

Non-biting midges of the genus *Paracladopelma* Harnisch (Diptera: Chironomidae) from the Russian Far East

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Abstract

The Far Eastern species of the genus *Paracladopelma* Harnisch, 1923 are revised. Four new species of *Paracladopelma* are described: *P. augustus*, *P. globosum*, *P. pseudocamptolabis*, and *P. urkanensis*. Seven species *P. doris* (Townes), *P. furudoprimum* Sasa, *P. laminatum* (Kieffer), *P. nais* (Townes), *P. nereis* (Townes), *P. nigritulum* (Goetghebuer), and *P. undine* (Townes) are redescribed on the basis of male morphology. Six species are recorded from Russia for the first time. *Paracladopelma simantodeea* Sasa et al. 1998 is presented as a junior synonym of *Paracladopelma furudoprimum* Sasa & Arakawa. A key for males of 12 Far Eastern species of *Paracladopelma* is given.

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

Introduction

The genus *Paracladopelma* Harnisch, 1923 includes 16 species in the Palaearctic Region (Sasa & Kikuchi 1995, Sasa 1998, Sasa et al. 1998, Sæther et al. 2000). Two species, *P. camptolabis* (Kieffer) and *P. doris* (Townes), are known from Russia (Sæther et al. 2000, Kuzmina et al. 2003). Nine species are recorded from the Far East: one from North Korea, two from China, and nine from Japan (Sasa & Kikuchi 1995, Sasa 1998, Sasa et al. 1998, Sæther et al. 2000, Wang 2000). Ten species are recorded from the Nearctic region (Oliver & Dillon 1990).

During our investigation of the chironomid fauna of the Russian Far East, 12 species of the genus *Paracladopelma* were identified. Four new species (*P. augustus*, *P. globosum*, *P. pseudocamptolabis*, and *P. urkanensis*) are described. Six species *P. furudoprimum* Sasa & Arakawa, 1994, *P. laminatum* (Kieffer, 1921), *P. nais* (Townes, 1945), *P. nereis* (Townes, 1945), *P. nigritulum* (Goetghebuer, 1942) and *P. undine* (Townes, 1945) are

recorded from Russia for the first time. *Paracladopelma simantodeea* Sasa *et al.* 1998 is listed as a junior synonym of *Paracladopelma furudoprimum*. A key to known species of the genus *Paracladopelma* from the Russian Far East is given.

Material and methods

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

Descriptions of species

Paracladopelma augustus sp. nov.

(Figs. 1–3)

Type material. Holotype: male, Russia, Khabarovsk Territory, Amur River basin, Bira River in 4 km from the Zheltyei Jar Village, 12–15.VIII.2004, leg. T. Tiunova.

Etymology. Latin noun (*augustus*) for the month of August. The species is named for the month when material was collected.

Diagnostic characters. The species has a total length of 4.0 mm; wing 2.15 mm long; AR 2.19; terminal combs of median and hind tibiae with 2 spurs; anal tergite bands Y-type; posterior part of tergite IX elongated and triangular; superior volsella foot-shaped with elongated base and rectangular apical part; gonostylus long and widest at about apical 1/3, curved, apically pointed.

Male imago ($n = 1$)

Total length 4.0 mm. Wing length 2.15 mm. Total length/wing length 1.86.

Coloration. Scape yellowish brown, flagellomeres dark brown; ground color of thorax pale yellow, mesonotal stripes yellow, postnotum brown; P_1 yellow, except brown on distal 1/3 f_1 and t_1 ; P_2 and P_3 yellowish brown; abdomen brown, hypopygium brown, superior and inferior volsellae yellowish.

Head. Frontal tubercles invisible. Verticals 16. Clypeus with 18 setae. Antenna 1273 μm long. AR 2.19. Maxillary palp 545 μm long, lengths of last 4 palpomeres (in μm): 59; 108; 162; 216. Antenna length/palp length 2.34.

Thorax. Anteprenotals 8, acrostichals 13, dorsocentrals 11–14, prealars 5, supraalars 1. Scutellum with 17 setae.

Wing. Length 2.15 mm, width 0.61. VR 1.11. R with 17–19 setae, R_1 with 12–16 setae, R_{4+5} with 19–20 setae. Squama with 9–11 setae, brachiolum with 1–2 setae.

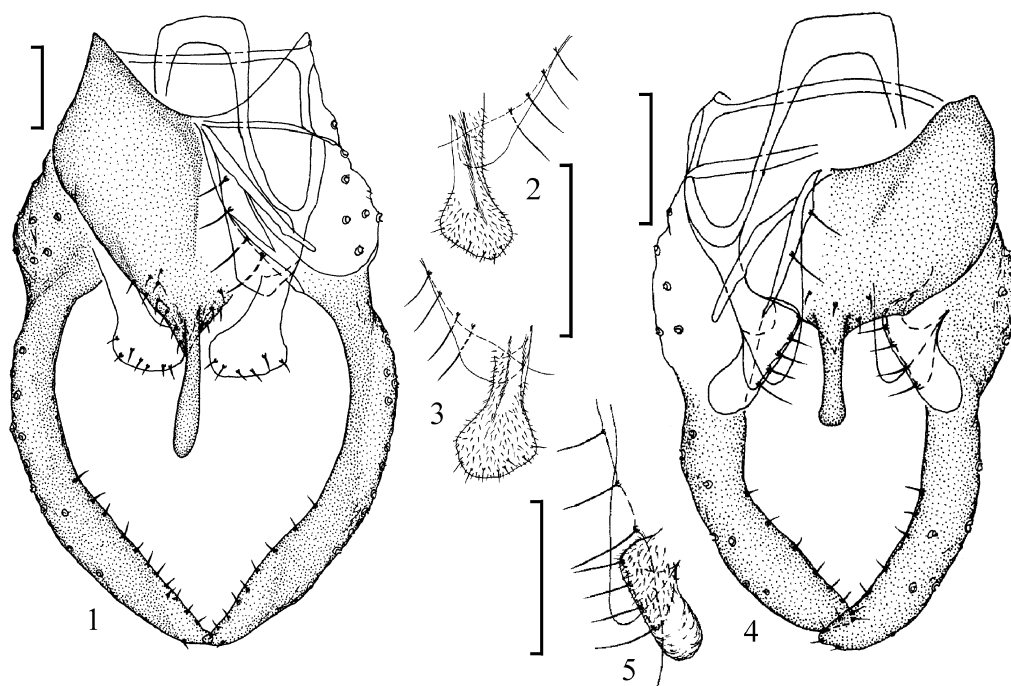
Legs. Terminal combs of median and hind tibiae with 2 spurs (length 18–23 μm). BR_2 3.54, BR_3 5.14.

Length (in μm) and proportions of leg segments:

P	fe	ti	ta ₁	ta ₂	ta ₃	ta ₄	ta ₅	LR	SV	BV
P ₁	950	760	-	-	-	-	-	-	-	-
P ₂	912	817	494	266	190	133	95	0.60	3.5	3.25
P ₃	1045	1045	760	418	342	190	133	0.73	2.75	2.63

Hypopygium (Figs 1–3). Anal tergite bands of Y-type. Posterior part of tergite IX elongated, triangular. Anal point (length 63 μm , width 15.8 μm) widest at about distal 2/3. Laterosternite IX with 1 seta. Transverse sternapodeme 63 μm long. Gonocoxite (length 90 μm) with 4–5 setae. Superior volsella foot shaped with elongated base and rectangular apical part (length 63–68 μm , width 16 μm) covered by microtrichia and with 5–8 setae. Inferior volsella rounded apically (length 95 μm , width 32 μm). Gonostylus long and narrow (length 203 μm , width 32 μm), curved, apically pointed, widest at about distal 1/3. HR 0.44.

Distribution. Known only from the type locality, the Bira River (Amur River basin).



FIGURES 1–5. Male imago *Paracladopelma augustus* sp. nov. (1–3) and *Paracladopelma doris* (4–5). 1, 4. Hypopygia. 2, 3, 5. Superior volsellae. Scale bar = 50 μm .

***Paracladopelma doris* (Townes)**

(Figs. 4–5)

Harnischia (*Cladopelma*) *doris* Townes, 1945: 151*Chironomus* (*Cryptochironomus*) *doris* (Townes); Sublette & Sublette (1965: 167)*Paracladopelma doris* (Townes); Hudson (1971: 169)

Material. 1 male, Russia, Khabarovsk Territory, Ussuri River near Zabaykalskoe Village, 25.VII.2003, leg. T. Tiunova.

Male imago ($n = 1$)

Wing length 1.15 mm.

Coloration. Scape yellow, flagellomeres dark brown; ground color of thorax pale yellow, mesonotal stripes yellow, 2/3 of postnotum brownish; P_1 yellow, except brown on distal end f_1 and t_1 , ta_{1-5} ; P_2 and P_3 yellowish; abdomen yellowish.

Head. Frontal tubercles small (6.75 μm long and 4.5 μm wide). Verticals 7–8. Clypeus with 10 setae.

Thorax. Anteprenotals 0, acrostichals 7, dorsocentrals 5–6, prealars 2–3, supraalars 1. Scutellum with 5 setae.

Wing. Length 1.15 mm, width 0.34. VR 0.89. R and R_1 without setae, R_{4+5} with 2 apical setae. Squama with 2 setae, brachiolum with 1 seta.

Legs. Terminal combs of median and hind tibiae with 2 spurs (length 18 μm). Leg segments lost.

Hypopygium (Figs. 4–5). Anal tergite bands of H-type. Anal point (length 23 μm , width 9 μm) widest subapically. Laterosternite IX without setae. Transverse sternapodeme 32 μm long. Gonocoxite (length 68 μm) with 3 setae. Superior volsella consisting of membranous, bare, pediform dorsal lobe (length 27 μm , width 14 μm) and triangular ventral lobe (length 36 μm) covered by microtrichia and bearing 5 setae. Inferior volsella slightly pointed apically (length 59 μm , width 14 μm). Gonostylus (length 68 μm , width 18 μm) curved, widest at about median. HR 1.

Remarks. The male from the Russian Far East has the wing 1.15 mm long; P_1 yellowish except for the brown distal end of f_1 and t_1 , ta_{1-5} ; P_2 and P_3 yellowish. Males from the Nearctic Region have the wing 1.35–1.65 mm long and the legs stramineous (Townes 1945, Jackson 1977).

Distribution. Holarctic. In the Palaearctic Region, this species is known as larvae from the Komi Republic (Kuzmina *et al.* 2003).

***Paracladopelma furudoprimum* Sasa & Arakawa**

(Figs. 6–7)

Paracladopelma furudoprima Sasa & Arakawa, 1994: 91*Paracladopelma simantodeea* Sasa Suzuki & Sakai, 1998: 51, syn. nov.

Material. 10 males, Russia, Primorye Territory, Bolshaya Ussurka River near Salskoe Village, 16.VII.2003, leg. O. Zorina.

Male imago (n = 3)

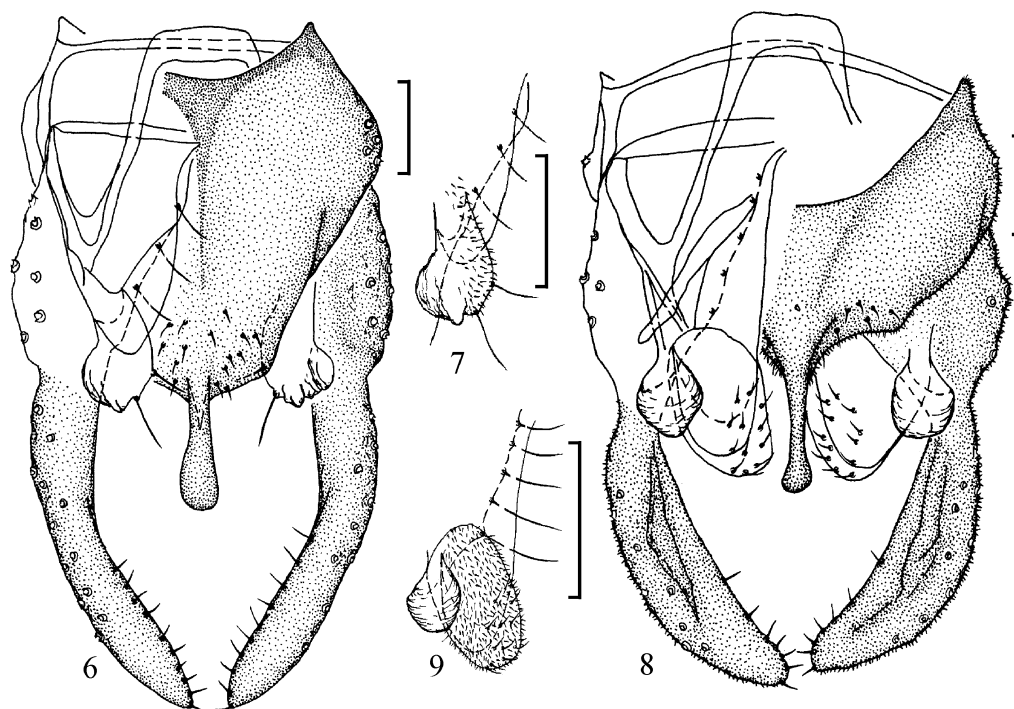
Total length 2.6–2.8 mm. Wing length 1.35–1.45 mm. Total length/wing length 1.79–2.0.

Coloration. Scape yellowish brown, flagellomeres dark brown; ground color of thorax pale yellow, mesonotal stripes yellow, 2/3 of postnotum brownish yellow; P_1 yellow, except brown on distal 1/2 f_1 and t_1 , ta_{1-5} ; P_2 and P_3 yellowish, f_2 and f_3 brown on distal end and t_2 , t_3 , ta_{1-5} brown; abdomen yellowish brown.

Head. Frontal tubercles small (4.5 μm long and 4.5 μm wide). Verticals 11–13. Clypeus with 12–13 setae. Antenna 779–798 μm long. AR 1.56–1.63. Maxillary palp 450–473 μm long, lengths of last 4 palpomeres (in μm): 36–45; 113–122; 122–126; 180. Palp length/head width 1.06–1.18; antenna length/palp length 1.65–1.73.

Thorax. Anteprenotals 6–7, acrostichals 12–14, dorsocentrals 9–14, prealars 3–5, supraalars 1. Scutellum with 11–13 setae.

Wing. Length 1.35–1.45 mm, wide 0.38–0.46. VR 1.17–1.22. R with 19–25 setae, R_1 with 15–18 setae, R_{4+5} with 25 setae. Squama with 2–3 setae, brachiolum with 1–2 setae.



FIGURES 6–9. Male imago *Paracladopelma furudoprimum* (6–7) and *Paracladopelma globosum* sp. nov. (8–9). 6, 8. Hypopygia. 7, 9. Superior volsellae. Scale bar = 50 μm .

Legs. Terminal combs of median and hind tibiae with 2 spurs (length 18 μm). LR_1 1.64–1.67, LR_2 0.58–0.59, LR_3 0.65–0.69; SV_1 1.40–1.42, SV_2 3.67–3.72, SV_3 2.88–3.0; BV_1 1.86–1.91, BV_2 3.4–3.5, BV_3 2.62–2.81; BR_1 2.6–2.8, BR_2 3.3–4.0, BR_3 5.0–5.2.

Hypopygium (Figs. 6–7). Anal tergite bands of Y-type. Anal point (length 54–59 μm , width 14 μm) widest in distal 1/3. Posterior part of tergite IX elongated with lateral protuberances. Laterosternite IX with 2–4 setae. Transverse sternapodeme 36–41 μm long. Gonocoxite (length 90 μm) with 3 setae. Superior volsella (length 41–45 μm , width 27–36 μm) with ventromedian lobe covered by microtrichia and bearing 1 long (18 μm) and 1 short (14 μm) seta, and dorsolateral bare, membranous lobe. Inferior volsella rounded apically (length 77 μm , width 23 μm). Gonostylus (length 126–131 μm , width 23–27 μm) curved medially. HR 0.69–0.71.

Remarks. Type material of *Paracladopelma simantodeea* Sasa et al. was not examined. *Paracladopelma simantodeea* is a synonym of *Paracladopelma furudoprimum* on the basis of the description and figures of Sasa et al. (1998). The genus name *Paracladopelma* is neuter, and the adjectival ending of the species epithet is thus changed to -um. The species is recorded from Russia for the first time.

Distribution. Palaearctic species. Known from Japan (Sasa & Arakawa 1994) and the Russian Far East (Makarchenko et al. 2005).

***Paracladopelma globosum* sp. nov.**

(Figs. 8–9)

Type material. Holotype: male, Russia, Sakhalin Island, Tym River, 2 km from bridge crossing Parkata River, 2–3.VIII.2003, leg. E. Makarchenko; Paratype: 1 male, same data as holotype.

Etymology. The species name is from Latin *globosum*, globe-shaped, an adjective referring to the form of the superior volsella.

Diagnostic characters. This new species has a total length of 3.0 mm, AR 1.73, and the superior volsella with globe-shaped dorsal lobe and oval ventral lobe covered by microtrichia and 12 setae.

Male imago ($n = 2$)

Total length 3.0 mm. Wing length 1.85 mm. Total length/wing length 1.62.

Coloration. Scape yellow, flagellomeres brown; ground color of thorax pale yellow, mesonotal stripes yellow, 2/3 of postnotum brownish; P_1 yellow, except brown on distal 1/2 f_1 and distal half t_1 , ta_{1-5} ; P_2 and P_3 yellowish brown; abdomen yellowish brown.

Head. Frontal tubercles small (length 6.8 μm and wide 4.5 μm). Verticals 10–12. Clypeus with 11 setae. Antenna 1140 μm long. AR 1.73. Maxillary palp 482 μm long, lengths of last 4 palpomeres (in μm): 41; 126; 117; 198. Palp length/head width 1.01; antenna length/palp length 2.37.

Thorax. Anteprenotals 1–2, acrostichals 10, dorsocentrals 6–7, prealars 3, supraalars 1. Scutellum with 3–4 setae.

Wing. Length 1.85 mm, width 0.53–0.55. VR 1.18–1.20. R with 11–13 setae, R₁ with 2 setae, R₄₊₅ with 13–15 setae. Squama with 1 seta, brachiolum with 2–3 setae.

Legs. Terminal combs of median and hind tibiae with 2 spurs (length 18–22 µm). BR₁ 2.8, BR₂ 4.17, BR₃ 7.0.

Length (in µm) and proportions of leg segments:

P	fe	ti	ta ₁	ta ₂	ta ₃	ta ₄	ta ₅	LR	SV	BV
P ₁	722	513	1064	532	418	323	152	2.07	1.16	1.61
P ₂	722	665	380	190	133	76	95	0.57	3.65	3.58
P ₃	817	855	570	323	247	152	95	0.67	2.93	2.74

Hypopygium (Figs. 8–9). Anal tergite bands of H-type. Anal point (length 59 µm, width 14 µm) widest subapically. Laterosternite IX with 1 seta. Transverse sternapodeme 45 µm long. Gonocoxite (length 108 µm) with 5 setae. Superior volsella with globular, bare dorsal lobe (length 36 µm, width 27 µm) and oval ventral lobe (length 59–68 µm, width 54 µm) covered by microtrichia and 12 setae. Inferior volsella rounded apically (length 122 µm, width 32 µm). Gonostylus (length 104 µm, width 32 µm) slightly curved, widest medially. HR 1.04.

Remarks. This new species is similar to *P. doris* (Townes) but can be distinguished by having a globe-shaped dorsal lobe and oval ventral lobe bearing microtrichia and 12 setae of the superior volsella of the gonocoxite.

Distribution. Known only from the type locality, the Tym River on Sakhalin Island.

Paracladopelma jacksoni Zorina

(Figs. 10–11)

Paracladopelma jacksoni Zorina 2003: 221

The description of the species, based on the morphology of the adult male, was published in a separate paper (Zorina 2003).

Paracladopelma laminatum (Kieffer)

(Figs. 12–13)

Cladopelma laminata Kieffer, 1921: 64

Chironomus (Cryptochironomus) laminatus (Kieffer); Goetghebuer (1937: 34)

Paracladopelma laminata (Kieffer): Lenz (1959: 438); Reiss (1968: 261); Albu (1980: 148)
Paracladopelma laminatum (Kieffer): Sæther & Spies (2004)

Material. 1 male, Russia. Primorye Territory, Barabashevka River at about 8 km from Primorskaya Village, 17.VII.1975, leg. L. Zhiltzova; 1 male, Amursk Region, Zavitaya River near railway bridge of route Birobidzhan-Khabarovsk, 1.IX.2004, leg. T. Tiunova.

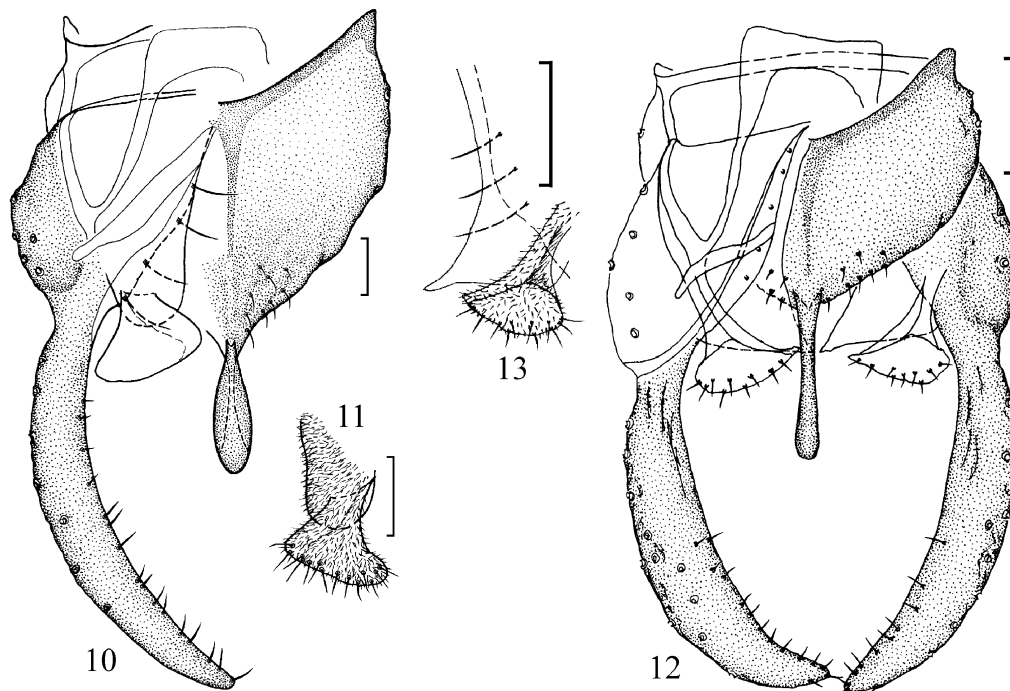
Male imago ($n = 2$)

Total length 3.4–3.5 mm. Wing length 2.05–2.10 mm. Total length/wing length 1.62–1.71.

Coloration. Scape yellow, flagellomeres dark brown; ground color of thorax pale yellow, mesonotal stripes yellow, 2/3 of postnotum brown; P_1 yellow, except brown on distal 1/3 f_1 and t_1 , ta_{1-5} ; P_2 and P_3 yellowish, f_2 and f_3 yellowish brown at distal end and t_2 and t_3 yellowish brown at proximal end; ta_{1-5} gradually darkened toward apex; abdomen yellowish brown.

Head. Frontal tubercles 23 μm long and 9 μm wide. Verticals 17–20. Clypeus with 10–12 setae. Antenna 1197 μm long. AR 2.0. Maxillary palp 495 μm long, lengths of last 4 palpomeres (in μm): 50; 99; 158; 189. Antenna length/palp length 2.42.

Thorax. Anteprenotals 8, acrostichals 12, dorsocentrals 5, prealars 4, supraalars 1. Scutellum with 8 setae.



FIGURES 10–13. Male imago *Paracladopelma jacksoni* (10–11) and *Paracladopelma laminatum* (12–13). 10, 12. Hypopygia. 11, 13. Superior volsellae. Scale bar = 50 μm .

Wing. length 1.62–1.71 mm, width 0.59–0.67. VR 1.16–1.20. R with 10–15 setae, R₁ with 7–8 setae, R₄₊₅ with 17–19 setae. Squama with 6 setae, brachiolum with 1–2 setae.

Legs. Terminal combs of median and hind tibiae with 1 spur (length 32 µm). LR₁ 1.75, LR₂ 0.58–0.61, LR₃ 0.68–0.72; SV₁ 1.36, SV₂ 3.52–3.70, SV₃ 2.82–3.0; BV₁ 1.81, BV₂ 3.35–3.38, BV₃ 2.71–2.72; BR₁ 2.6, BR₂ 3.2, BR₃ 4.5.

Hypopygium (Figs. 12–13). Anal tergite bands of Y-type. Median longitudinal ridge of anal tergite bands present. Anal point (length 63–72 µm, width 14 µm) widest in apical part. Laterosternite IX with 1–2 setae. Transverse sternapodeme 72 µm long. Gonocoxite (length 99–122 µm) with 4–5 setae. Superior volsella foot-shaped (length 50 µm, width 45 µm) with 10–11 setae. Inferior volsella pointed ventromedially (length 90 µm, width 54 µm). Gonostylus (length 126–144 µm, width 27 µm) curved, widest medially. HR 0.79–0.84.

Distribution: Holarctic. The species is recorded from Russia for the first time.

Paracladopelma nais (Townes)

(Figs. 14–15)

Harnischia (*Cladopelma*) *nais* Townes, 1945: 149; Roback (1957: 101)

Chironomus (*Cryptochironomus*) *nais* (Townes); Sublette & Sublette (1965: 168)

Paracladopelma nais (Townes); Hudson (1971: 161)

Material. 1 male, Russia, Primorye Territory, Barabashevka River, 23.V.2002, leg. T. Tiunova.

Male imago ($n = 1$)

Wing length 2.5 mm.

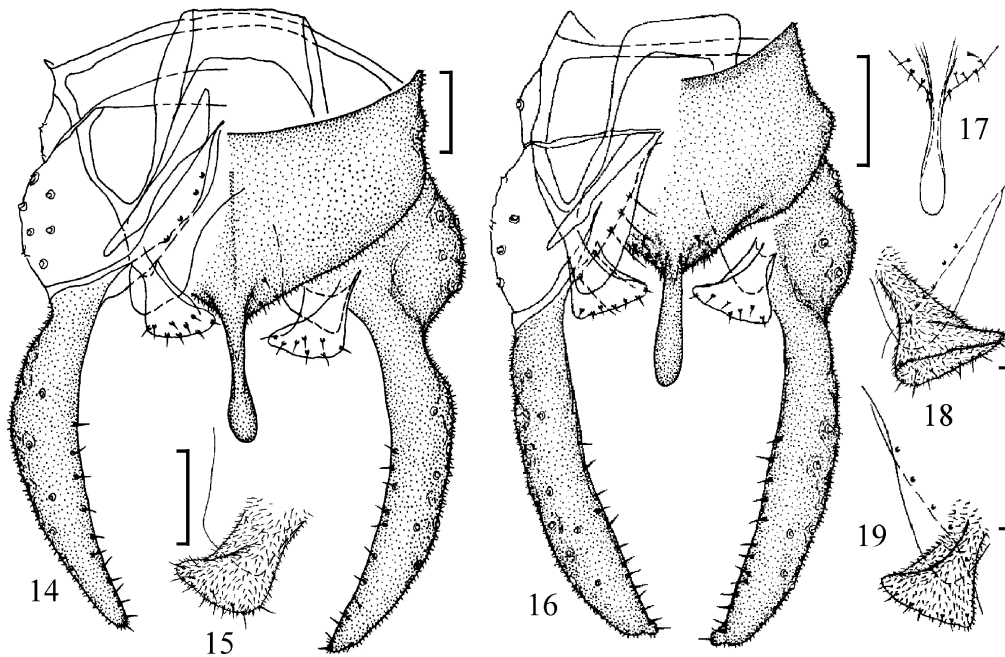
Coloration. Scape and flagellomeres brown; ground color of thorax pale brown, mesonotal stripes brown, 2/3 of postnotum brown; legs yellowish brown; abdomen yellowish brown.

Head. Frontal tubercles 23 µm long and 9 µm wide. Verticals 15–17. Clypeus with 15 setae. Antenna 1406 µm long. AR 2.08. Maxillary palp 630 µm long, lengths of last 4 palpomeres (in µm): 54; 135; 185; 257. Antenna length/palp length 2.23.

Thorax. Anteprenotals 5, acrostichals 13, dorsocentrals 11, prealars 3, supraalars 1. Scutellum with 13 setae.

Wing. Length 2.5 mm, width 0.7. VR 1.16. R with 14 setae, R₁ with 17 setae, R₄₊₅ with 24 setae. Squama with 6 setae, brachiolum with 2 setae.

Legs. Terminal combs of median and hind tibiae with 1 spur (length 27 µm). LR₁ 1.74, LR₂ 0.61, LR₃ 0.73; SV₁ 1.36, SV₂ 3.25, SV₃ 2.68; BV₁ 1.79, BV₂ 2.98, BV₃ 2.66; BR₁ 2.5, BR₂ 5.0, BR₃ 4.57.



FIGURES 14–19. Male imago *Paracladopelma nais* (14–15) and *Paracladopelma nereis* (16–19). 14, 16. Hypopygia. 15, 18, 19. Superior volsellae. 17. Anal point. Scale bar = 50 μ m.

Hypopygium (Figs. 14–15). Median longitudinal ridge of anal tergite bands present. Anal point (length 81 μ m, width 18 μ m) widest in apical half. Laterosternite IX with 0–2 setae. Transverse sternapodeme 81 μ m long. Gonocoxite (length 122 μ m) with 5 setae. Superior volsella foot-shaped (length 50–59 μ m, width 41 μ m) with 11–13 setae. Inferior volsella apically slight pointed (length 126 μ m, width 41 μ m). Gonostylus (length 185 μ m, width 32 μ m) slightly curved, apically pointed. HR 0.66.

Distribution. Holarctic. In the Palaearctic Region, the species has been recorded as larvae from Romania (Tudorancea & Tudorancea 1998). It is recorded from the East Palaearctic for the first time.

***Paracladopelma nereis* (Townes)**

(Figs. 16–19)

Harnischia (*Cladopelma*) *nereis* Townes, 1945: 150

Chironomus (*Cryptochironomus*) *nereis* (Townes); Sublette & Sublette (1965: 168)

Paracladopelma nereis (Townes); Mozley & Garcia (1972: 109)

Material. 2 males, Russia, Primorye Territory, Tumannaya River, 18.V.1999, leg. E. Makarchenko; 2 males, Razdolnaya River near Pokrovka Village, 15–16.V.1993, leg. E.

Makarchenko; 1 male, Ussuri River at about 1.5 km from Kirovsky, 23.IX.1991, leg. T. Tiunova; 1 male, Kabarga River near railway bridge, Ussuri River basin, 14.VII.2000, leg. T. Tiunova; 1 male, Khabarovsk Territory, Amur River basin, Bidzhan River near Preobrazhenovka Village, 4.VIII.2003, leg. T. Tiunova; 1 male, Tunguska River near Danilovka Village, 26.VI.2004, leg. T. Tiunova; 1 male, Zavitaya River near railway bridge of route Birobidzhan-Khabarovsk, 1.IX.2004, leg. T. Tiunova; 2 males, Amursk Region, Zeya River at about 1 km above of bridge, 20.VIII.2004, leg. T. Tiunova.

Male imago ($n = 8$)

Total length 3.0–4.1 mm. Wing length 1.7–2.4 mm. Total length/wing length 1.42–1.93.

Coloration. Scape yellowish brown or brown, flagellomeres dark brown; ground color of thorax pale yellow, mesonotal stripes yellow, 2/3 of postnotum brown; P_1 yellow, except brown on distal 2/3 f_1 and t_1 , ta_{1-5} ; P_2 and P_3 yellowish, ta_{1-5} gradually darkened toward apex or f_2 and f_3 yellowish brown at distal end and t_2 and t_3 yellowish brown at proximal end; abdomen yellowish brown.

Head. Frontal tubercles 9.0–22.5 μm long and 6.8–11.3 μm wide. Verticals 12–17. Clypeus with 11–16 setae. Antenna 1045–1292 μm long. AR 1.89–2.09. Maxillary palp 500–554 μm long, lengths of last 4 palpomeres (in μm): 54–68; 113–117; 135–158; 185–212. Antenna length/palp length 2.33–2.43.

Thorax. Anteprenotals 3–5, acrostichals 10–12, dorsocentrals 5–9, prealars 2–4, supraalars 1. Scutellum with 7–11 setae.

Wing. Length 1.7–2.4 mm, wide 0.53–0.72. VR 1.16–1.21. R with 4–10 setae, R_1 without setae, R_{4+5} with 2–4 apical setae. Squama with 3–10, brachiolum with 1–3 setae.

Legs. Terminal combs with 2 spurs (length 18–23 μm). LR_1 1.58–1.81, LR_2 0.58–0.63, LR_3 0.63–0.68; SV_1 1.32–1.44, SV_2 3.40–3.62, SV_3 2.88–3.09; BV_1 1.75–1.86, BV_2 3.48–3.83, BV_3 2.58–2.75; BR_1 2.5–3.0, BR_2 4.3, BR_3 4.4–4.5.

Hypopygium (Figs. 16–19). Median longitudinal ridge of anal tergite bands absent. Anal point (length 54–59 μm , width 9–14 μm) widest in apical half. Laterosternite IX with 1–2 setae, rarely 0. Transverse sternapodeme 50 μm long. Gonocoxite (length 72–99 μm) with 5–11 setae. Superior volsella foot-shaped (length 32–50 μm , width 32–45 μm) with 12–15 setae. Inferior volsella apically rounded (length 72–108 μm , width 23 μm). Gonostylus (length 117–180 μm , width 23–27 μm) slightly curved, on apex with rounded tubercle. HR 0.55–0.65.

Distribution. Holarctic. In the Palearctic Region, the species is known from North Korea (Sæther *et al.* 2000) and the Russian Far East (Makarchenko *et al.* 2005). It is recorded from Russia for the first time.

***Paracladopelma nigrifulum* (Goetghebuer)**

(Figs. 20–21)

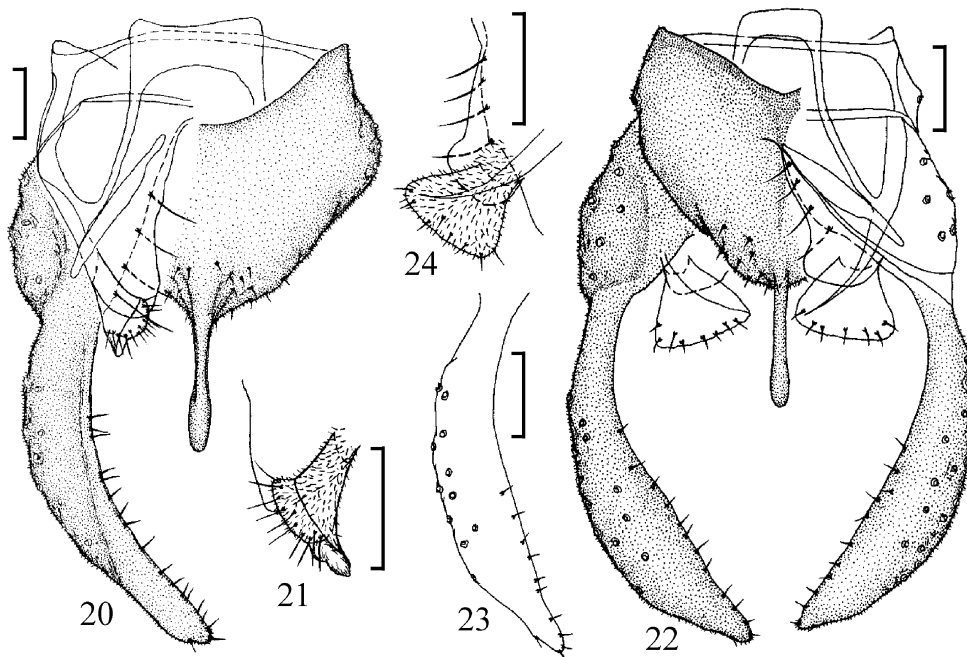
Chironomus (*Cryptochironomus*) *nigrifulus* Goetghebuer, 1942: 3*Paracladopelma nigrifula* (Goetghebuer); Lenz (1959: 440)*Chironomus* (*Chironomus*) *claripennis* Edwards, 1929: 387*Tendipes* (*Cryptochironomus*) *claripennis* (Edwards); Goetghebuer (1937: 35)*Paracladopelma obscura* Brundin, 1949: 763; Reiss (1968: 203)

Material. 1 male, Russia, Primorye Territory, Ussuri River at about 4–5 km from Kamenka Village, 3.VII.1993, leg. T. Tiunova; 2 males, Sakhalin Island, Ossoy River, 19.VIII.2001, leg. T. Tiunova; 1 male, Evay River, 7–8.IX.2001, leg. T. Tiunova; 1 male, Tym River 12 km from Nogliki Village, 30–31.VII.2002, leg. E. Makarchenko; 3 males, Starodinskaya River near 45–50 km from Krasnoyarsk Village, 22.VII.2002, leg. E. Makarchenko; 1 male, Orlovka River near 5 km from Pilvo Village, 25.VII.2003, leg. E. Makarchenko; 1 male, Tym River 2 km from railway bridge through Parkata River, 2–3.VIII.2003, leg. E. Makarchenko.

Male imago ($n = 7$)

Total length 3.5 mm. Wing length 2.5–2.8 mm. Total length/wing length 1.49.

Coloration. Scape and flagellomeres dark brown; ground color of thorax brown, mesonotal stripes and postnotum dark brown; legs and abdomen brown.



FIGURES 20–24. Male imago *Paracladopelma nigrifulum* (20–21) and *Paracladopelma pseudocampitolabis* sp. nov. (22–24). 20, 22. Hypopygia. 21, 24. Superior volsellae. 23. Gonostylus. Scale bar = 50 μ m.

Head. Frontal tubercles 13.5–18 μm long and 9 μm wide. Verticals 13–19. Clypeus with 12–15 setae. Antenna 1273–1482 μm long. AR 2.19–2.55. Maxillary palp 581–630 μm long, lengths of last 4 palpomeres (in μm): 54–68; 145–167; 158–180; 216–234. Palp length/head width 0.95–0.99; antenna length/palp length 2.08–2.35.

Thorax. Anteprenotals 6–13, acrostichals 0, dorsocentrals 8–12, prealars 3–6, supraalars 1. Scutellum with 10–12 setae.

Wing. Length 2.5–2.8 mm, width 0.70–0.76. VR 1.02–1.06. R with 11–19, R_1 with 11–16, R_{4+5} with 12–21 setae. Squama with 9–18, brachiolum with 2 setae.

Legs. Terminal combs with 2 spurs (length 18 μm). LR_1 1.25–1.53, LR_2 0.48–0.52, LR_3 0.59–0.63; SV_1 1.45–1.72, SV_2 4.0–4.15, SV_3 3.07–3.32; BV_1 1.78–1.92, BV_2 2.84–3.10, BV_3 2.61–2.80; BR_1 2.5–3.0, BR_2 3.38–3.83, BR_3 4.29–5.38.

Hypopygium (Figs. 20–21). Median longitudinal ridge of anal tergite bands absent. Anal point (length 77–86 μm , width 14 μm) widest in apical half. Laterosternite IX with 2–6 setae. Transverse sternapodeme 72–81 μm long. Gonocoxite (length 108–144 μm) with 3–4 setae. Superior volsella (length 36–45 μm , width 27–32 μm) with membranous, bare dorsolateral lobe and ventromedian lobe covered by microtrichia and 8–10 setae. Inferior volsella apically rounded (length 99–122 μm , width 27–41 μm). Gonostylus (length 162–198 μm , width 36 μm) curved, widest at about proximal 1/3. HR 0.64–0.75.

Distribution. Palaearctic species. In the Russian Far East, this species occurs on Sakhalin Island and in the Primorye Territory (Makarchenko *et al.* 2005). It is recorded from Russia for the first time.

***Paracladopelma pseudocamptolabis* sp. nov.**

(Figs. 22–24)

Type material. Holotype: male, Russia, Primorye Territory, Ilistaya River near Lyalichy Village, 4.VIII.2003, leg. O. Zorina; Paratypes: 14 males, the same data as holotype; 1 male, Ussuri River opposite Mikheevskiei Island, 1.VI.1992, leg. T. Tiunova; 2 males, Ussuri River about 1.5 km above Kirovsky Village, 23.IX.1991, leg. T. Tiunova; 6 males, Bolshaya Ussurka near Salskoe Village, 16.VII.2003, leg. O. Zorina; 1 male, Bolshaya Ussurka about 2 km from Zvenigoroda Village, 8.VI.2004, leg. T. Tiunova; 1 male, Bikin River about 300 m from bridge of route Vladivostok-Khabarovsk, 13.VII.2000, leg. T. Tiunova; 5 males, Khabarovsk Territory, Ussuri River near Zabaikalskoe Village, 26.VII.2003, leg. T. Tiunova; 1 male, Amur River near Troitzkoe Village, 2.VIII.1996, leg. T. Tiunova, T. Arephina; 1 male, Bira River near Zheltyei Jar Village, 2.IX.2004, leg. T. Tiunova; 1 male, Amursk Region, Norski Nature Reserve, Nora River basin, Sorokoverstova duct, 4.IX.2004, leg. T. Tiunova.

Etymology. The prefix *pseudo-* is from Latin, meaning "incorrect" or "erroneous", referring to the similarity of this species to *P. camptolabis* (Kieffer, 1913).

Diagnostic characters. This species has a total length of 2.5–4.0 mm, wing length 1.4–2.0 mm, terminal combs of the median and hind tibiae with 2 spurs, anal point narrow and parallel sided, superior volsella symmetrical club-shaped, inferior volsella in the apical part rectangular without setae, and the gonostylus widest at about the distal 1/3.

Male imago ($n = 10$)

Total length 2.5–4.0 mm. Wing length 1.4–2.0 mm. Total length/wing length 1.56–2.42.

Coloration. 1. Scape yellowish brown, flagellomeres dark brown; ground color of thorax pale yellow, mesonotal stripes yellowish brown, 2/3 of postnotum brown; P_1 yellow, except brown on distal 1/2 f_1 and t_1 , ta_{1-5} ; P_2 and P_3 yellowish; abdomen yellowish. Antenna, mesonotal stripes, and 2/3 postnotum dark brown; legs brown; abdomen yellowish brown.

Head. Frontal tubercles 9.9–18 μm long and 4.5–6.75 μm wide. Verticals 10–16. Clypeus with 12–19 setae. Antenna 912–1235 μm long. AR 1.82–2.05. Maxillary palp 392–522 μm long, lengths of last 4 palpomeres (in μm): 36–45; 95–122; 104–158; 158–207. Palp length/head width 0.99–1.06; antenna length/palp length 2.28–2.45.

Thorax. Anteprenotals 5–10, acrostichals 7–18, dorsocentrals 6–12, prealars 2–3, supraalars 1. Scutellum with 4–7 setae.

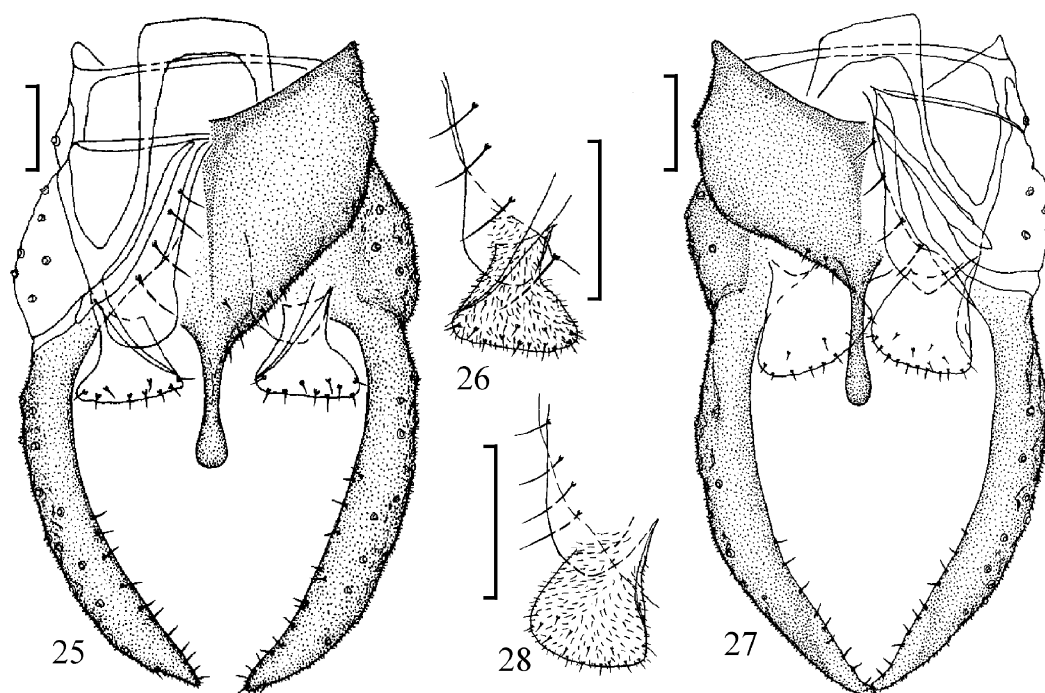
Wing. Length 1.4–2.0 mm, width 0.40–0.67. VR 1.14–1.24. R with 5–13 setae, R_1 without setae, R_{4+5} with 4–21 setae. Squama with 2–7, brachiolum with 1–2 setae.

Legs. Terminal combs of median and hind tibiae with 2 spurs (length 22 μm), rarely terminal combs of hind tibiae with 3 spurs. BR_1 2.2–2.6, BR_2 3.4–4.0, BR_3 5.0–5.4.

Length (in μm) and proportions of leg segments:

P	fe	ti	ta_1	ta_2	ta_3	ta_4	ta_5
P_1	646–836	437–646	836–1064	380–475	314–380	247–323	114–171
P_2	608–836	513–741	304–475	152–228	114–190	76–114	57–95
P_3	684–969	665–931	456–665	228–342	209–304	124–190	86–114
P	LR	SV	BV				
P_1	1.65–1.91	1.29–1.40	1.78–1.89				
P_2	0.53–0.69	3.16–4.0	3.21–3.59				

Hypopygium (Figs. 22–24). Anal tergite bands Y-type. Anal point (length 50–59 μm , width 8–9 μm) narrow and parallel side. Laterosternite IX with 1–2 setae. Transverse sternapodeme 36–45 μm long. Gonocoxite (length 68–126 μm) with 3–4 setae. Superior volsella symmetrical pad-like (length 32–50 μm , width 32–50 μm) with 10–14 short setae. Inferior volsella rounded apically (length 63–68 μm , width 27–32 μm). Gonostylus (length 117–171 μm , width 27–36 μm) slightly curved, widest at about distal 1/3. HR 0.54–0.74.



FIGURES 25–28. Male imago *Paracladopelma undine* (25–26) and *Paracladopelma urkanensis* sp. nov. (27–28). 25, 27. Hypopygia. 26, 28. Superior volsellae. Scale bar = 50 μ m.

Remarks. This new species is similar to *P. camptolabis* (Kieffer, 1913) and *P. hibarasecunda* Sasa, 1993 but is distinguished from them by the following features:

- *P. pseudocamptolabis*: total length 2.5–4.0 mm, wing length 1.4–2.0 mm, terminal combs of median and hind tibiae with 2 spurs, anal point narrow and parallel sided, superior volsella symmetrical club-shaped, inferior volsella with more or less rectangular distal margin without setae, gonostylus widest at about distal 1/3 length.

- *P. camptolabis* (Kieffer *sensu* Jackson 1977): total length 5.0 mm, wing length 2.5 mm, terminal combs of median and hind tibiae with 1 spur, anal point widest at about apical 1/3, superior volsella slightly foot-shaped, inferior volsella apically rounded without setae, gonostylus widest at about proximal 1/3 length.

- *P. hibarasecundum*: total length 3.68 mm; wing length 1.67 mm; terminal combs of median and hind tibiae with 2 spurs; anal point long, narrow and pointed apically; superior volsella symmetrical club-shaped; inferior volsella composed of small knob-like process bearing 2 short setae at the base of superior volsella and triangular process covered by microtrichia; gonostylus widest at about distal 1/3 length.

Distribution. This species is widespread in the Russian Far East.

***Paracladopelma undine* (Townes)**

(Figs. 25–26)

Harnischia (*Cladopelma*) *undine* Townes, 1945: 149; Roback (1957: 102)*Chironomus* (*Cryptochironomus*) *undine* (Townes); Sublette & Sublette (1965: 168)*Paracladopelma undine* (Townes); Beck & Beck (1969: 302)

Material. 1 male, Russia, Khabarovsk Territory, Khingan River near railway bridge, 28.VII.2003, leg. O. Zorina; 1 male, Sakhalin Island, Lutoga River near Vysokoe Village, 25–26.VII.2001, leg. E. Makarchenko; 3 males, Leonidovka River 8 km below Leonidovo Village, 9–10.VIII.2001, leg. E. Makarchenko; 1 male, Avgustovka River 13 km from Boshnyakovo Village, 23.VII.2003, leg. E. Makarchenko; 1 male, Nayba River about 5 km from Bikovo Village, 17.VII.2003, leg. E. Makarchenko.

Male imago ($n = 6$)

Wing length 1.6–2.1 mm.

Coloration. Scape yellow, flagellomeres dark brown; ground color of thorax pale yellow, mesonotal stripes yellow or yellowish brown, 2/3 of postnotum brown; P_1 yellow, except brown on distal end f_1 and t_1 , ta_{1-5} ; P_2 and P_3 yellowish, except f_2 and f_3 brownish on distal 1/3 and t_2 and t_3 brownish on proximal end, ta_{1-5} gradually darkened toward apex; abdomen yellowish.

Head. Frontal tubercles 13.5–18 μm long and 4.5–6.75 μm wide. Verticals 17. Clypeus with 12–15 setae. Antenna 931–1083 μm long. AR 1.58–1.71. Maxillary palp 356–491 μm long, lengths of last 4 palpomeres (in μm): 32–54; 90–117; 99–135; 135–194. Palp length/head width 0.72–0.99; antenna length/palp length 2.17–2.78.

Thorax. Anteprenotals 3, acrostichals 9–13, dorsocentrals 4–9, prealars 2–5, supraalars 1. Scutellum with 7–9 setae.

Wing. Length 1.6–2.1 mm, width 0.48–0.59. VR 1.15–1.23. R with 7–11 setae, R_1 without setae, R_{4+5} with 11–14 setae. Squama with 2–4, brachiolum with 1–2 setae.

Legs. Terminal combs with 2 spurs (length 18 μm). LR_1 1.77–1.84, LR_2 0.56–0.60, LR_3 0.62–0.68; SV_1 1.25–1.41, SV_2 3.52–3.84, SV_3 2.93–3.21; BV_1 1.72–1.84, BV_2 3.43–3.81, BV_3 2.82–2.95; BR_1 2.6–3.0, BR_2 4.0, BR_3 4.0–5.0.

Hypopygium (Figs 25–26). Median longitudinal ridge of anal tergite bands present (Y-type). Anal point (length 54–63 μm , width 12–14 μm) widest in apical 1/3. Laterosternite IX with 1–2 setae. Transverse sternapodeme 54 μm long. Gonocoxite (length 77–90 μm) with 3–4 setae. Superior volsella foot shaped (length 41–45 μm , width 36–45 μm) with 8–10 setae. Inferior volsella quadrate, apically rounded (length 77–90 μm , width 27–45 μm). Gonostylus (length 144–162 μm , width 23 μm) almost straight, apically pointed. HR 0.53–0.61.

Distribution. Holarctic species. In the Palaearctic Region, it occurs in Western Europe (Sæther *et al.* 2000) and the Russian Far East (Makarchenko *et al.* 2005). It is recorded from Russia for the first time.

***Paracladopelma urkanensis* sp. nov.**

(Figs. 27–28)

Type material. Holotype: male, Russia, Amursk Region, Urkan River near bridge of route of Tygda-Zeya, 13.VIII.2004, leg. T.Tiuniva.

Etymology. The species name is from the type locality, Urkan River, and the Latin suffix - *ensis*, denoting locality.

Diagnostic characters. This new species has wing length 2.0 mm; AR 2.1; legs brown; tergite IX with Y-type band; superior volsella symmetrical club-shaped, covered by microtrichia and bearing numerous short setae; inferior volsella slightly pointed apically; gonostylus long and narrow, slightly curved, apically pointed.

Male imago ($n = 1$)

Total length 3.6 mm. Wing length 2.0 mm. Total length/wing length 1.8.

Coloration. Antenna brown; ground color of thorax and scutellum yellowish brown, mesonotal stripes and postnotum brown; legs brown; abdomen brownish, hypopygium brown, superior and inferior volsellae pale yellow.

Head. Frontal tubercles small (length 9 μm and width 6.8 μm). Clypeus with 12 setae. Antenna 1178 μm long. AR 2.1. Maxillary palp 495 μm long, lengths of last 4 palpomeres (in μm): 63; 99; 144; 189. Antenna length/palp length 2.38.

Thorax. Anteprenotals 6, acrostichals 8, dorsocentrals 8–9, prealars 4, supraalars 1. Scutellum with 9 setae.

Wing. Length 2.0 mm, width 0.63. VR 1.09. R with 14 setae, R_1 with 12–13 setae, R_{4+5} with 16–17 setae. Squama with 8–10 setae, brachiolum with 2 setae.

Legs. Terminal combs of median and hind tibiae with 2 spurs (length 18 μm). BR_1 2.6, BR_2 3.6, BR_3 5.0.

Length (in μm) and proportions of leg segments:

P	fe	ti	ta ₁	ta ₂	ta ₃	ta ₄	ta ₅	LR	SV	BV
P ₁	836	646	1102	532	418	361	190	1.71	1.34	1.72
P ₂	817	722	456	228	171	114	95	0.63	3.38	3.28
P ₃	912	912	627	342	285	171	114	0.69	2.91	2.69

Hypopygium (Figs. 27–28). Anal tergite bands Y-type. Anal point (length 68 μm , width 14 μm) widest subapically. Laterosternite IX with 1 seta. Transverse sternapodeme 50 μm long. Gonocoxite (length 104 μm) with 5 setae. Superior volsella symmetrical, club-shaped (length 54 μm , width 50 μm), covered by microtrichia, and bearing numerous short setae. Inferior volsella slightly pointed apically (length 104 μm , width 36 μm). Gonostylus long and narrow (length 180 μm , width 27 μm), slightly curved, apically pointed, widest medially. HR 0.58.

Remarks. This new species is closely related to *P. alphaeus* (Sublette, 1960) but can be distinguished from it as follows:

- *P. urkanesis*: wing length 2.0 mm; AR 2.1; legs brown; tergite IX with Y-type band; superior volsella without dorsal membranous lobe, covered by microtrichia, and with numerous short setae; inferior volsella slightly pointed apically;

- *P. alphaeus* (Sublette *sensu* Jackson 1977): wing length 1.60–1.92 μm ; AR 1.4–1.8; legs stremineous, knees somewhat darker; tergite IX with mesal longitudinal ridge and 2 small anterior ridges; superior volsella with round dorsolateral, membranous lobe and 9 or 10 strong setae; apical margin of superior volsella parallel to inner margin of gonocoxite; inferior volsella rounded apically.

Distribution. Known only from the type locality, the Urkan River (Amursk Region).

Key to males of *Paracladopelma* Harnisch

1. Anal tergite bands of H-type; superior volsella deeply divided into bare dorsal lobe and microtrichose and setose ventral lobe (*doris* group) 2
- Anal tergite bands usually of Y-type, sometimes absent; superior volsella not as above, when dorsal membranous section is present, it is closely fused with ventral portion..... 3
2. Superior volsella with pediform dorsal lobe (width 14 μm) and triangular ventral lobe (width 14 μm) with 4 or 5 setae; inferior volsella slightly pointed apically (Figs. 4–5) *P. doris*
- Superior volsella with globular dorsal lobe (width 27 μm) and oval ventral lobe (width 54 μm) with 12 setae; inferior volsella apically rounded (Figs, 8, 9) *P. globosum* sp. nov.
3. Superior volsella with membranous dorsolateral lobe, bare; ventromedian lobe covered by microtrichia and setae (*nigritulum* group)..... 4
- Superior volsella evenly sclerotized, club shaped or foot like, covered by microtrichia and setae (*camptolabis* group)..... 5
4. Brown or dark brown midges; wing length 2.5–2.8 mm; AR 2.19–2.55; anal tergite bands absent; posterior margin of tergite IX triangular without lateral protuberances; ventrolateral part of superior volsella with 8–10 setae; gonostylus not constricted medially (Figs. 20–21) *P. nigritulum*
- Yellowish brown midges; wing length 1.35–1.45 mm; AR 1.56–1.63; anal tergite bands Y-type; posterior part of tergite IX elongated with lateral protuberances; ventromedian margin of superior volsella with 2 setae; gonostylus constricted medially (Figs. 6, 7) *P. furudoprimum*
5. Terminal combs of median and hind tibiae with 1 spur 6
- Terminal combs of median and hind tibiae with 2 spurs 7
6. Inferior volsella pointed and ventromedially elongated; anal tergite bands of Y-type

- (Figs. 12, 13) *P. laminatum*
- Inferior volsella apically rounded, not pointed and elongated; tergite IX with medial longitudinal band only (Figs. 14, 15) *P. nais*
7. Anal tergite bands absent; gonostylus with apical tubercle (Figs. 16–19)
..... *P. nereis*
- Anal tergite bands of Y-type; gonostylus without tubercle 8
8. Wing 2.5–2.9 mm long; AR 2.32–2.44; squama with 21 setae; anal point widest medially; superior volsella with elongated dorsolateral margin; inferior volsella apically rounded; gonostylus curved, widest at about midpoint (Figs. 10, 11) *P. jacksoni*
- Wing 1.40–2.15 mm long; AR 1.58–2.19; squama with 1–11 setae; hypopygial structures different 9
9. Superior volsella symmetrical, wide, triangular 10
- Superior volsella foot shaped 11
10. Gonostylus widest at about distal 1/3 length; anal point parallel sided; superior volsella length 31.5–49.5 μm ; R_1 without setae (Figs 22–24)
..... *P. pseudocamptolabis* sp. nov.
- Gonostylus widest in middle; anal point widest subapically; superior volsella length 54 μm ; R_1 with 12 or 13 setae (Figs. 27, 28) *P. urkanensis* sp. nov.
11. Superior volsella with elongated dorsolateral margin; anal point widest subapically; gonostylus nearly straight and widest at about midpoint; HR 0.53–0.61; R_1 without setae (Figs. 25, 26) *P. undine*
- Superior volsella with elongated base and rectangular distal part; anal point widest at about 2/3 length; gonostylus curved and slightly wider in distal 1/3; HR 0.44; R_1 with 12–16 setae (Figs. 1–3) *P. augustum* sp. nov.

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