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To systematics of the genus *Saetheria* Jackson (Diptera, Chironomidae) from the Russian Far East

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Abstract

The genus *Saetheria* Jackson from the Russian Far East is reviewed. The males of *S. reissi* Jackson, 1977, *S. tamanipparai* (Sasa, 1983) and *S. tylus* (Townes, 1945) are redescribed and figured. The pupa of *S. reissi* is redescribed and illustrated. The larva of *S. reissi* Jackson is described for the first time. Comments on the systematics and distribution of each species are provided. *Paracladopelma kisopediformis* Sasa, Kondo, 1993 is designated a new junior synonym of *S. reissi* Jackson, 1977. Keys to the males, pupae and larvae of the Russian *Saetheria* are given.

Key words: Chironomidae, Chironomini, *Saetheria*, key, Russian Far East

Introduction

The genus was erected by Jackson in 1977 for *Harnischia* (*Cladopelma*) *tylus* Townes, 1945. Species of this genus are the middle size non-biting midges with immature stages inhabit sandy substrata of standing and flowing waters. The genus *Saetheria* includes 1 widespread Holarctic species, *S. tylus* (Townes, 1945), 1 Nearctic species, *S. hirta* Sæther, 1983, and 5 Palaearctic species, *S. reissi* Jackson, 1977, *S. tamanipparai* (Sasa, 1983), *S. digitata* Yan *et al.*, 2011, *S. glabra* Yan *et al.*, 2011, and *S. separata*Yan *et al.*, 2011. In addition, descriptions of the five larvae with 6-segmented antenna, allocatable to *Saetheria*, are present in North America (*Saetheria* sp.1), Japan (*S. tylus*, *Saetheria* sp. SE, *Saetheria* sp. SG) and Russia (Chironominae genuinae № 9 Lipina) (Jackson 1977; Kobayashi 2007; Pankratova 1983). Up to present time two species, *S. reissi* and *S. tylus* have been recorded from Russia (Sæther & Spies 2004). During studies of the chironomid fauna in the Russian Far East, the males, pupae and larvae of *S. reissi* was found, and herein is presented. Additionally, the males of *S. tamanipparai* and *S. tylus* are redescribed and figured. *Paracladopelma kisopediformis* Sasa, Kondo, 1993 is designated a new junior synonym of *S. reissi* Jackson, 1977. The keys to males, pupae and larvae of Russian *Saetheria* are given.

Material and methods

Material was fixed in 70% ethanol and mounted in Fora-Berlese solution. Morphological terminology and abbreviations follow of Sæther (1980). Male: TL/WL—total length of male over wing length; AR—length of apical flagellomere 13 to length flagellomeres 1–12; VR—length of Cu to length of M; P_{1-3}—legs; LR—length of tarsomere 1 to length tibia; SV—length femur plus tibia to tarsomere 1; BV—length of femur, tibia and tarsomere 2–5; BR—longest seta of tarsomere 1 divided by minimum width of tarsomere 1; HR—length of gonocoxite to length of gonostylus. Pupa: ALR—length of anal lobe to its width. Larva: AR—length of basal antennal segment to combined length of remaining segments; R—distance from ring organ to base of basal segment of antenna; ROR—length of basal segment of antenna to distance between base of basal segment and ring organ; VmPR—width ventromental plate to its high; VmPSR—mean width of the two ventromental plates to distance between vetromental plates. The following additional abbreviations are used: PL-male=associated larva, pupa, and

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adult male; PL-female=associated larva, pupa, and adult female; P-male= associated pupa and male; 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.

Systematics

Saetheria Jackson, 1977

Saetheria Jackson, 1977: 1325.
Type species: *Harnischia* (*Cladopelma*) *tylus* Townes, 1945

Other included species: *S. digitata* Yan *et al.*, 2011, *S. glabra* Yan *et al.*, 2011, *S. hirta* Sæther, 1983, *S. reissi* Jackson, 1977, *S. separate* Yan *et al.*, 2011, *S. tamanipparai* (Sasa, 1983).

Emended diagnosis. Male: as in Cranston *et al.* (1989: 410) with the following emendations: wing length 2.0–2.4 mm; AR 1.81–2.10; antepronotals 1–5, acrostichals 6–11, dorsocentrals 6–13, supraalar 1–2, prealars 2–5; squama with 2–10 setae; superior volsella consist of bare dorsal lobe with a finger-shaped sclerotized projection and ventral lobe covered with microtrichia and bearing 2 setae.
Pupa: as in Pinder and Reiss (1986: 350) with the following emendations: sternite IV with weak median shagreen; segment I with 1 L seta.

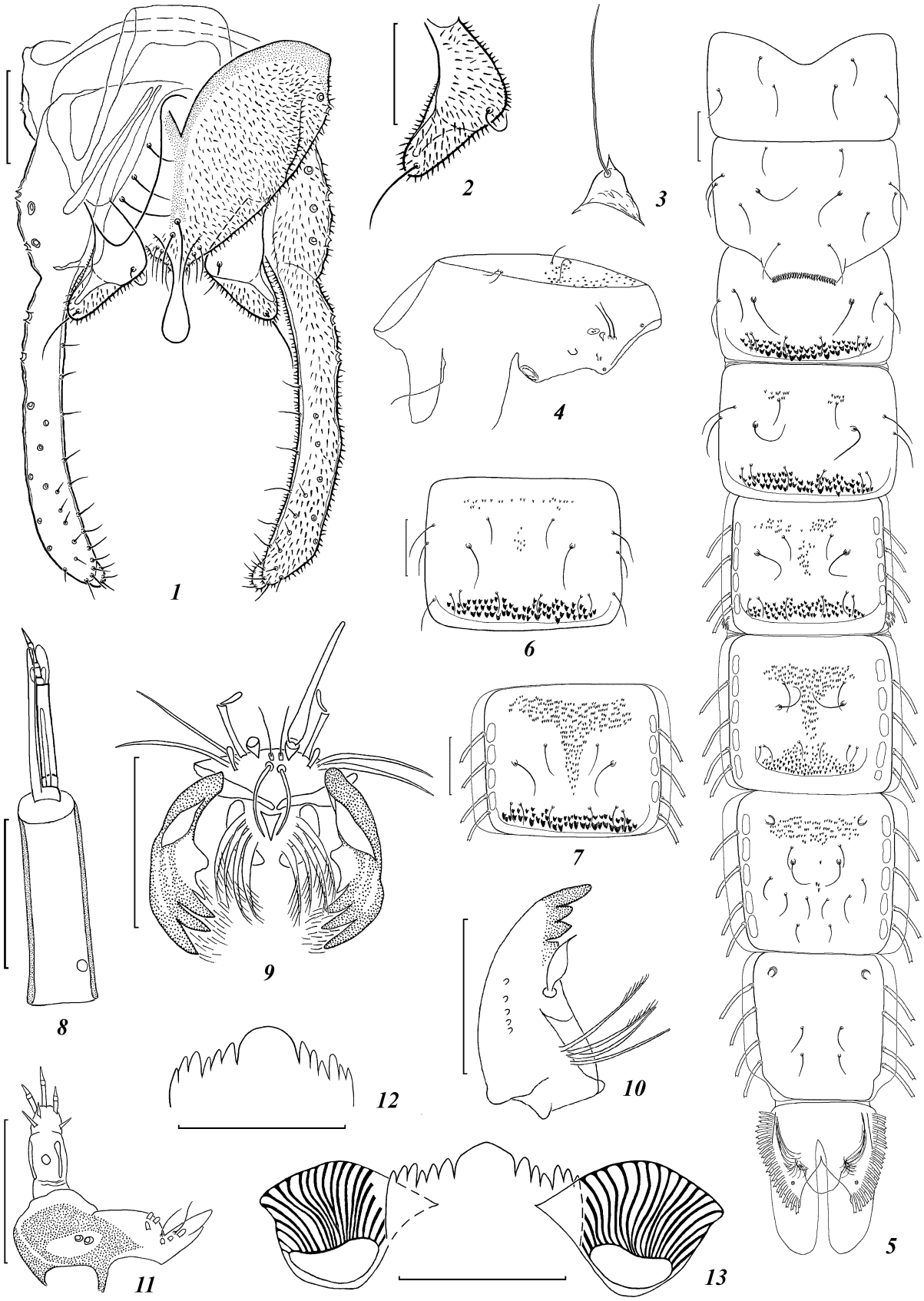
Fourth instar larva: as in Epler *et al.* (2013: 434) with the following emendations: SIII hair-like.

Saetheria reissi Jackson, 1977
(Figs 1–13)

Saetheria reissi Jackson, 1977: 1354, fig. 32; Ashe & Cranston 1990: 310; Langton 1991: 1192, fig. 111; Sæther *et al.* 2000: 69; Zorina 2003: 223, figs 22–24; Makarchenko *et al.* 2005: 413; Zorina 2006: 426, fig. 292, 8–9, fig. 394, 7–10; Langton & Pinder 2007: 190, fig. 231A; Yan *et al.* 2011: 35.
Paracladopelma kisopediformis Sasa, Kondo, 1993: 98, fig. 7.1; Ree 2009: 243, fig. 1. **Syn. nov.**
Saetheria tylus (Townes), Zorina 2000: 110 (misidentification).

Material examined. PRIMORYE TERRITORY: male, Nadezhdenky Region, Razdol'naya River, 31.05.1990, Vshivkova T.S.; 1 male, same data, 02.06.1990, Vshivkova T.S.; male, Khankaisky Region, Khanka Lake basin, Kommisarovka River, 17.06.1999, Makarchenko E.A.; 2 males, 2 larvae, Khasansky Region, Barabashevka River, 01.06.2002, Teslenko V.A.; P-male, same data, 04.06.2002, Teslenko V.A.; male, larva, same data, 01.06.2003, Makarchenko E.A.; larva, same data, 12.05.2004, Makarcheko E.A.; male, Khasansky Region, Izvestkovaya River, 31.05.2003, Lubaretz V.; larva, Partizansraya River about Peretino Vallage, 29.05.2004, Vshivkova T.S.; male, Terneisky Region, Samarga River, 07.08.2006, Zorina O.V.; KHABAROVSK TERRITORY: P-male, Chegdomynsky Region, Chegdomyn River, 13.07.2003, Tiunova T.M.; larva, Urgal River, 18.07.2003, Tiunova T.M. AMUR TERRITORY: P-male, 2 larvae, Zeya River basin, Ulunga River near Aprel'sky Village, 20.07.2008, Kotzuk D.B. SAKHALIN REGION: male, Otchepukha River about Lesnoe Village, 03.07.1985, Makarchenko E.A.; MAGADAN TERRITORY: P-male, pupal exuviae; Tauy River; 17.07.2001, Kocharina C.; SOKHA REPUBLIC (YAKUTIA): P-male with larval exuviae, Aldan River basin, Chul'man River, 25.07.2006, Makarchenko E.A.

Diagnostic characters. The male of *S. reissi* Jackson is distinguished by the following combination of features: wing length 2.1–2.4 mm; AR 1.81–2.10; small frontal tubercles always present; anal point spoon-shaped; superior volsella consist of bare dorsal lobe with a finger-shaped sclerotized projection and triangular ventral lobe covered with microtrichia and bearing 1 strong apical seta and 1 weaker median seta; gonostylus narrowed in middle. The pupa with 1 L seta on segment I, with 2–3 L setae on segments II–IV, with weak median shagreen on sternite IV, with median shagreen on tergite V. The larva with setae SI seta-like, SII broadly blade-like, SIII hair-like; AR 1.13–1.26; segment 2 of antenna 5–7 μm long, apically with the blade reaches the apex of the segment 5; premandible with 3 large distal teeth and 1 small proximal tooth; seta subdentalis a wide blade-like; mentum with broad triangular or round median tooth and 6 pair of lateral teeth; third pair lateral teeth below the remaining teeth.



FIGURES 1–13. *Saetheria reissi* Jackson adult male (1–2), pupa (3–7) and larva (8–13). 1—hypopygium, dorsal view; 2—superior volsella, ventral view; 3—frontal tubercle; 4—thorax, lateral view; 5—tergites I–IX; 6—tergite IV; 7—tergite V; 8—antenna, 9—labro-epipharyngeal region; 10—mandible; 11—maxilla; 12—mentum; 13—mentum and ventromental plates. Scale bar 50 μm.

Male (n=7). Total length 3.2–3.8 mm. Wing length 2.1–2.4 mm. Total length / wing length 1.52–1.76.

Colouration. Pedicel of antenna, mesonotal stripes and postnotum yellowish brown, ground colour and scutellum pale yellowish. Abdomen yellowish or yellowish-brown. Fore legs yellowish with brown distal end of femora, proximal third and distal end of tibia, ta_{1-5} gradually darkened toward ends, tibiae sometimes brown. Mid and hind legs yellowish, ta_{1-5} gradually darkened toward ends.

Head. Frontal tubercles small (3.4–10.2 µm long, 3.4–6.8 µm wide). Antenna 944–1080 µm long; ultimate flagellomere 608–720 µm long; AR 1.81–2.10. Verticals 12–19. Clypeus with 8–10 setae. Maxillary palp 435–510 µm long; length of palpomeres 2–5 (in µm): 34–44, 109–126, 116–139, 170–204. Head width / palp length 0.42–0.43; antenna length / palp length 2.12–2.28.

Thorax chaetotaxy. Antepronotals 1–3, acrostichals 6–11, dorsocentrals 6–13, supraalar 1–2, prealars 2–3. Scutellum with 5–9 setae.

Wing 0.51–0.60 mm wide. Veins R with 0–7 setae, R_{4+5} with 1–2 setae. Squama with 2–7 setae; brachiolum with 1–2 setae. VR 1.19–1.25.

Legs. Spurs of middle tibia 24–27 µm, of hind tibia 27–31 and 34 µm long. Lengths and proportions of legs as in Table 1.

TABLE 1. Lengths (in µm) and proportions of legs of *Saetheria reissi* Jackson, male (n=7).

	fe	ti	ta_1	ta_2	ta_3	ta_4	ta_5
p_1	672–798	462–567	798–1008	420–546	294–378	189–231	105–126
p_2	630–777	272–588	294–336	168–210	126–147	84	63
p_3	861–1134	735–903	462–546	273–336	231–273	126–147	105

TABLE 1. (Continued)

	LR	SV	BV	BR
p_1	1.72–1.78	1.35–1.43	1.80–1.92	1.5–2.0
p_2	0.47–0.51	4.11–4.44	3.40–3.76	2.3–3.1
p_3	0.59–0.67	2.96–3.32	2.50–2.71	3.0–4.8

Hypopygium (Figs 1–2). Laterosternite IX with 1–4 strong setae. Anal point spoon-shaped (length 54–61 µm, width 14–17 µm) at the base with 2–4 strong medial and 4–7 weak lateral setae. Gonocoxite 112–126 µm long, with 3–4 setae on inner margin. Transverse sternapodeme 68–82 µm wide. Phallapodeme 85–92 µm long. Superior volsella triangular (54–68 µm long and 14–17 µm wide in the base) composed of dorsal and ventral lobes. Dorsal lobe bare with a finger-shaped sclerotized projection (14–20 µm long), ventral lobe covered with microtrichia and bearing 1 strong apical seta (34–37 µm long) and 1 weaker seta (17–20 µm long) on middle. Inferior volsella with rounded apical part and covered with microtrichia. Gonostylus (147–170 µm long, 24–31 µm wide) narrowed in middle, apically round. HR 0.66–0.80.

Pupa (n=5, males). *Cephalothorax* (Figs 3–4). Cephalic tubercle conical (20–31 µm long, 34–51 µm wide) with apical spine; frontal setae 68–109 µm long (Fig. 3). Base of thoracic horn oval form (34 µm long, 17 µm wide). Lamelliform precorneals 2 (1st 170 µm long, 2nd 150–160 µm long), lamelliform antepronotals 2 (1 median 119–122 µm long and 1 lateral 290 µm long), dorsocentrals 4 (Dc_1 34–54 µm long, Dc_2 85–202 µm long, Dc_3 41–61 µm long, Dc_4 41–51 µm long); distance between Dc_1 and Dc_2 41–61 µm, Dc_2 and Dc_3 150–180 µm, Dc_3 and Dc_4 10–14 µm (Fig. 4).

Abdomen (Figs 5–7) 2.2–2.4 mm long. Tergites I–III, VIII without shagreen. Hook row 153–204 µm long, with 44–50 spines. Tergites III–V on posterior margin with transverse band of strong dark spines distributed in 2–4 rows (tergite III with 47–62 spines, IV with 50–70 spines, V with 51–75 spines), tergite VI with weaker spines. Tergite IV with pair of anterolateral patches of shagreen (Fig. 5), sometimes present weak median shagreen (Fig. 6). Tergites V–VII with shagreen in a T-shaped (Fig. 7), sometimes tergite V with pair anterolateral patches of spines and median spines (Fig. 5) Sternite IV with median shagreen. Sternite V with or without posterolateral spines. Segment I with 1 L seta, segments II–IV with 2–3 L seta, V–VIII with 4 LS setae. Anal lobe with 28–40 lamelliform setae. Length of anal lobe 177–221 µm, width 187–279 µm. ALR 0.79–1.0.

Fourth instar larva (n=5). Green or greenish yellow (in formaldehyde).

Head. Yellowish, 0.3 mm long, 0.2 mm wide Antenna 102–122 μm long, length of segments (in μm): 58–78, 5.1–6.8, 24–31, 5.1, 6.8, 5.1 (Fig. 8). AR 1.13–1.26. Basal segment with ring organ in proximal 1/4; distance from ring organ to base of antenna 17 μm; ROR 4.0–5.7. Blade 34–41 μm long, seated apically on segment 2, reaches the apex of the segment 5; accessory blade 20–27 μm. Lauterborn organ 3.4 μm long. Style 10 μm long. Seta SI seta-like 24 μm long, SII broadly blade-like 41 μm long, SIII hair-like 17 μm long, SIVa 3-segmented 10 μm long and SIVb 10 μm long. Labral lamella absent. Premandible 54 μm long, with 3 large apical teeth and 1 small proximal tooth; premandibular brush well developed. Pecten epipharyngis triangular, 10 μm long (Fig. 9). Mandible 75–88 μm long, 41 μm wide, with apical (14 μm long) tooth and 2 brown inner teeth; seta subdentalis a wide blade-like 20–24 μm long; pecten mandibularis consist of 5 lamellae (Fig. 10). Maxillary palp 20 μm long, 12–14 μm wide; distance from ring organ to base of maxillary palp 7–10 μm; ROR 2–3 (Fig. 11). Mentum (61–68 μm wide) with brownish median tooth and 6 pair of lateral teeth. Median tooth (17–20 μm wide) triangular or round form; third lateral tooth below the remaining teeth (Figs 12–13). Ventromental plate 51–58 μm wide, 37–41 μm high; number of striae 21; distance between ventromental plates 31–34 μm. VmPR 1.25–1.55. VmPSR 1.5–1.9.

Body. Posterior parapod with 17 yellow simple claws. Anal tubules conical, upper pair 85–102 μm long, bottom pair 102–119 μm long. Procercus 24 μm long, with 8 simple anal setae.

Remarks. The male of *S. reissi* Jackson is very similar to *S. tylus* (Townes) in the shape of the hypopygium, but can be separated by a larger body size (TL 3.2–3.8 mm), superior volsella roughly triangular form, gonostylus narrowed in middle. Whereas, the male of *S. tylus* has total length 2.30–3.18 mm, superior volsella an elongated foot-shaped, gonostylus narrowed in the proximal third (Townes 1945; Jackson 1977; Sasa 1989; Sasa & Tanaka 2001; Kobayashi 2007). The Russian far eastern specimens of *S. reissi* are different by larger body size from its found in the Irkutsk Territory (original description), Japan, and Korea (Jackson 1977; Sasa & Kondo 1993; Ree 2009). The pupa of *S. reissi* is also similar to *S. tylus*, but can be separated by the presence of 1 L seta on segment I, 2–3 L setae on segments II–IV, median shagreen on tergite V and on sternite IV. While, the pupa of *S. tylus* characterized by the absence of L setae on segment I, median shagreen on tergite V and sternite IV, and the presence of only 2 L setae on segments II–IV (Jackson 1977; Sæther 1983; Pinder & Reiss 1986). According to Langton (1991) pupa of *S. reissi* has not shagreen on tergites IV–V and 1 L seta on segment I. Whereas pupae from our material are characterized by the presence of shagreen on tergites IV–V and 1 L seta on segment I. The larva also is very close to *S. tylus*, but can be easily separated by the presence of well developed premandibular brush, the blade of antenna reaches the apex of the segment 5. Whereas, the larva of *S. tylus* has not premandibular brush, the blade of antenna reaches of middle of the segment 5 (Jackson 1977). The larva of Chironominae genuinae № 9 described by Lipina (1926) from Oka River has 3 large teeth in the apical part and a large tooth in middle of premandible, and seta subdentalis a narrow blade-like. The larvae of *S. reissi* in our material with 3 large apical teeth and 1 small proximal tooth and seta subdentalis a wide blade-like.

Paracladopelma kisopediformis Sasa, Kondo, 1993 **syn. nov.** was described based on adult male from Japan, Kiso River and redescribed from Korea (Ree 2009). This species is currently regarded as a junior synonym of *S. tylus* (Kobayashi 2007). Unfortunately, we have not examined the holotype this species. But thanks to an electronic database of type specimens held by National Museum of Nature and Science was possible to view hypopygium of the holotype of the species. On digital photo the male have a roughly triangular form of superior volsella with two setae different length, which is characteristic for *S. reissi* (http://www.type.kahaku.go.jp/TypeDB/typedb_pub). Frontal tubercles present as *S. reissi* and *S. tylus*. Therefore, we believe that *Paracladopelma kisopediformis* Sasa, Kondo, 1993 is a junior synonym of *S. reissi*.

Distribution. *Saetheria reissi* Jackson is quite widespread in the West Europen (Saether & Spies 2004). This species was so far reported from North Korea and Japan (Sasa & Kondo 1993; Ree 2009; Sæther *et al.* 2000). In Russian *S. reissi* is known from Angara River near Irkutsk Townes by original description (Jackson 1977). This species is widespread in Russian Far East: Primorye, Khabarovsk and Amur Territories, Magadan and Sakhalin Regions, Sokha Republic (Yakutia) (Makarchenko *et al.* 2005).

***Saetheria tamanipparai* (Sasa, 1983)**
(Figs 14–15)

Paracladopelma tamanipparai Sasa, 1983: 5, fig. 1 (G–L); Ashe & Cranston 1990: 297; Yan *et al.* 2008: 24, figs 44–46.
Parachironomus tamanipparai (Sasa), Sasa & Kikuchi 1995: 102, fig. 21F; Sasa 1998: 30.
Saetheria tamanipparai (Sasa), Makarchenko *et al.* 2005: 413; Zorina 2006: 426, fig. 292, 13–14.

Material examined. KHABAROVSK TERRITORY: 10 males, Jewish Autonomous Region, Bira River at about 4 km above of Zheltyi Yar Village, 12–15.08.2004, Tiunova T.M.

Diagnostic characters. The male *S. tamanipparai* (Sasa) can be separated from other species of this genus by the following combination of characters: wing length 2.0 mm; AR 2.0; small frontal tubercles present; anal point drop-shaped; superior volsella consist of bare dorsal lobe with a finger-shaped sclerotized projection and foot-shaped ventral lobe covered with microtrichia and bearing 1 strong apical seta and 1 weaker seta in apical third; gonostylus widest in the proximal third and gradually narrowed toward apex.

Male (n=1). Total length 3.3 mm. Wing length 2.0 mm. Total length / wing length 1.65.

Colouration. Pedicel of antenna, mesonotal stripes and postnotum yellowish brown, ground colour and scutellum pale yellowish. Abdomen yellowish gradually darkened toward end. Fore legs yellowish with brown distal end of femora, proximal third and distal end of tibia, ta_{1-5} gradually darkened toward ends. Mid and hind legs yellowish, ta_{1-5} gradually darkened toward ends.

Head. Frontal tubercles small (6.8 µm long, 5.1 µm wide). Antenna 960 µm long; ultimate flagellomere 640 µm long; AR 2.0. Verticals 17. Clypeus with 15 setae. Maxillary palp 575 µm long; length of palpomeres 2–5 (in µm): 48, 146, 143, 238. Antenna length / palp length 1.67.

Thorax chaetotaxy. Antepronotals 3–5, acrostichals 11, dorsocentrals 10, supraalar 1, prealars 4–5. Scutellum with 18 setae.

Wing 0.54 mm wide. Veins R with 9–10 setae, R_{4+5} with 2 setae. Squama with 10 setae; brachiolum with 1 setae. VR 1.12.

Legs. Spurs of middle tibia 30 µm, of hind tibia 27 and 34 µm long. Lengths and proportions of legs as in Table 3.

TABLE 2. Lengths (in µm) and proportions of legs of *Saetheria tamanipparai* (Sasa), male (n=1).

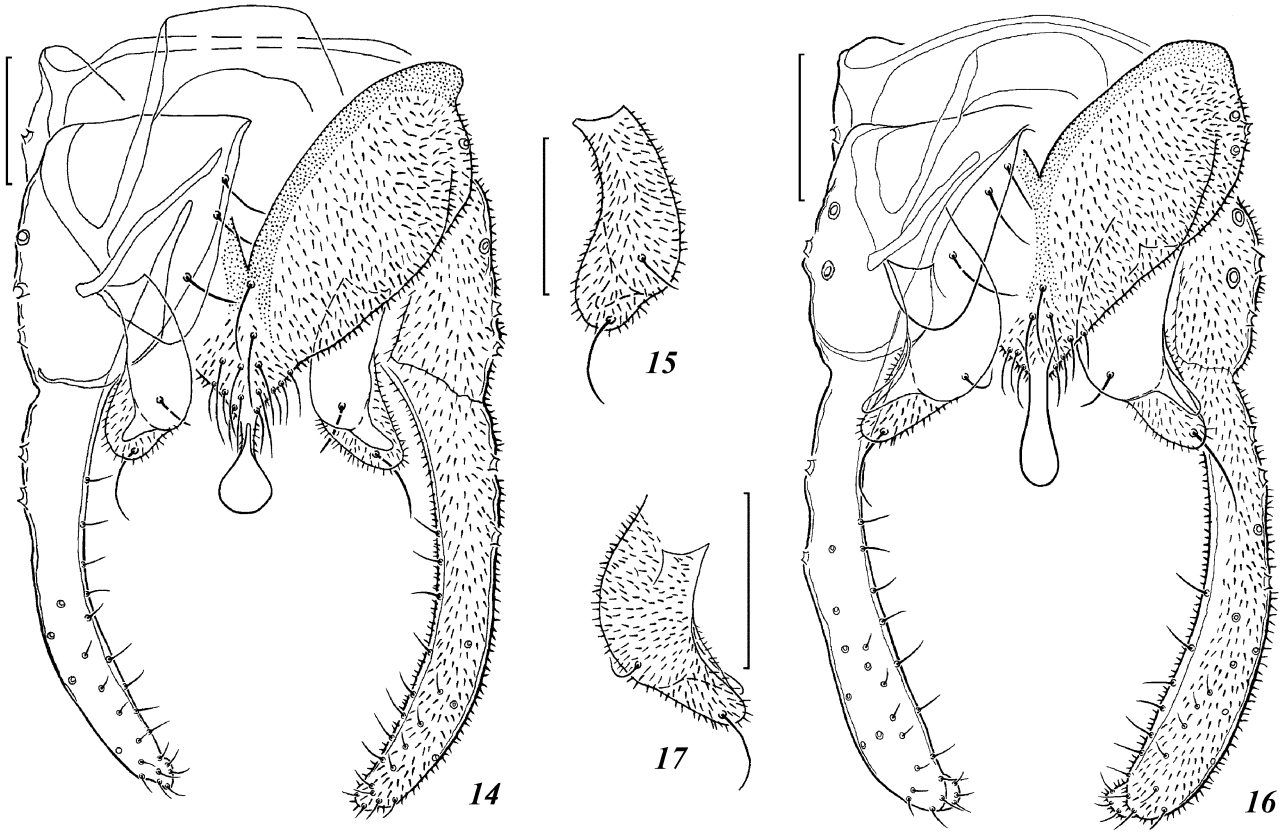
	fe	ti	ta_1	ta_2	ta_3	ta_4	ta_5
p_1	798	546	1050	525	378	294	168
p_2	735	693	399	231	168	84	63
p_3	840	861	588	315	273	147	84

TABLE 2. (Continued)

	LR	SV	BV	BR
p_1	1.92	1.28	1.75	2.43
p_2	0.58	3.58	3.35	3.1
p_3	0.68	2.89	2.79	3.5

Hypopygium (Figs 14–15). Laterosternite IX with 1 strong seta. Anal point spoon-shaped (length 68 µm, width 17 µm) in the base with 7 strong median and 5–6 weak lateral setae. Gonocoxite 129 µm long, with 3 setae on inner margin. Transverse sternapodeme 75 µm wide. Phallapodeme 102 µm long. Superior volsella foot-shaped (75 µm long and 20 µm wide in the base) composed of dorsal and ventral lobes. Dorsal lobe bare with a finger-shaped sclerotized projection (17 µm long), ventral lobe covered with microtrichia and bearing 1 strong apical seta (27 µm long) and 1 weaker seta (14 µm long) in the apical third. Inferior volsella with rounded apical part and covered with microtrichia. Gonostylus (170 µm long, 31 µm wide) widest in proximal third and gradually narrowed toward apex. HR 0.79.

Pupa unknown.



FIGURES 14–17. Adult males of *Saetheria tamanipparai* (Sasa) (14–15) and *Saetheria tylus* (Townes) (16–17). 14, 16—hypopygium, dorsal view; 15, 17—superior volsella, ventral view. Scale bar 50 μm.

Larva unknown.

Remarks. Far eastern male of *S. tamanipparai* differ from the Japanese smaller body size (TL 3.3 mm), AR (2.0) and colour of fore femora (brown on distal end). Whereas, Japanese male has total length 3.75 mm, AR 1.67, and femora yellow (Sasa 1983).

Saetheria tamanipparai (Sasa, 1983) was described as *Paracladopelma tamanipparai* based on adult male from Japan, Tama River. Then this species was transferred to *Parachironomus* by Sasa & Kikuchi (1995). Yan *et al.* (2008) re-examined the holotype and decided that species belongs to the genus *Paracladopelma*. We believe that the combination of such features as: tergite IX Y-type, superior volsella consist of bare dorsal lobe with a finger-shaped sclerotized projection and ventral lobe covered with microtrichia and bearing 2 setae, clearly shows that the species should be placed in genus *Saetheria* (Makarchenko *et al.* 2005; Zorina 2006).

Distribution. *Saetheria tamanipparai* (Sasa) is recorded from Japan and Russian Far East (Sasa 1983; Makarchenko *et al.* 2005; Zorina 2006).

***Saetheria tylus* (Townes, 1945)**

(Figs 16–17)

Harnischia (*Cladopelma*) *tylus* Townes, 1945: 150, fig. 170; Townes 1952: 92.

Chironomus (*Cryptochironomus*) *tylus* (Townes), Sublette & Sublette 1965: 168.

Paracladopelma cfr. *nereis* Mozley, Garcia, 1972: 109.

Paracladopelma nagaraelongata Sasa, 1989: 65, Plate 19 fig. 41; Sasa & Okazawa 1992: 43; Sasa & Kikuchi, 1995: 102, fig. 21B; Sasa, 1998: 31.

Parachironomus taishoabeus Sasa & Tanaka, 2001: 46, Plate 1 fig. 3.

Saetheria tylus (Townes), Jackson 1977: 1352, figs 29, 30, 31; Sæther 1983: 400, figs 2–4; Pinder & Reiss 1986: 435, fig. 10.70 (A–D); Oliver *et al.* 1990: 52; Kobayashi 2007: 10, figs 6–7; Yan *et al.* 2011: 41.

Material examined. PRIMORYE TERRITORY: male, Ussuryiskiy Region, Razdol'naya River basin, Kraunovka River, 21.07.2004, Arephina T.I.

Diagnostic characters. The male of *S. tylus* (Townes) is distinguished by the following combination of features: wing length 1.7 mm; AR 1.74; small frontal tubercles present; anal point spoon-shaped; superior volsella consist of bare dorsal lobe with a finger-shaped sclerotized projection and elongated foot-shaped ventral lobe covered with microtrichia and bearing 1 strong apical seta and 1 weaker seta in the apical third; gonostylus narrowed in the proximal third.

Male (n=1). Total length 3.0 mm. Wing length 1.7 mm. Total length / wing length 1.76.

Colouration. Pedicel of antenna, mesonotal stripes and postnotum yellowish brown, ground colour and scutellum pale yellowish. Abdomen yellowish. Fore legs yellowish with brown distal end of femora, proximal third and distal end of tibia, ta_{1-5} gradually darkened toward ends, tibiae sometimes brown. Mid and hind legs yellowish, ta_{1-5} gradually darkened toward ends.

Head. Frontal tubercles small (5.1 µm long, 3.4 µm wide). Antenna 856 µm long; ultimate flagellomere 544 µm long; AR 1.74. Verticals 12–14. Clypeus with 10 setae. Maxillary palp 462 µm long; length of palpomeres 2–5 (in µm): 37, 109, 122, 194. Antenna length / palp length 1.85.

Thorax chaetotaxy. Antepronotals 2, acrostichals 4, dorsocentrals 8–9, supraalar 1, prealars 3. Scutellum with 6 setae.

Wing 0.48 mm wide. Veins R with 6–7 setae, R_{4+5} with 2 setae. Squama with 4 setae; brachiolum with 1 setae. VR 1.31.

Legs. Spurs of middle tibia 24 µm, of hind tibia 24 and 31 µm long. Lengths and proportions of legs as in Table 3.

TABLE 3. Lengths (in µm) and proportions of legs of *Saetheria tylus* (Townes), male (n=1).

	fe	ti	ta_1	ta_2	ta_3	ta_4	ta_5
p_1	630	399	735	389	273	189	105
p_2	588	504	252	147	105	84	63
p_3	651	651	420	231	210	105	84

TABLE 3. (Continued)

	LR	SV	BV	BR
p_1	1.84	1.40	1.85	2.15
p_2	0.50	4.33	3.37	2.86
p_3	0.65	3.10	2.73	3.71

Hypopygium (Figs 16–17). Laterosternite IX with 3 strong setae. Anal point drop-shaped (length 51 µm, width 17 µm) at the base with 3 strong medial and 5–6 weak lateral setae. Gonocoxite 102 µm long, with 3 setae on inner margin. Transverse sternapodeme 51 µm wide. Phallapodeme 75 µm long. Superior volsella elongated foot-shaped (58 µm long and 31 µm wide in the base) composed of dorsal and ventral lobes. Dorsal lobe bare with a finger-shaped sclerotized projection (17 µm long), ventral lobe covered with microtrichia and bearing 1 strong apical seta (27 µm long) and 1 weaker seta (10–14 µm long) in the apical third. Inferior volsella with rounded apical part and covered with microtrichia. Gonostylus (136 µm long, 20–24 µm wide) narrowed in the proximal third and apically round. HR 0.75.

Pupa is described by Jackson (1977) and redescribed by Sæther (1983) and Pinder & Reiss (1986).

Larva is described by Jackson (1977).

Remarks. The adult male of *S. tylus* (Townes) from Primorye Territory is almost indistinguishable from the description of specimens of this species by other authors (Table 4). The species affiliation larvae of *S. tylus* described by Kobayashi (2007), is questionable, as the larvae have 5-segmented antenna and it are not associated with the male. The larva of Chironominae genuinae № 9 described by Lipina (1926) from Oka River is somewhat different from larva of *S. tylus* by presence of a large tooth in middle of premandible and seta subdentalis a narrow blade-like. The larva of *S. tylus* has 3 large apical teeth and 1 small proximal tooth on premandible and seta subdentalis a wide blade-like (Jackson 1977).

TABLE 4. Morphological characteristics of adult males of *S. tylus* (Townes) by various authors.

Morphological characters	Literature data					Out data
	Townes 1945	Jackson 1977	Sasa 1989	Sasa & Tanaka 2001	Kobayashi 2007	
TL	–	3.0–3.2	2.72	3.02–3.18	2.3–2.8	3.0
WL	1.5	1.4–1.5	1.29	1.30–1.52	1.34–1.60	1.7
AR	2.1	1.5–1.7	–	1.82–2.13	1.71–2.00	1.74
LR	1.85	1.7–1.9	2.0	–	2.10–2.19	1.84
Antepronotals	–	2	2	2	2–3	2
Acrostichals	–	4–6	8	8–10	7–11	4
Dorsocentrals	–	8–9	7	7–8	8–9	8–9
Prealars	–	3	3	3–4	2–3	3
Scutellars	–	5–8	6	10–12	5–10	6
Squama	"without a fringe of hairs"	3	2–3	2–3	2–3	4

Distribution. *Saetheria tylus* (Townes) is distributed in the Holarctic Region (Sæther & Spies 2004). This species is known from Japan (Kobayashi 2007). In Russian Far East it is recorded from Primorye Territory only.

Key to the Russian Far East species of the genus *Saetheria* Jackson

Males

1. Anal point drop-shaped; gonostylus widest in proximal third and gradually narrowed toward apex (Fig. 14) . . . . . *S. tamanipparai* (Sasa)
- Anal point spoon-shaped; gonostylus other form 2
2. Superior volsella roughly triangular form, the ventral seta is arranged in middle (Fig. 2); gonostylus narrowed in middle (Fig. 1); TL 3.2–3.8 mm . . . . . *S. reissi* Jackson
- Superior volsella an elongated foot-shaped, the ventral seta is arranged in the apical third (Fig. 17); gonostylus narrowed in the proximal third (Fig. 16); TL 2.3–3.2 mm . . . . . *S. tylus* (Townes)

Pupae

1. Segment I with 1 L seta (Fig. 5); sternite IV with median shagreen . . . . . *S. reissi* Jackson
- Segment I without L seta, sternite IV without shagreen (according to Jackson 1977: 1353, fig. 30; Sæther 1983: 400, figs 2–4; Pinder & Reiss 1986: 435, fig. 10.70 A–D) . . . . . *S. tylus* (Townes)

Larvae

1. Premandibular brush well developed; the blade of antenna reaches the apex of the segment 5 (Figs 8, 9) . . . . *S. reissi* Jackson
- Premandibular brush absent; the blade of antenna reaches of middle of the segment 5 (according to Jackson 1977: 1353, fig. 31) . . . . . *S. tylus* (Townes)

References

Ashe, P. & Cranston, P.S. (1990) Family Chironomidae. *In*: Soós, A. & Papp, L. (Eds.), *Catalogue of Palaearctic Diptera. Vol. 2. Psychodidae-Chironomidae*. Akadémiai Kiadó, Budapest, pp. 113–499.

Cranston, P.S., Dillon, M.E., Pinder, L.C.V. & Reiss, F. (1989) The adult males of chironominae (Diptera: Chironomidae) of the Holarctic region - Keys and diagnoses. *In*: Wiederholm, T. (Ed.), Chironomidae of the Holarctic region - Keys and diagnoses. Part 3. Adult males. *Entomologica scandinavica*, Supplement 34, pp. 353–502.

Epler, J.H, Ekrem, T. & Cranston, P.S. (2013) The larvae of Chironominae (Diptera: Chironomidae) of the Holarctic Region—Keys and diagnoses. *In*: Andersen, T., Cranston, P.S. & Epler, J.H. (Eds.), The larvae of Chironomidae (Diptera) of the Holarctic Region—Keys and diagnoses. *Insect Systematics and Evolution*, Supplement 66, pp. 387–556.

Jackson, G.A. (1977) Naerctic and Palaearctic *Paracladopelma* Harnisch and *Saetheria* n.gen. (Diptera: Chironomidea). *Journal of the Fisheries Research Board of Canada*, 34, 1321–1359.

Kobayashi, T. (2007) *Kloosia* Kruseman, *Chernovskiia* Sæther, and *Saetheria* Jackson (Chironomidae: Chironominae) in Japan. *Zootaxa*, 1527, 1–15.

Langton, P.H. (1991) *A key to pupal exuviae of West Palaearctic Chironomidae*. P. Langton, Cambridgeshire, 386 pp.

Langton, P.H. & Pinder, L.C.V. (2007) Keys to the adult male Chironomidae of Britain and Ireland. Vol. 1 Introductory text, keys, references checklist and index. Vol. 2. Illustrations of the hypopygia. *Freshwater biological association scientific publication* 64, 1 & 2, 1–239 & 1–168.

Lipina, N.N. (1926) *The larvae of the non-biting midges from basin of Oka River*. Trudy okskoy biologicheskoi stantzii, 4, 72–120. [in Russian]

Makarchenko, E.A., Makarchenko, M.A., Zorina, O.V. & Sergeeva, I.V. (2005) Preliminary data on fauna and taxonomy of chironomids (Diptera, Chironomidae) of the Russian Far East. *V.Ya. Levanidov's Biennial Memorial Meetings,* 3, 394–420. [in Russian]

Mozley, S.C. & Garcia, L.C. (1972) Benthic macrofauna in the coastal zone of southeastern Lake Michigan. *Proceeding of the 15th Conference on Great Lakes Research*, pp. 102–116.

Oliver, D.R., Dillon, M.E. & Cranston, P.S. (1990) *A catalog of Nearctic Chironomidae*. Research Branch Agriculture Canada, 89 pp.

Pankratova, V.Ya. (1983) *The larvae and pupae of the non-biting midges of subfamily Chironomidae of the fauna USSR (Diptera, Chironomidae=Tendipedinae)*. Nauka, Leningrad, 296 pp. [in Russian]

Pinder, L.C.V. & Reiss, F. (1986) The pupae of Chironominae (Diptera: Chironomidae) of the Holarctic region—Keys and diagnoses. *In*: Wiederholm, T. (Ed.), Chironomidae of the Holarctic region - Keys and diagnoses. Part 2. Pupae. *Entomologica scandinavica*, Supplement 19, pp. 299–456.

Ree, H. (2009) Three new and four unrecorded species of Chironomidae (Insecta: Diptera) in Korea. *Korean Journal of Systematic Zoology*, 25 (3), 243–254.
http://dx.doi.org/10.5635/kjsz.2009.25.3.243

Saether, O.A. (1980) Glossary of the chironomid morphology terminology (Diptera, Chironomidae). *Entomologica scandinavica*, Supplement 14, 1–51.

Saether, O.A. (1983) *Oschia dorsenna* n. gen., n.sp. and *Saetheria hirta* n.sp., two new members of the *Harnischia* complex (Diptera: Chironomidae). *Entomologica Scandinavica*, 14, 395–404.
http://dx.doi.org/10.1163/187631283x00146

Saether, O.A., Ashe, P. & Murray, D.E. (2000) Family Chironomidae. *In*: Papp, L., Darvas, B. (Eds.), *Contributions to a Manual of Palaearctic Diptera (with Special Reference to the Flies of Economic Importance)*. Science Herald, Budapest, pp.113–334.

Saether, O.A. & Spies, M. (2004) Fauna Europaea: Chironomidae. Fauna Europaea version 2.6. Available from: htpp://www.faunaeur.org (accessed 9 April 2013)

Sasa, M. (1983) Studies on chironomid midges of the Tama River. Part 5. An observation on the distribution of Chironominae along the main stream in June, with description of 15 new species. *Research Report from the National Institute for Environmental Studies*, 43, 1–67.

Sasa, M. (1989) Annex. Chironomid midges of some rivers in western Japan. *Research Report from Toyama Prefectural Environmental Pollution Research Center*, 1989, 45–110.

Sasa, M. (1998) Chironomidae of Japan 1998. List of species recorded and supplemental keys for identification. *Research Report Institute of Environmental and Welfare Studies*, Sunaba, Kurobe-shi, Japan, pp. 1–158.

Sasa, M. & Kikuchi, M. (1995) *Chironomidae (Diptera) of Japan*. University of Tokyo Press, Tokyo, 333 pp.

Sasa, M. & Kondo, S. (1993) Studies on the chironomid midges (yusurika) collected in Toyama and other areas of Japan. Part 7. Additional chironomids recorded from the middle reaches of Kiso River. *Research Report from Toyama Prefectural Environmental Pollution Research Center*, 98–106.

Sasa, M. & Okazawa, T. (1992) Studies on the chironomid midges (yusurika) of Kurobe River. *Research Report from Toyama Prefectural Environmental Pollution Research Center*, 1992, 38–91.

Sasa, M. & Tanaka, N. (2001) Studies of the chironomid midges collected with light traps during the summer season by the bridges of the Tone River, Gunma Prefecture. *Annual Report of Gunma Prefectural Institute for Public Health and Environmental Sciences*, 33, 41–73.

Sublette, J.E & Sublette, M.S. (1965) Family Chironomidae (Tendipedidae). *In*: Stone A. (Ed.), A catalog of the Diptera of America north of Mexico. *United States Department of Agriculture*, 276, 142–181.

Townes, H.K.J. (1945) The Nearctic species of Tendipedini [Diptera, Tendipedidae (= Chironomidae)]. *The American Midland Naturalist*, 34, 1–206.
http://dx.doi.org/10.2307/2421112

Townes, H.K. (1952) Tribe Tendipedini (= Chironomini),. *In*: Johannsen, O.A., Townes, H.K., Shaw, F.R. & Fisher, E.G. (Eds.), *Guide to the Insects of Connecticut. Part Vl. The Diptera or True Flies. Fifth Fascicle: Midges and Gnats*. Bulletin of State Geological and Natural History Survey of Connecticut, 80, pp. 27–147.

Yan, C., Jin, Z. & Wang, X. (2008) *Paracladopelma* Harnisch from the Sino-Indian Region (Diptera: Chironomidae). *Zootaxa*, 1934, 1–29.

Yan, C., Sæther, O.A. & Wang, X. (2011) *Saetheria* Jackson from the Sino-Indian Region (Diptera: Chironomidae). *Zootaxa*, 3040, 34–42.

Zorina, O.V. (2000) Fauna and systematics of the tribe Chironomini (Diptera, Chironomidae) of the south of Russian Far East. *A.I. Kurentsov's Annual Memorial Meetings*, 101–120. [in Russian]

Zorina, O.V. (2003) New records of non-biting midges of Chironomini (Diptera, Chironomidae) from Russian Far East. *V.Ya. Levanidov's Biennial Memorial Meetings,* 2, 217–225. [in Russian]

Zorina, O.V. (2006) Subfamily Chironominae. *In*: Lelej, A. (Ed.), *Key to the insects of Russian Far East. Vol. 6. Diptera and Siphonaptera. Pt 4.* Dal'nauka, Vladivostok, pp. 372–453, 530–592, 671–734. [in Russian]