 0.67	3.08	2.44– 2.65	3.0– 3.7

**Hypopygium** (Figs. 3–5). Anal tergite bands of H-type. Anal point spatulate, 50 µm long, 14 µm wide, placed preapically on tergite IX. Laterosternite IX with 1–3 setae. Transverse sternapodeme 36 µm long. Gonocoxite 90–104 µm long, with 5–7 setae.

Superior volsella pad-like, 45–50  $\mu\text{m}$  long, 36  $\mu\text{m}$  wide, with 10–12 setae and microtrichia, fused with inferior volsella. Gonostylus 144–158  $\mu\text{m}$  long, 32–41  $\mu\text{m}$  wide, curved, widest at about distal one-third. HR 0.62–0.66.

Distribution

Known from the type locality only, the Amur River Basin.

***Beckidia tethys* (Townes)**

(Figs. 6–7)

*Harnischia (Cladopelma) tethys* Townes, 1945: 152, fig. 174.

*Beckiella tethys* (Townes); Sæther, 1977: 120, fig. 44.

*Beckidia tethys* (Townes); Sæther, 1979: 119; Cranston *et al.* 1989: fig. 10.6; Makarchenko *et al.* 2005: 394.

**Material examined:** 1 male, RUSSIA, Khabarovsk Territory, Ussury River near Zabaykalskaya Village, 25.vii.2003, T. Tiunova; 1 male, Primorye Territory, Khanka Lake near Astrakhanka Village, 26.viii.1996, E. Makarchenko; 3 males, Khanka Lake near Turiy Rog Village, 12.vi.1998, T. Vshivkova.

Previous descriptions of *B. tethys* are brief, so below I give a more detailed description based on the specimens from the Russian Far East.

**Male** (n = 3)

Total length 3.0–3.3 mm. Wing length 1.3–1.4 mm. Total length/wing length 2.1–2.5.

*Coloration.* Scapus yellowish, flagellomeres dark brown; ground color of thorax pale yellow, mesonotal strips and two-third of postnotum yellowish brown; front leg brownish except for pale yellow femur; mid and hind legs with pale yellow femur and tibia,  $ta_{1-5}$  gradually darker toward apex; abdomen yellowish.

*Head.* Frontal tubercle absent. Verticals 8–11. Clypeus with 6–8 setae. Antenna 895–916  $\mu\text{m}$  long, AR 1.63–1.82. Maxillary palp 440  $\mu\text{m}$  long, lengths of segments II–V (in  $\mu\text{m}$ ): 40, 80, 110–130, 190. Palp length/head width 0.85, antenna length/palp length 2.03.

*Thorax.* Antepronotals 0, acrostichals 0, dorsocentrals 6–8, prealars 2–3, supraalars 1. Scutellum with 3–8 setae.

*Wing.* Width 0.43 mm. VR 1.03–1.22. R with 2–4 setae,  $R_1$  without setae,  $R_{4+5}$  with 2 apical setae, brachiolum with 2 setae. Squama with 2–5 setae.

*Legs.* Combs of median and hind tibiae with 2 spurs, 18–23  $\mu\text{m}$  long.  $LR_1$  1.94–2.0,  $LR_2$  0.64,  $LR_3$  0.73;  $SV_1$  1.37–1.38,  $SV_2$  3.36,  $SV_3$  2.64;  $BV_1$  1.67–1.69,  $BV_2$  3.21,  $BV_3$  2.22;  $BR_1$  2.89–3.13,  $BR_2$  5.0,  $BR_3$  5.0.

*Hypopygium* (Figs. 6–7). Anal tergite bands of H-type. Anal point 50–70  $\mu\text{m}$  long, 9  $\mu\text{m}$  wide, placed preapically on tergite IX. Laterosternite IX with 1–2 setae. Transverse sternapodeme 41–45  $\mu\text{m}$  long. Gonocoxite 90–95  $\mu\text{m}$  long, with 3–4 setae. Superior volsella pad-like, 32  $\mu\text{m}$  long, 32–36  $\mu\text{m}$  wide, with 11–15 setae and microtrichia, partially fused with inferior volsella. Gonostylus 126–153  $\mu\text{m}$  long, 23–27  $\mu\text{m}$  wide, curved, widest medially. HR 0.63–0.66.

### Distribution

The species has previously been recorded from Canada and USA in the Nearctic Region and from Serbia in the Palaearctic Region (Sæther *et al.* 2000). The species is recorded for the first time from Russia.

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