Four new species of non-biting midges of the *Harnischia* complex (Diptera, Chironomidae, Chironominae) from Sakhalin Island (Russian Far East)

Четыре новых вида комаров-звонцов комплекса *Harnischia* (Diptera, Chironomidae, Chironominae) с острова Сахалин (российский Дальний Восток)

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**Key words:** Diptera, Chironomidae, Cryptotendipes, Parachironomus, Paracladopelma, Rabackia, new species, Sakhalin Island.

**Ключевые слова:** Diptera, Chironomidae, Cryptotendipes, Parachironomus, Paracladopelma, Rabackia, новые виды, остров Сахалин.

**Abstract.** Four new species of chironomids of the *Harnischia* complex, *Cryptotendipes secundus* sp.n., *Parachironomus pseudovarius* sp.n., *Paracladopelma jacksoni* sp.n. and *Rabackia aculeata* sp.n. are described, based on the morphology of adult males collected from Sakhalin Island of the Russian Far East.

**Резюме.** До настоящего исследования на острове Сахалин было отмечено 27 видов комаров-звонцов трибы Chironomini из 15 родов. В результате анализа имагинального материала, собранного и любезно предоставленного нам участниками Международного сахалинского проекта 2001–2002 гг. (ISIP–project), видовой состав Chironomini о. Сахалин увеличился до 88 видов, принадлежащих к 24 родам. Приведены иллюстрированные описания имаго самцов четырёх новых для науки видов из комплекса *Harnischia: Cryptotendipes secundus* sp.n., *Parachironomus pseudovarius* sp.n., *Paracladopelma jacksoni* sp.n., *Rabackia aculeata* sp.n., найденные нами в различных водоёмах и водоётах о. Сахалин.

To date, 27 species belonging to 15 genera of non-biting midges of the tribe Chironomini have been recorded from Sakhalin Island [Tokunaga, 1940; Makarchenko, Makarchenko, 1994, 1995; Zorina, 2002]. Analysis of the imaginal material kindly collected for us by members of the ISIP–project 2001–2002, the number of Chironomini has been increased to 88 species in 24 genera; amongst these are four species of the genera *Cryptotendipes* Lenz, *Parachironomus* Lenz, *Paracladopelma* Harnisch and *Rabackia* Sæther new for science which are described only on the basis of adult male morphology.

Material was fixed in 70% ethanol and mounted in Fora-Berlese solution.

Morphological terminology and abbreviations are as described in Shilova [1976] and Sæther [1980].

Holotype and paratypes of new species are deposited in the Institute of Biology and Soil Sciences FEB RAS, Vladivostok, Russia.

**Cryptotendipes secundus** Zorina, sp.n.
Figs 1–2.

**Material.** Holotype ♂, Russia, Sakhalin Island, Ryboke lake near Nogiki village, 27.07.2002, E. Makarchenko.

**Description.** Imago, male. Coloration of surface yellowish, total length 3.5 mm; total length/wing length ratio 1.89.

Head with 11–15 temporal and 6 clypeal setae, frontal tubercles lacking; maxillary palp brown, lengths of four anterior palpal segments: 55, 121, 132 and 165 μm. Palp length/head width ratio 0.78. Scapus yellowish, flagellomeres 1–11 — dark brown, 1210 μm long, AR 1.89. Antenna length/palp length ratio 2.55.

Thorax. Background colour of scutum pale yellow, mesonotal strips yellow. Aps 0–1, Ac 0, De 5–7, Pa 2–3, Su 1. Scutellum pale yellow, with 7 setae. Postnotum in distal 2/3 dark brown.

Wing length 1.85 mm. Squama with 5 setae. R, R, without setae, R₃, with 2 setae. VR 1.11. Halteres pale yellow.

Legs pale yellow, with the exception of distal end of, proximal 1/3 and distal end of, distal 1/3, with brown, P₁ and P₃ yellowish, with the exception of brown P₃,
Table 1. Length (µm) and proportions of legs of the male Cryptotendipes secundus sp.n.

<table>
<thead>
<tr>
<th>P</th>
<th>f</th>
<th>t</th>
<th>t₁₄</th>
<th>t₂₃</th>
<th>t₃₄</th>
<th>t₄₅</th>
<th>t₅₆</th>
<th>t₆₇</th>
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<tbody>
<tr>
<td>P₁</td>
<td>1012</td>
<td>748</td>
<td>1170</td>
<td>561</td>
<td>418</td>
<td>275</td>
<td>176</td>
<td>1.56</td>
<td>1.50</td>
<td>2.05</td>
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</tr>
<tr>
<td>P₂</td>
<td>858</td>
<td>847</td>
<td>407</td>
<td>242</td>
<td>198</td>
<td>132</td>
<td>132</td>
<td>0.48</td>
<td>4.19</td>
<td>3.0</td>
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</tr>
<tr>
<td>P₃</td>
<td>1122</td>
<td>1122</td>
<td>660</td>
<td>407</td>
<td>330</td>
<td>220</td>
<td>165</td>
<td>0.59</td>
<td>3.40</td>
<td>2.59</td>
<td></td>
</tr>
</tbody>
</table>

Terminal combs of t₁ and t₄ with spurs 28 µm long. BR 3.18, BR₂ 3.31, BR₃ 3.57. Length and proportions of legs see Table 1.

Abdomen pale yellow.

Hypopygium (Figs 1-2). Anal tergite bands Y-type. Anal point (length 98 µm) wide at about apical 1/3rd, apically rounded. Anterior margin of tergite IX with caudolateral shoulders bearing four setae. Gonocoxite 182 µm long. Inner margin of gonocoxite with 5-6 setae. Superior volsella (length 73 µm) sclerotized, without microtrichia, bearing apical seta (length 45 µm) and ventral seta (length 110 µm). Gonostylus 224 µm long, curved medially. Inner margin of gonostylus without basal projection. HR 0.81.

Female, pupa and larva are unknown.

Differential diagnosis. Male of Cryptotendipes secundus can be distinguished from all known species of genus by having sclerotized superior volsella bearing apical and ventral setae, and by the absence of acrostichals.

Etymology. From Latin secundus = second, the second new species of the genus Cryptotendipes Lenz described from the Russian Far East.

Distribution. Known only from the type locality — Rybnoe Lake (Sakhalin).
**Parachironomus pseudovarulus** Zorina, sp.n.
Figs 3–4.

**Material.** Holotype ♂, Russia, Sakhalin Island, Maloe lake, 24.08.2001, T. Tisnouve. Paratypes: 8♂ 8♀, the same data as holotype.

**Description. Imago, male** (n=2). General colour yellowish-brown. Total length 4.8–5.5 mm; total length/ wing length ratio 1.43–1.60.


 Wing length 3.0–3.5 mm. Squama with 23–32 setae; brachiohum with 2–3 setae. R, R, with 57–64, R+4, with 26–38 setae. VR 1.05–1.07. Halters pale yellow.

Legs yellowish, with the exception of dark brown distal end t1, distal 1/3rd t2, slightly brownish proximal and distal ends t3, t4, t5, P, and P, yellowish, t6 gradually darkled to the end. Terminal combs of t1, with spurs long 48 μm and t6 with spurs long 36 μm. BR, 2.5, BR, 4.5, BR, 5.3. Length and proportions of legs see Table 2.

Abdomen yellowish-brown.


Female, pupa and larva are unknown.

**Differential diagnosis.** New species is close related by structures of superior volsella to *Parachironomus varus* (Goethebuer, 1921), but is distinguished from latter by following features: — *P. varus* (Goeth.) [Towns, 1945; Lehmann, 1970]: length wing 2.4–2.5 mm; t6, P, brown or yellow except for light brown distal end; gonostyli widest in the middle; — *P. pseudovarulus* sp.n.: length wing 3.0–3.5 mm; t6, P, pale yellow except for light brown proximal and distal ends; gonostyli widest in the proximal 1/3rd.

**Etymology.** Name expresses the species’ similarity to *P. varus* (Goethebuer).

**Distribution.** Known only from the type locality — Maloe Lake (Sakhalin).

**Paracladopelma jacksoni** Zorina, sp.n.
Figs 5–6.

**Material.** Holotype:♂, Russia, Sakhalin Island, Tym river at about 12 km from Nogliki village, 30–31.07.2002, E. Makarchenko. Paratypes: 6♂ 6♀, the same data as holotype:♂, Russia, Sakhalin Island, Piltun river near railway bridge, 2008.01. T. Tisnouve.

**Description. Imago, male** (n=3). General colour yellowish-brown. Total length 4.7–5.0 mm; total length/wing length ratio 1.85–1.88.


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**Table 2.** Length (μm) and proportions of legs of the male *Parachironomus pseudovarulus* sp.n.

<table>
<thead>
<tr>
<th>P</th>
<th>f</th>
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<th>t1</th>
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<th>t5</th>
<th>P</th>
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<td>1536</td>
<td>2080</td>
<td>1120</td>
<td>960</td>
<td>640</td>
<td>320</td>
<td>1.35</td>
<td>1.55</td>
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<tr>
<td>P2</td>
<td>1856</td>
<td>1600</td>
<td>896</td>
<td>480</td>
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<td>256</td>
<td>224</td>
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</tr>
<tr>
<td>P3</td>
<td>2048</td>
<td>2240</td>
<td>1440</td>
<td>864</td>
<td>640</td>
<td>384</td>
<td>256</td>
<td>0.64</td>
<td>2.98</td>
<td>2.67</td>
<td></td>
</tr>
</tbody>
</table>

**Table 3.** Length (μm) and proportions of legs of the male *Paracladopelma jacksoni* sp.n.

<table>
<thead>
<tr>
<th>P</th>
<th>f</th>
<th>t</th>
<th>t1</th>
<th>t2</th>
<th>t3</th>
<th>t4</th>
<th>t5</th>
<th>P</th>
<th>LR</th>
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<th>BV</th>
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</thead>
<tbody>
<tr>
<td>P1</td>
<td>1504-1664</td>
<td>2126-1344</td>
<td>1952-1984</td>
<td>960</td>
<td>800</td>
<td>640-672</td>
<td>320</td>
<td>1.61-1.63</td>
<td>1.37-1.39</td>
<td>1.70-1.73</td>
<td></td>
</tr>
<tr>
<td>P2</td>
<td>1472-1664</td>
<td>1504-1376</td>
<td>832-864</td>
<td>448-480</td>
<td>320-352</td>
<td>192-224</td>
<td>160-192</td>
<td>0.57-0.60</td>
<td>3.42-3.67</td>
<td>3.23-3.29</td>
<td></td>
</tr>
<tr>
<td>P3</td>
<td>1692-1888</td>
<td>1692-1888</td>
<td>1184-1376</td>
<td>672-800</td>
<td>512-576</td>
<td>272-352</td>
<td>160-224</td>
<td>0.70-0.73</td>
<td>2.74-2.86</td>
<td>2.64-2.83</td>
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</tbody>
</table>
Legs yellowish, with the exception of distal end $t_1$, $t_2$, distal half or 2/3rds $t_3$, $t_4$, which are brown. $P_1$, yellowish, with the exception of brown distal end $t_1$, proximal 1/3rd $t_2$, $t_3$ gradually darkened to the end. $P_2$, coloured as $P_1$. Terminal combs of $t_1$ and $t_2$ with two spurs long 34–48 $\mu$m. BR, 2.75, BR, 3.2–3.4, BR, 2.83–2.86. Length and proportions of legs see Table 3.

Abdomen tergites I–V yellowish-brown, VI–VIII and hypopygium brown or all tergites brown. Hypopygium (Figs 5–6). Anal tergite bands Y-type. Anal point (length 143–176 $\mu$m, width 33 $\mu$m) widest medially, rounded apically. Gonocoxite 187–220 $\mu$m long. Inner margin of gonocoxite with 4–5 setae. Superior volsella pad-shaped, 88–99 $\mu$m long, 94–110 $\mu$m wide. Inferior volsella apically rounded. Gonostylus 297–341 $\mu$m long, curved, with pointed apex, widest at about middle. Inner margin of gonostylus with 8–15 setae. HR 0.59–0.67.

Female, pupa and larva are unknown.

**Differential diagnosis.** New species is closely related by structures of hypopygium to *Paracladopelma nais* (Townes, 1945), but is distinguished from latter by following features: — *P. nais* (Townes, 1945) [Jackson, 1977]: totally dark brown; terminal combs of $t_3$ and $t_4$ with single spur; Aps 4–11, Ac 8–12, Scts 13–16; tergite IX with weak longitudinal ridge; anal point widest in apical 1/3rd; — *P. jacksoni* sp.n.: totally yellowish-brown; terminal combs of $t_1$ and $t_2$ with two spurs; Aps 10–19, Ac 16–19, Scts 22–25; anal tergite bands Y-type; anal point widest at about middle.

**Etymology.** The species is named after Dr G.A. Jackson, systematist of the genus *Paracladopelma* Hamisch.

**Distribution.** Known only from the Tym and Pulton rivers (Sakhalin).

*Rabackia aculeata* Zorina, sp.n.

Fig. 7.

**Material.** Holotype ♂, Russia, Sakhalin Island, Tym river at about 20 km from Nogliki village, 30.07.2002, V. Teslenko

**Description. Imago, male.** General colour yellow-brown. Total length 5.0 mm; total length/wing length ratio 1.85.

Head. Frontal tubercles absent. Temporal setae 16. Clypeus with 14 setae. Maxillary palp brown, lengths of last 4 palpal segments: 132, 297, 242 and 352 $\mu$m. Pulp length/head width ratio 1.10. Inner part of scapus
Table 4. Length (μm) and proportions of legs of the male Robackia aculeata sp.n.

<table>
<thead>
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<th>P</th>
<th>f</th>
<th>t</th>
<th>ta₁</th>
<th>ta₂</th>
<th>ta₃</th>
<th>ta₄</th>
<th>ta₅</th>
<th>LR</th>
<th>SV</th>
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<tbody>
<tr>
<td>P₁</td>
<td>1440</td>
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<td>-</td>
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<td>1280</td>
<td>800</td>
<td>384</td>
<td>288</td>
<td>160</td>
<td>128</td>
<td>0.63</td>
<td>3.36</td>
<td>3.63</td>
</tr>
<tr>
<td>P₃</td>
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<td>1728</td>
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<td>448</td>
<td>256</td>
<td>160</td>
<td>0.87</td>
<td>2.15</td>
<td>3.22</td>
</tr>
</tbody>
</table>

yellowish-brown, outer part dark brown, flagellumeres 1–11 — dark brown. Antenna 2080 μm long. AR 2.42. Antenna length/palp length ratio 2.03.


Wing length 2.7 mm. Squama with 16 setae; brachiolum with 2 setae. R with 10 setae, R₄ with without setae, R₅ with 2 apical setae. VR 1.11. Halters pale yellow.

Legs yellowish, with the exception of brown proximal 1/3rd and distal ends f₁ and t₁, P₁, yellowish, with the exception of brown distal 2/3rds f₁, t₁, ta₁, P₁, yellowish, with the exception of brown f₂, proximal and distal ends t₂, distal 2/3rds ta₂, ta₃, Terminal combs of t₁ and t₅ with two spurs long 36.4 mm. BR 3.8, BR 5.6. Length and proportions of legs see Table 4.

Abdomen dark brown. Hypopygium (Fig. 7). Anal point length 132 μm, width 38.5 μm) widest in apical 1/3rd, rounded apically, with 11 weak ventral setae. Tergite IX with 2 spines at the base of anal point. Gonocoxite 165 μm long. Inner margin of gonocoxite with 4 setae. Superior volsella (88–99 μm length) rod-shaped, with 2 apical setae. Inferior volsella apically rounded. Gonostyli 341 μm long, clavate, slightly curved. HR 0.48.

Female, pupa and larva are unknown. 

**Differential diagnosis.** New species differs from other species of Robackia by the form of the superior volsella and presence of two spines at the base of anal point.

**Etymology.** From Latin aculeata = spiny, referring to the base of anal point.

**Distribution.** Known only from the type locality — Tym river (Sakhalin).

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**Literature**


