

Order Diptera, family Chironomidae

Tribe Tanytarsini

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INTRODUCTION

The Tanytarsini (from Greek: *ταυνο* = to strain, *ταρσοσ* = foot) is a species-rich tribe of the large dipteran family Chironomidae. The tribe groups mainly those species that dwell and grow in freshwater habitats, including lakes, ponds, pools, peat-bogs, different kinds of artificial reservoirs, as well as in all kinds of lotic habitats, from springs to large river discharge sites. Larvae and pupae of some species tolerate saline habitats, from brackish, oligo- and mesohaline sea gulfs to strongly saline inland water bodies.

Some species of the tribe are known for mass swarming. This phenomenon is usually connected with the ever fluctuating concentration of organic compounds and the water level in large inland reservoirs, evoking a sudden area for incubation. The mass presence of the Tanytarsini may cause allergic symptoms, which are accompanied by diseases of the respiratory system. In Sudan this phenomenon, which has certain aspects of an epidemic, has lasted for decades now and began just after the extensive development of irrigation channels. The species, which appears there most often includes the *Cladotanytarsus lewisi* (Freeman, 1950) (Cranston et al., 1981).

The Tanytarsini are fine midges, not exceeding a few millimetres, and also for this reason they are still fairly unknown. Although the West Palaearctic is the best studied region, known for over 200 species (Cranston, 2000), systematic studies still yield new species. Some countries of this region remain unexplored. A large area of the Arabian Peninsula is known for the 13 species, which have been recorded here (Cranston, 1989; Cranston & Judd, 1989), whereas no data on Tanytarsini from the United Arab Emirates have been published so far. Four genera, *Cladotanytarsus* Kieffer, 1921, *Paratanytarsus* Thienemann & Bause, 1913, *Tanytarsus* van der Wulp, 1874, and *Virgatanytarsus* Pinder, 1982, including seven species, two of which are new to science, have been found in the present study.

MATERIALS AND METHODS

The material was sampled with light traps (LT), Malaise traps (MT), yellow & white water pans (WP) and sweep net (SN). If not otherwise stated the specimens were collected by A. van Harten. For exact data on sampling sites and methods see van Harten (2008). All trapped specimens were preserved in alcohol, but selected specimens were dissected and mounted in Canada balsam on microscope slides. Designated holotypes and most of paratypes are housed in the Department of Invertebrate Zoology, University of Gdańsk, Poland (DIZUG). Selected specimens of all the species recorded in the present study are deposited in the United Arab Emirates Invertebrate Collection (UAEIC).

The wing was measured from the arculus to the tip; lengths of leg segments were rounded off to the nearest 5 µm; palpomeres II–V, tibial spurs and combs were measured to nearest 1 µm; antennal and leg ratios (AR and LR) were rounded off to 0.01. When 3 or more specimens were measured, the dimensions are reported as ranges followed by the mean (in parentheses). The morphological terminology and abbreviations adjusted to Tanytarsini (Figs 1–5) follow Sæther (1980). Illustrations were prepared using the technique described by Gilka (2008).

Morphological abbreviations used in the text and figures.

Ac = acrostichal setae (acrostichals), AMS = anteromedian setae of superior volsella, AnL = anal lobe of wing, AnP = anal point, AnPC = anal point crests, AnPS = anal point spinulae, AnT = anal tergite, Ar = arculus, ATB = anal tergite bands, BLP = basilateral process of anal tergite, BLS = basilateral setae of anal tergite, Cly = clypeus, Dc = dorsocentral setae (dorsocentrals), Di = digitus, DMR = dorsomedian ridge of inferior volsella, DS = dorsal setae of superior volsella, FCu = cubital fork, fe = femur, Fm₁₋₁₃ = antennal flagellomeres 1–13, FT = frontal tubercle, FV = false veins, Gc = gonocoxite, Gs = gonostylus, IVo = inferior volsella, LT = lateral teeth of anal tergite, MiF = field of microtrichia on superior volsella, MS = median setae, MVo = median volsella, p1-3 = legs of fore, mid and hind pair, Pa = prealar setae (prealars), Pc = pedicel, Pm₁₋₅ = palpomeres 1–5, Pn = postnotum, RM = radius–media crossvein, Sa = sternapodeme, Scp = scape, Sct = scutellum with scutellars (Scts), Sq = squama, SVo = superior volsella, ta₁₋₅ = tarsomeres 1–5, TC = tibial comb, Te = tentorium, ti = tibia, TS = tibial spur, VL = vittae (scutal stripes) lateral, VM = vittae (scutal stripes) median; wing veins (C, Sc, R, M, Cu, An, R₁, R₂₊₃, R₄₊₅, M₁₊₂, M₃₊₄, Cu₁) and cells (r₄₊₅, m₁₊₂, m₃₊₄) as in general dipteran terminology.

SYSTEMATIC ACCOUNT

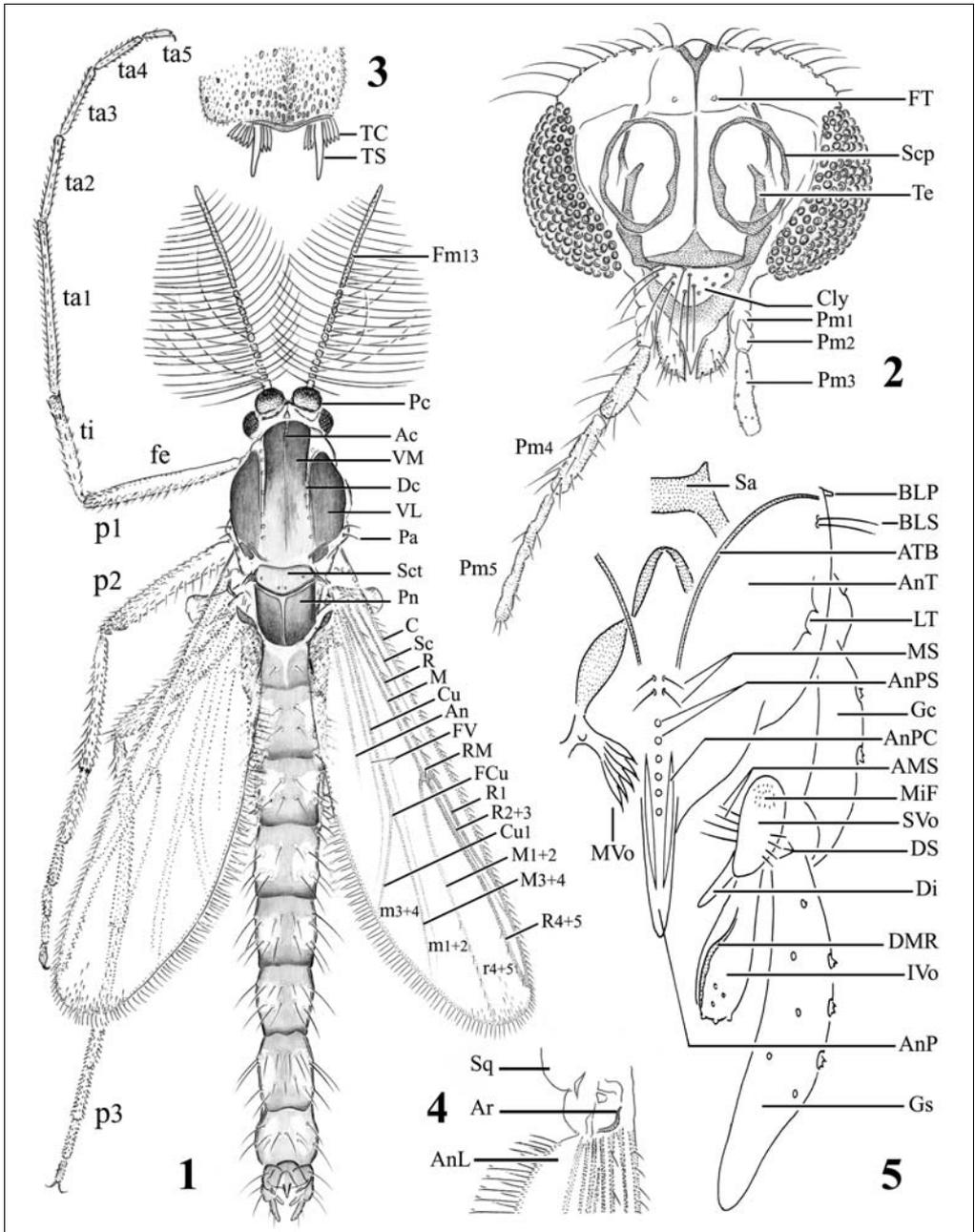
Cladotanytarsus pseudomancus (Goetghebuer, 1934)

Figures 6–9

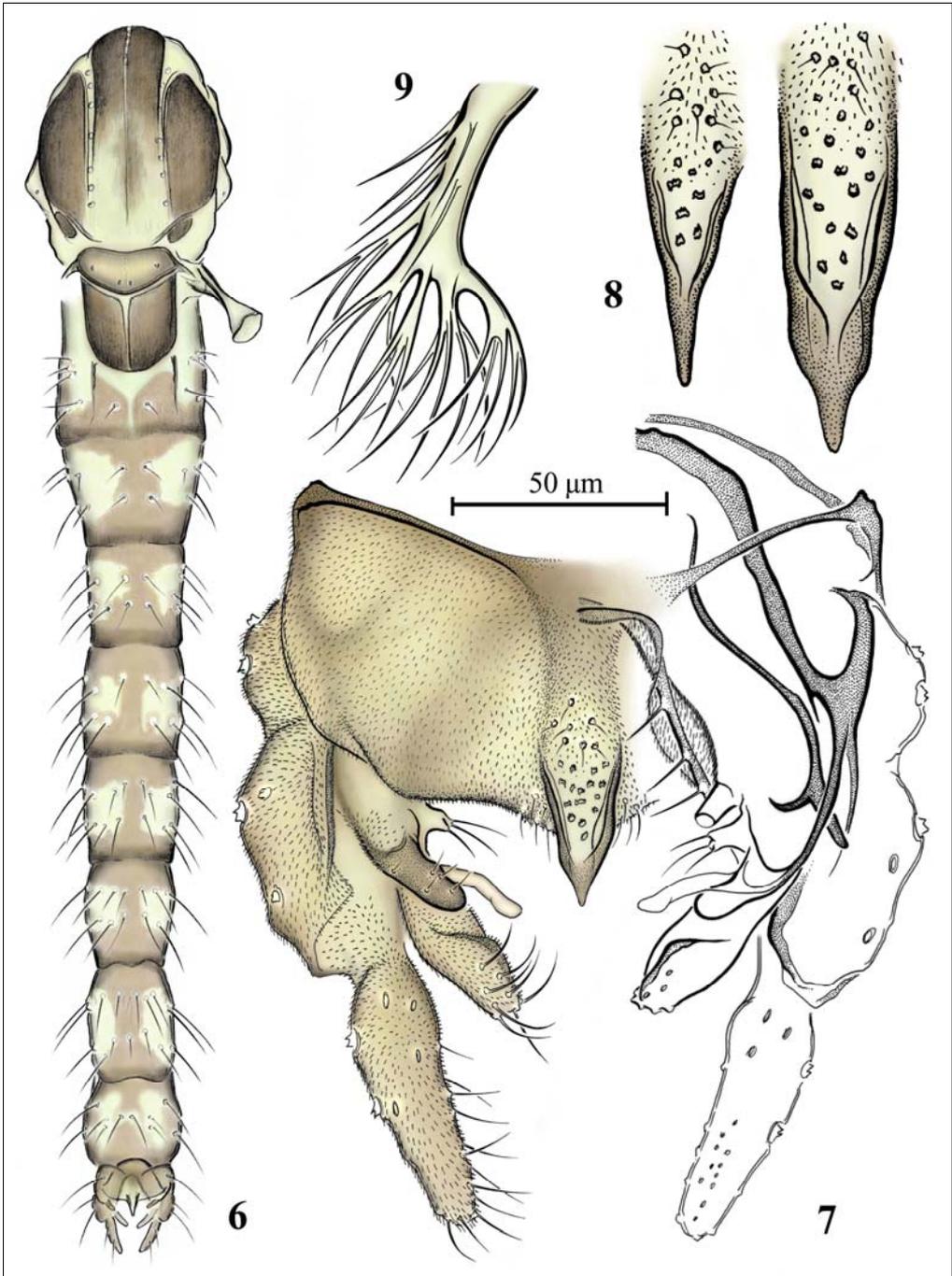
Specimens examined: Al-Ajban, 5♂, 10–17.x.2005; 11♂, 17.x–9.xi.2005; 2♂, 26.ii–2.iv.2006; 5♂, 1.iv–2.v.2006; 34♂, 27.v–26.vi.2006; 27♂, 19–26.vi.2006; 1♂, 23.xi–27.xii.2006; all MT. Bithnah, 33♂, 15–21.i.2005; 10♂, 26.i–2.ii.2006; 1♂, 31.xii–5.ii.2006; all LT. Fujairah, 1♂, 16–24.ii.2005; 2♂, 2.v–5.vi.2005; 7♂, 19–26.i.2006; all LT. Khor Kalba, near tunnel, 1♂, 7–22.iii.2006, LT. Mahafiz, 20♂, 10–15.xii.2005, LT. Sharjah Desert Park, 1♂, 18–25.i.2005; 2♂, 25.i–22.ii.2005; 1♂, 22.ii–9.iii.2005; 3♂, 9–21.iii.2005; 7♂, 30.iv–7.v.2005; 2♂, 30.iv–31.v.2005; 1♂, 31.v–30.vi.2005; 1♂, 30.vi–21.vii.2005; 1♂, 21.vii–5.viii.2005; 2♂, 20.x–8.xi.2005; 24♂, 20.x–10.xi.2007; all LT. Wadi Hayl, 2♂, 30.xi.2006, at light, leg. J.L. Gattolliat. Wadi Madaqa, 2♂, 5.iii.2005, WP; 1♂, 27.xi–22.xii.2005, LT. Wadi Safad, 3♂, 31.i–21.ii.2006, LT. Wadi Shawkah, 7♂, 27–28.xi.2006, at light, leg. J.L. Gattolliat; 10♂, 26.iii.2007, SN, leg. F. Menzel & A. Stark.

Diagnostic description: Male (n = 10). Wing length 0.95–1.51 mm (1.26 mm). Abdominal segments with darker dorsomedian areas and posterior margins (transversal bands), distinctly standing out from the lighter greenish background (Fig. 6). AR 0.74–1.06 (0.87). Frontal tubercles variable in size, 5–25 µm long. Length of palpomeres II–V (µm): 28–44 (36), 52–83 (67), 75–111 (91), 115–159 (139). Clypeus with 10–17 setae. Ac 4–9, never reaching antepnotum; Dc 5–9; Pa 1; Scts 2–4, placed symmetrically. Wing membrane covered with macrotrichia in apical part of r₄₊₅ and m₁₊₂. Combs of mid and hind tibiae well separated, each comb with spur; LR 2.08–2.39 (2.24); ta₁ of p₂ bearing 3–8 hook-shaped sensilla chaetica. Gonostylus shorter than gonocoxite. Basilateral setae and processes of anal tergite absent. Median setae short, dispersed at base of anal point. Anal point variable in shape, but always with well developed crests and numerous spinulae (Figs 7, 8). Superior volsella slightly swollen apically, with field of microtrichia at base; digitus long, sinuous, with finger-like apex typical for *Cladotanytarsus*; inferior volsella with slightly pigmented dorsomedian ridge (Fig. 7). Stem of median volsella relatively long, bearing 4–5 furcate and some setiform lamellae (Fig. 9).

Remarks: The examined males of *Cladotanytarsus pseudomancus* were found as greatly variable in their measurements and shape of some hypopygial structures. The character best separating *C. pseudomancus* from other similar species of the genus, i.e. *C. mancus* (Walker, 1856) and *C. atridorsum* Kieffer, 1924, is the pigmentation pattern of its thorax and abdomen, as shown in Figure 6.



Figures 1–5. General structure of adult male. 1: Habitus, dorsal view; 2: Head, anterior view; 3: Tibial spurs and combs; 4: Base of wing; 5: Hypopygium. For abbreviations see ‘Material and Methods’.



Figures 6–9. *Cladotanytarsus pseudomancus* (Goetghebuer, 1934). 6: Thorax and abdomen; 7: Hypopygium; 8: Anal point, variability; 9: Median volsella.

C. pseudomancus is widespread in the Old World. So far it was recorded across the Afrotropical region, including Madagascar, from the Oriental region: India (West Bengal), China (Hainan) and the Palearctic: Russia (Far East), France, Egypt, Saudi Arabia (Baha, Eastern Province, Gasim, Medina, Riyadh) and Oman (Cranston & Judd, 1989; Datta et al., 1992a; Dejoux, 1974; Freeman, 1958; Makarchenko et al., 2005; Wang & Zheng, 1993). *C. pseudomancus* is known as an euryhaline and one of the most salt-tolerant freshwater chironomids (Verschuren et al., 2000). Presently recorded as the most frequent tanytarsine chironomid in the United Arab Emirates. Photophilous species.

***Cladotanytarsus sagittifer* Gilka nov. spec.**

Figures 10–16

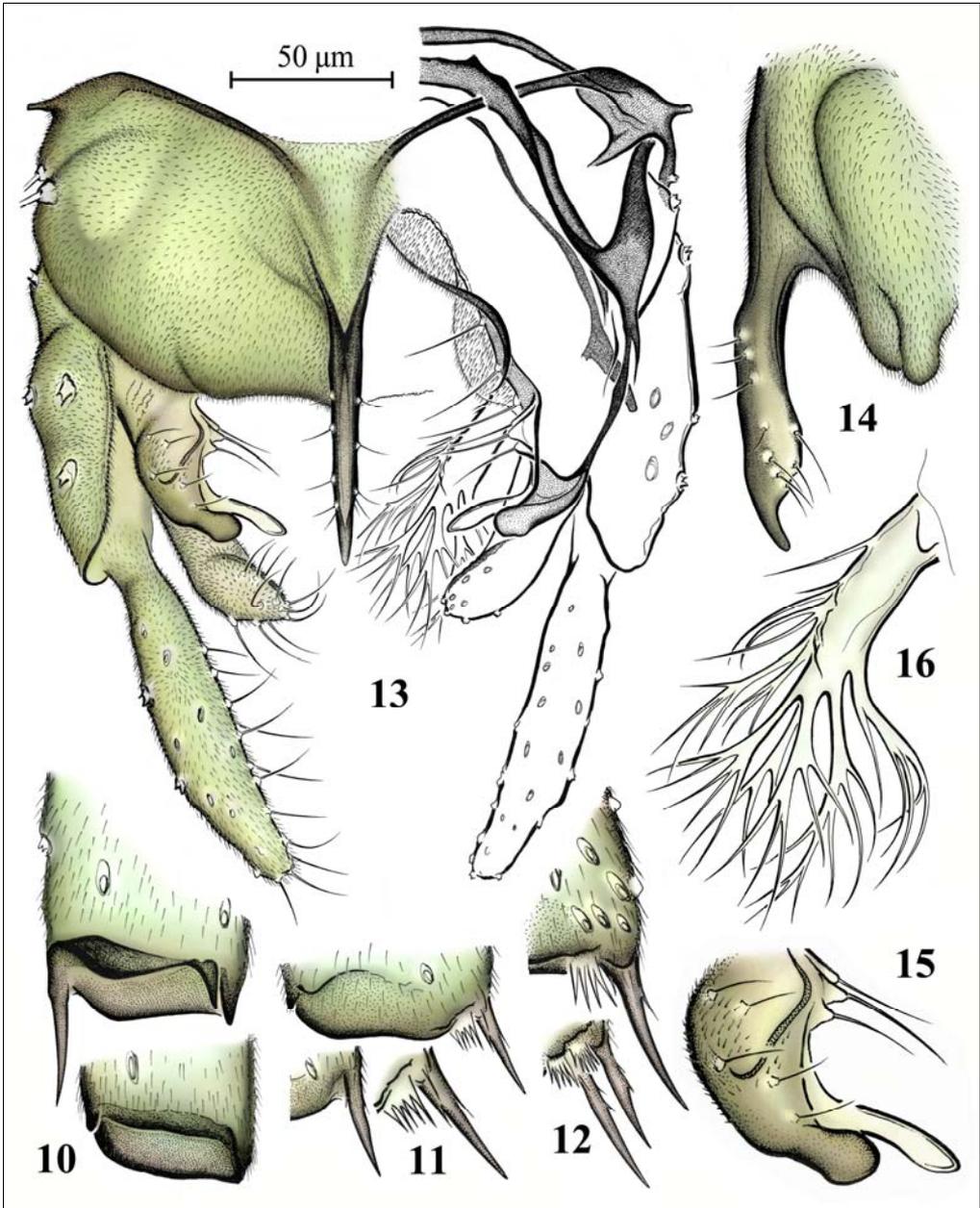
Specimens examined: Holotype: ♂ (adult, slide mounted in Canada balsam), United Arab Emirates, al-Ajban [24°36'N 55°01'E], 15–22.i.2006, light & Malaise traps, leg. A. van Harten (DIZUG). Paratypes: 3 ♂ as holotype; 1 ♂, al-Ajban, 10–17.x.2005, MT; 1 ♂, 17.x–9.xi.2005, MT; 2 ♂, 21–28.xii.2005, LT & MT. 1 ♂, NARC (National Avian Research Centre), near Sweihan, 14.iii–2.iv.2005, LT. 1 ♂, Sharjah Desert Park, 9–21.iii.2005, LT; 1 ♂, 30.iv–31.v.2005, LT.

Diagnosis: The species is easily separable from other *Cladotanytarsus* in having reduced spurs and combs of mid and hind tibiae, bare wing membrane and the extremely elongated, black hypopygial anal point, lacking crests and spinulae.

Description: Male (n = 11). Wing length 1.07–1.43 mm (1.22 mm). Colouration. Antennal pedicel, tentorium, lateral and anteromedian parts of scutal stripes, postnotum and sternum brown to dark brown; antennal flagellum, head capsule, ground color of thorax, posterior part of median scutal stripes, scutellum, haltere, legs and abdomen light greenish to olive brown with anal point of hypopygium black; arculus, costa and radius brownish, other parts of wing poorly pigmented. Head. Antenna with 13 flagellomeres, AR 0.69–0.79 (0.73), plume well developed. Frontal tubercles 5–20 µm long, c. 5 µm wide. Length of palpomeres II–V (µm): 32–36 (33), 52–67 (58), 64–79 (71), 95–115 (107). Clypeus with 16–24 setae. Thorax chaetotaxy. Ac 4–11, never reaching anteprepronotum; Dc 7–12; Pa 1–3, usually 1; Scts 4–6, usually placed symmetrically. Wing. Basal part of R and distal section of r_{4+5} usually with sparse macrotrichia or whole wing excepting its margins bare. R_{4+5} and M_{3+4} ending at the same distance from wing base and distinctly proximal of M_{1+2} ; FCu well distal of RM. Legs. Spurs and combs of tibiae reduced or absent, as shown in Figures 10–12 and Table 1. Spur of fore tibia, if present, straight or slightly curved (Fig. 10). Mid and hind tibia usually bearing single spur or spurs absent, rarely two spurs developed; combs usually represented with only a few small and poorly pigmented teeth or absent (Figs 11, 12). Ta_1 of p_2 bearing 2–5 (usually 3) hook-shaped sensilla chaetica. Pulvilli absent. Length of leg segments and leg ratios as in Table 2.

Table 1. Distribution and length (µm) of tibial spurs and combs in examined males of *Cladotanytarsus sagittifer* nov. spec.

specimens	1	2	3	4	5	6	7	8	9	10	11	
p_1	spur	20	18	20	absent	broken	broken	25	absent	broken	20	20
p_2	spur	18	15	18	15	absent	absent	15	17	16	15	15
	comb	5	5	absent	absent	3	3	absent	3	5	3	absent
p_3	spur(s)	25	22	absent	18, 25	absent	25	25	22	24	25	20, 25
	comb	5	5	absent	3	absent	5	absent	7	4	7	5



Figures 10–16. *Cladotanytarsus sagittifer* Gilka nov. spec. 10–12: Tibial combs and spurs of fore (10), mid (11) and hind (12) leg; 13: Hypopygium; 14: Anal point, lateral view; 15: Superior volsella and digitus; 16: Median volsella.

Table 2. Length (μm) of leg segments and leg ratios of male *Cladotanytarsus sagittifer* nov. spec.

	fe	ti	ta ₁	ta ₂	ta ₃	ta ₄	ta ₅	LR
P ₁	470–595 (510)	310–390 (335)	515–660 (565, n=9)	250–330 (280, n=9)	185–245 (210, n=9)	110–145 (125, n=9)	80–105 (90, n=9)	1.60–1.79 (1.69, n=9)
P ₂	535–660 (570)	435–535 (465)	230–295 (245, n=10)	110–155 (130, n=9)	90–120 (100, n=9)	65–90 (75, n=9)	65–80 (70, n=9)	0.50–0.55 (0.53, n=10)
P ₃	575–705 (615)	565–700 (610)	355–440 (390, n=9)	220–285 (245, n=9)	190–245 (210, n=9)	110–145 (130, n=9)	90–105 (95, n=9)	0.62–0.67 (0.64, n=9)

Hypopygium. Gonostylus slender, as long as gonocoxite (90–110 μm). Basilateral setae of anal tergite strong. Basilateral processes well developed. Lateral teeth absent. Anal tergite bands of V-type, separated. Median setae absent. Anal point black, very long, slender, with tip pointed and finely curved ventrally, 4–7 lateral setae on each side of anal point, crests and spinulae absent (Figs 13, 14). Superior volsella slightly narrowed in median part and swollen apically, with field of microtrichia on basal half, 5–7 dorsal setae and 3 setae at base; digitus long, sinuous, extending far beyond margin of superior volsella, apically swollen (Figs 13, 15). Inferior volsella slightly curved and directed medially, with thin and finely pigmented dorsomedian ridge. Stem of median volsella stout, 35–45 μm long, bearing 4–5 strong furcate lamellae (Fig. 16).

Adult female, pupa and larva unknown.

Remarks: *Cladotanytarsus sagittifer* is unique among all described *Cladotanytarsus* in having the extremely elongated, black hypopygial anal point lacking crests and spinulae. The anal point lacking crests and/or spinulae is known only for *C. bilinearis* Glover, 1973, described from Australia, *C. ecristatus* Reiss, 1991, from Morocco and the European *C. cyrylae* Gilka, 2001 (Glover, 1973; Reiss, 1991; Gilka, 2001). These species, however, differ distinctly from *C. sagittifer* in shape and colouration of their anal points, which are much shorter, wide at base (triangular) and/or slightly pigmented. They differ also in shape of superior volsellae, the presence of median setae on anal tergites and in having wings covered with macrotrichia distally. The bare wing membrane and the reduced or absent tibial combs and spurs found in *C. sagittifer* are the characters known in a few species of the genus, i.e. in *C. omanensis* Cranston, 1989 from Oman and Saudi Arabia and in species ascribed to *Lenziella* Kieffer, 1922 (the name apparently synonymous with *Cladotanytarsus*) (Cranston, 1989; Sæther, 1971). *C. omanensis* and *C. sagittifer* can be easily separated by their hypopygial structure, whereas *Lenziella* additionally differ in having tibial apical lobes bearing tufts of setae and the abbreviated antennal flagellum with the reduced plume.

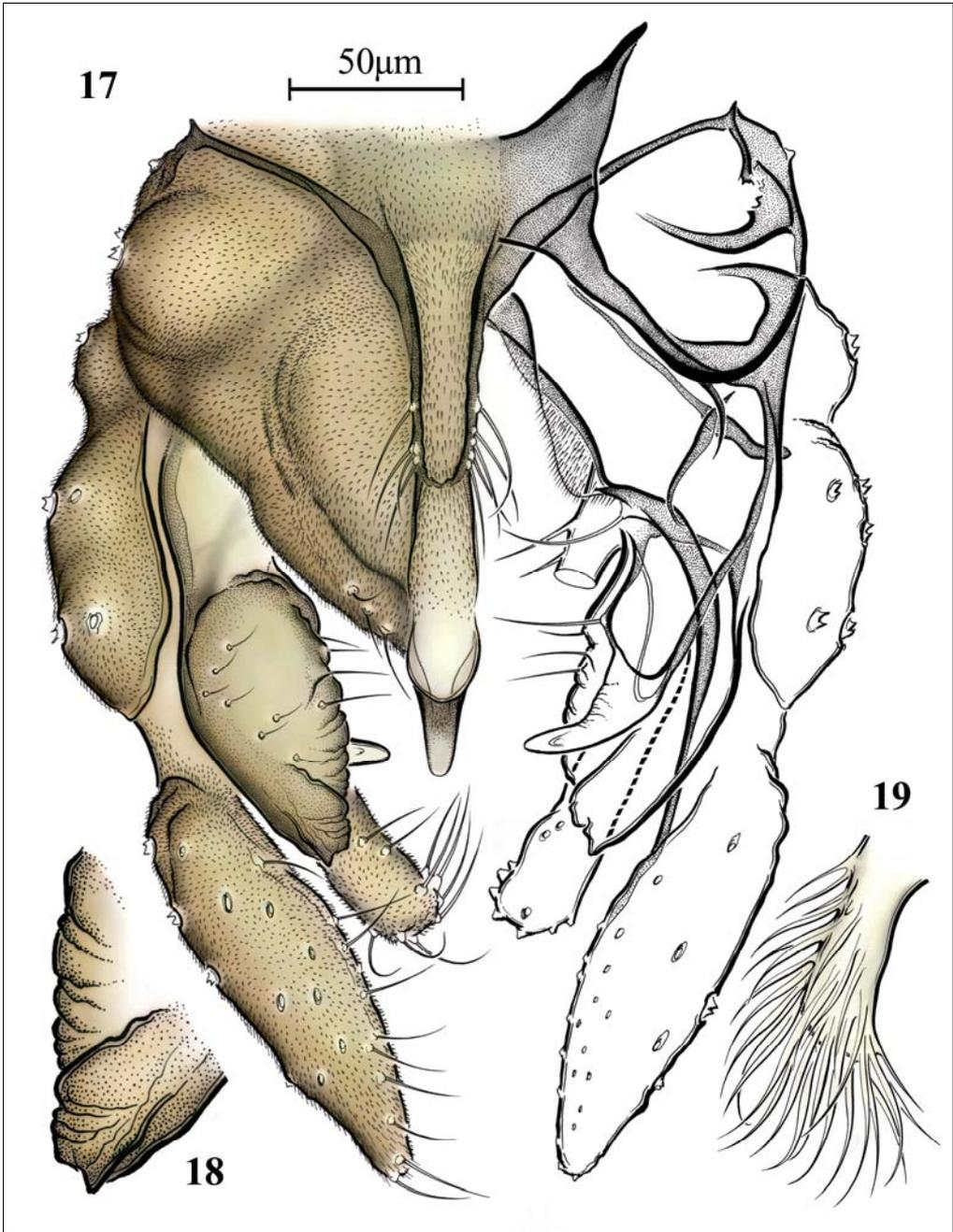
Derivation of the name: The specific name (from Latin *sagittifer* = bearing arrows) refers to the strongly elongated, arrow-like hypopygial anal point of the adult male.

***Paratanytarsus praecellens* Gilka nov. spec.**

Figures 17–19

Specimens examined: Holotype: ♂ (adult, slide mounted in Canada balsam), United Arab Emirates, Wadi Safad [25°13'N 56°19'E], 19–26.i.2006, light trap, leg. A. van Harten (DIZUG). Paratypes: 2♂ as holotype; 1♂, Wadi Safad, 31.i–21.ii.2006, LT.

Diagnosis: The species differs from other *Paratanytarsus* by the following combination of hypopygial characters: anal tergite bands of H-type, fused on hump of anal tergite armed with strong median setae; hypopygial sternapodeme broad, with long horn-shaped anterolateral arms; superior volsella bulky, ellipse-shaped, directed posteriorly, with median margin deeply incised and irregularly wrinkled; digitus stout, broad at base, bearing fine subapical swelling,



Figures 17–19. *Paratanytarsus praecellens* Gilka nov. spec. 17: Hypopygium; 18: Superior volsella, posteromedian part; 19: Median volsella.

apically blunt; inferior volsella slightly swollen distally, armed with bunch of strong setae directed anteriorly; median volsella robust, with dense subuliform lamellae.

Description: Male ($n = 4$, unless otherwise stated). Wing length 1.49–1.89 mm (1.71 mm). Colouration. Antennal pedicel, scutal stripes, postnotum and sternum dark brown; antennal flagellum, tentorium and scutellum brown; ground color of thorax, legs and abdomen olive brown; haltere and wing veins olive to light brownish. Head. Antenna with 13 flagellomeres, AR 0.89–1.09 (1.02). Eyes with wide dorsal extension. Frontal tubercles 8–15 μm long, 6–8 μm wide. Length of palpomeres II–V (μm): 40–52 (44), 111–127 (117), 103–123 (115), 159–195 (179). Clypeus with 25–27 setae. Thorax chaetotaxy. Ac 25–33, particularly densely placed near antepronotum; Dc 9–12; Pa 3; Scts 8–11, placed in regular row. Wing. Macrotrichia placed in wing margin, R, distal section of R_{4+5} , M_{1+2} and apical part of r_{4+5} , other veins and cells bare. R_{4+5} and M_{3+4} ending at the same distance from wing base and distinctly proximal of M_{1+2} ; FCu under RM. R_{2+3} very well developed and somewhat broadened distally. Legs. Fore tibia with slightly curved spur c. 20 μm long; combs of mid and hind tibiae separated, armed with teeth c. 10 μm (mid tibia) to 15 μm long (hind tibia); each comb of mid tibia bearing very short spur (12–16 μm); hind tibia usually without spurs or spurs only slightly longer than teeth of their combs. Tarsomeres 1, 2 and 3 of mid leg bearing 2–4, 1–3, 0–2 hook-shaped sensilla chaetica respectively ($n = 2$). Pulvilli well developed. Length of leg segments and leg ratios as in Table 3.

Table 3. Length (μm) of leg segments and leg ratios of male *Paratanytarsus praecellens* nov. spec.

	fe	ti	ta ₁	ta ₂	ta ₃	ta ₄	ta ₅	LR
P ₁	615–765 (700)	490–595 (545)	625–770 (705, n=3)	340–405 (365, n=3)	295–345 (315, n=3)	205–230 (215, n=3)	125–140 (130, n=3)	1.27–1.31 (1.29, n=3)
P ₂	670–865 (765)	550–685 (615)	410–440 (n=2)	200–215 (n=2)	170–185 (n=2)	120–125 (n=2)	105–110 (n=2)	0.62–0.65 (n=2)
P ₃	785–1005 (890)	715–910 (820)	605 (n=1)	355 (n=1)	300 (n=1)	190 (n=1)	140 (n=1)	0.66 (n=1)

Hypopygium. Gonostylus 145–180 μm long, swollen in median part, regularly tapering to tip. Strong 2–3 basilateral setae placed on each side of anal tergite. Basilateral processes small. Lateral teeth absent. Anal tergite bands of H-type, fused on elevated hump of anal tergite, armed with 8–15 strong median setae. Sternapodeme broad, with long horn-shaped anterolateral arms. Anal point moderately long, slightly tapering to rounded apex, bearing relatively thin flake-shaped crests and 3–6 setae on each side (Fig. 17). Superior volsella bulky, ellipse-shaped, directed posteriorly, with median margin deeply incised and irregularly wrinkled, bearing 4–7 fine dorsal setae, 3–4 anteromedian setae and single strong seta at base (Figs 17, 18). Digitus stout, broad at base, curved and directed medially, extending beyond median margin of superior volsella, with fine subapical swelling and blunt apex. Inferior volsella slender and straight, slightly swollen distally, armed with bunch of strong setae directed anteriorly. Stem of median volsella robust, 60–75 μm long, bearing dense subuliform lamellae (Fig. 19).

Adult female, pupa and larva unknown.

Remarks: A group membership of *Paratanytarsus praecellens* is not certain. Due to the median volsella bearing elongated subuliform lamellae, *P. praecellens* will key out to couplet 4 (*penicillatus* group) in the key to *Paratanytarsus* species groups by Cranston et al. (1989). Both species included into this group, i.e. *P. penicillatus* (Goetghebuer, 1928) and *P. setosimanus* (Goetghebuer, 1933), as well as *P. praecellens* have a similar, robust stem of the median volsella, dense and long median setae on the anal tergite and the broadly based and

stout digitus. However, *P. praecellens* strays from this species group and from the generic diagnosis in having the wing vein R_{2+3} distinctly isolated, well pigmented and distally broadened, FCu placed under RM, the poor wing setation, the higher number of scutal acrostichals and the presence of sensilla chaetica on three basal tarsomeres of mid leg (the character observed in two examined specimens having complete legs). Besides, *P. praecellens* differs distinctly from all known species of the genus in having H-type fused anal tergite bands (compare with Reiss & Säwedel, 1981) and the peculiar structure of the superior volsella. Within the tribe, somewhat similar, bulky superior volsella with its median margin wrinkled, is known only in the West Palearctic *Micropsectra radialis* Goetghebuer, 1939, and the Nearctic *Tanytarsus bayi* Ekrem, Sublette & Sublette, 2003.

Derivation of the name: The specific name (from Latin *praecellens* = distinct, exquisite) refers to the peculiar structure of the adult male, particularly its hypopygial superior volsella.

***Tanytarsus formosanus* Kieffer, 1912**

Figures 20–22

Specimens examined: Al-Ajban, 1♂, 10–17.x.2005, MT; 7♂, 17.x–9.xii.2005, MT; 2♂, 21–28.xii.2005, LT & MT; 9♂, 25.ii–19.iii.2006, MT; 7♂, 26.ii–2.iv.2006, MT; 3♂, 23.xi–27.xii.2006, MT. Fujairah, 1♂, 19–26.i.2006, LT. Hatta, 1♂, 17–24.viii.2006, LT. Khor Kalba, near tunnel, 1♂, 7–14.vi.2006, LT. Mahafiz, 16♂, 10–15.xii.2005, LT. Sharjah Desert Park, 1♂, 20.x–8.xi.2005; 14♂, 20.x–10.xi.2007; all LT.

Diagnostic description: Male (n = 10). Wing length 1.31–1.54 mm (1.43 mm). Body greenish brown to dark brown, with abdominal pigmentation pattern similar to that found in *Cladotanytarsus pseudomancus* (see above). AR 0.98–1.12 (1.04). Frontal tubercles large, 35–45 µm long. Length of palpomeres II–V (µm): 36–44 (40), 71–91 (81), 79–99 (91), 131–171 (151). Clypeus with 11–18 setae. Ac 12–16, Dc 7–10, Pa 1, Scts 4. LR 2.18–2.42 (2.31); ta_1 of p_2 with 3–6 hook-shaped sensilla chaetica. Gonostylus slightly swollen in proximal half. Lateral teeth weak or absent. Anal tergite bands of V-type, separated. Median setae (usually 2) moderately long. Anal point stout, with 5–9 large equidistant spinulae densely placed in row (Figs 20, 21). Superior volsella pear-shaped with apical lip and field of microtrichia in anterolateral position; digitus short; inferior volsella with slight head and fine dorsomedian ridge (Fig. 20). Stem of median volsella slender, bearing bunch of strongly elongated foliate lamellae (Fig. 22).

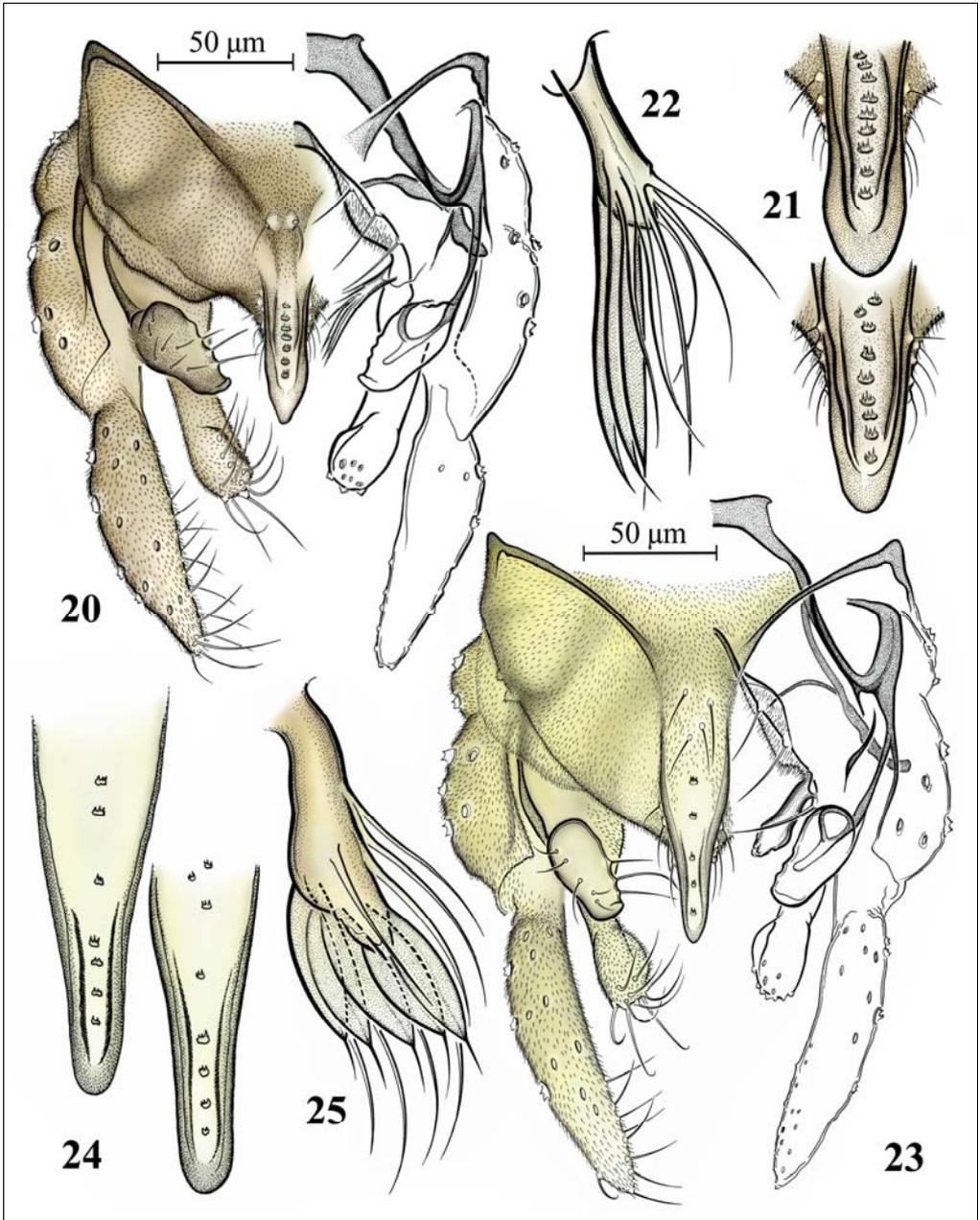
Remarks: *Tanytarsus formosanus* is widely distributed in the Old World, from Europe (France, Germany, Italy, Portugal, Spain), across Africa, south and east Asia (Turkey; India: West Bengal, Andaman Isl., Sagar Isl.; Japan; Taiwan; China: Hunan, Yunan; Thailand; Sumatra) to Australia (Queensland, Northern Territory). In the Middle East the species was so far recorded in Iraq (Goetghebuer, 1934; as *Tanytarsus horni*) and Saudi Arabia (Eastern Province, Jawf, Riyadh) (Cranston & Judd, 1989). Immatures of *T. formosanus* inhabit different kind of lentic freshwater and saline habitats, including lakes with higher salinity. The species belongs to the *mendax* species group. Detailed data on geographical distribution, biology and systematics compiled Ekrem (2001a, b; 2002; 2003).

***Tanytarsus mcmillani* Freeman, 1958**

Figures 23–25

Specimens examined: Khor Kalba, near tunnel, 2♂, 7–22.iii.2006; 4♂, 7–14.vi.2006; all LT. Wadi Madaq, 11♂, 15–21.i.2005; 40♂, 27.xi–22.xii.2005; 3♂, 5–15.xii.2005; all LT. Wadi Safad, 7♂, 22–29.xii.2005, LT. Wadi Shawkah, 2♂, 27–28.xi.2006, at light, leg. J.L. Gattolliat. Wadi Wurayah, 2♂, 14.xi–4.xii.2006, MT.

Diagnostic description: Male (n = 10). Wing length 1.45–1.69 mm (1.54 mm). Body green yellowish to pale brown. AR 0.90–1.04 (0.97). Frontal tubercles well developed, 15–30 µm



Figures 20–25. *Tanytarsus formosanus* Kieffer, 1912. 20: Hypopygium; 21: Anal point, variability; 22: Median volsella. Figures 23–25. *Tanytarsus mcmillani* Freeman, 1958. 23: Hypopygium; 24: Anal point, variability; 25: Median volsella.

long. Length of palpomeres II–V (μm): 44–56 (48), 119–135 (123), 111–131 (123), 210–242 (226). Clypeus with 13–17 setae. Ac 16–21, Dc 10–12, Pa 1, Scts 6–7. LR 2.73–2.96 (2.83, $n = 5$); ta_1 of p_2 with 3–6 hook-shaped sensilla chaetica. Gonostylus slender. Lateral teeth weak or absent. Anal tergite bands of V-type, separated. Median setae (6–8) long. Anal point slender, with 4–8 (usually 5–6) small spinulae sparsely placed in row (Figs 23, 24). Superior volsella somewhat elongated, with parallel margins, apically rounded, field of microtrichia absent; digitus well developed, variable in length but never extending beyond margin of superior volsella; inferior volsella with slight head and well developed dorsomedian ridge (Fig. 23). Stem of median volsella club-shaped bearing broad foliate lamellae (Fig. 25).

Remarks: In the Arabian Peninsula *Tanytarsus mcmillani* was recorded in Saudi Arabia (Baha, Eastern Province, Medina, Makkah, Najran) and Oman (Cranston & Judd, 1989). The species is also known from the Afrotropical region (Senegal, Chad, Nigeria, Cameroon, Zimbabwe) and India (West Bengal) (Datta et al., 1992b; Dejoux, 1974; Ekrem, 2001b, 2002; Freeman, 1958; Harrison, 2004). Ekrem (2003) proposed the *mcmillani* species group (the sister group of the *eminulus*, *gregarius*, *lugens* and *mendax* groups) including four species recorded in regions, which belonged to Gondwana. In biology the group is eurytolerant. Immatures of *T. mcmillani* inhabit running waters (Harrison, 2004). Adult males are photophilous.

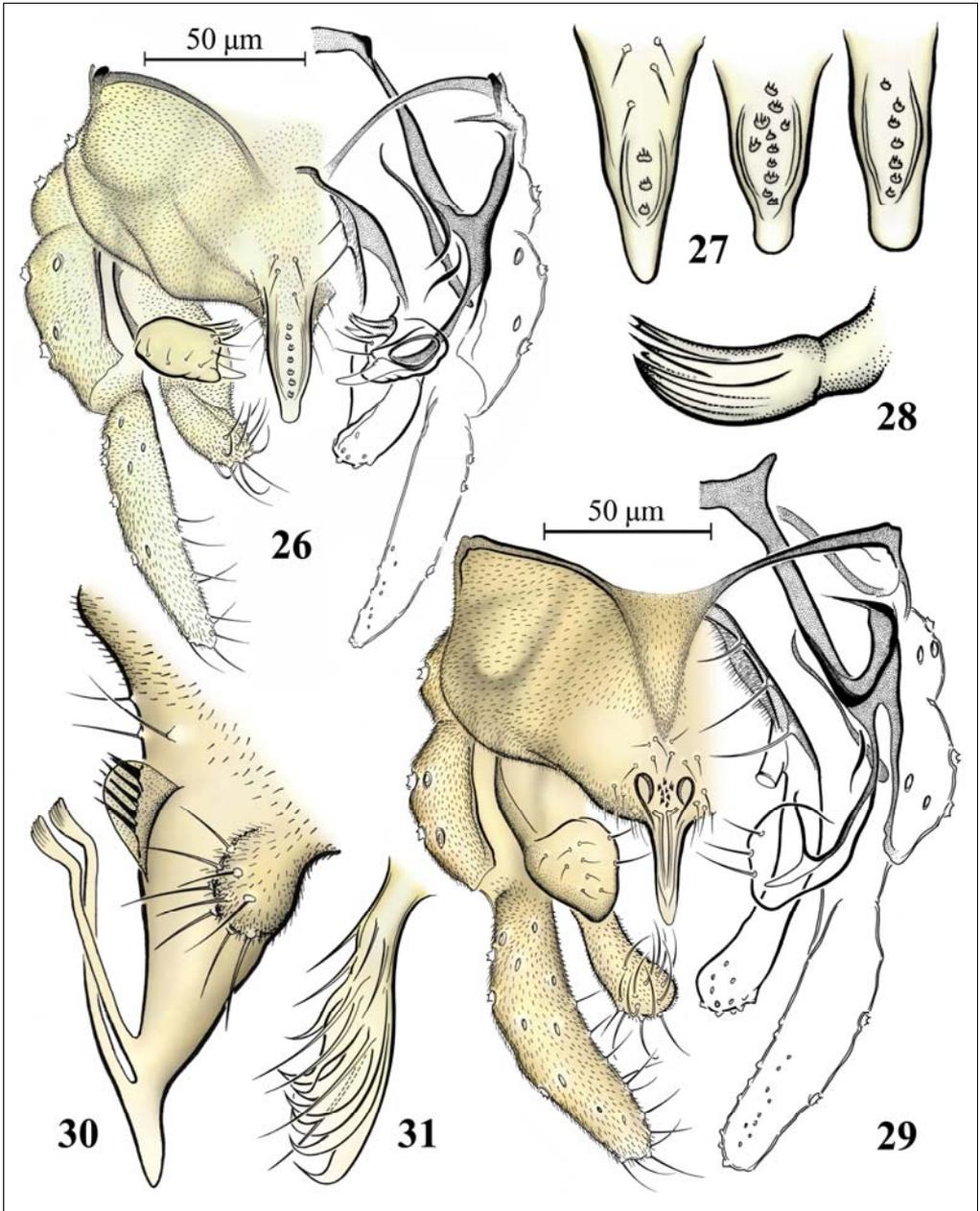
***Tanytarsus trifidus* Freeman, 1958**

Figures 26–28

Specimens examined: Bithnah, 7♂, 15–21.i.2005; 2♂, 31.xii.2005–5.ii.2006; 18♂, 26.i–2.ii.2006; all LT. Fujairah, 1♂, 6.iv–2.v.2005; 5♂, 19–26.i.2006; all LT. Khor Kalba, near tunnel, 3♂, 7–22.iii.2006, LT. Sharjah Desert Park, 26♂, 18–25.i.2005; 45♂, 25.i–22.ii.2005; 9♂, 22.ii–9.iii.2005; 23♂, 9.iii–21.iii.2005; 10♂, 30.iv–7.v.2005; 8♂, 30.iv–31.v.2005; 2♂, 31.v–30.vi.2005; 1♂, 30.vi–21.vii.2005; 2♂, 21.vii–5.viii.2005; 4♂, 20.x–8.xi.2005; 3♂, 20.x–10.xi.2007; all LT. Wadi Maidaq, 3♂, 15–21.i.2005; 6♂, 27.xi–22.xii.2005; 1♂, 5–15.xii.2005; all LT. Wadi Safad, 5♂, 19–26.i.2006; 5♂, 31.i–21.ii.2006; all LT. Wadi Shawkah, 1♂, 27–28.xi.2006, at light, leg. J.L. Gattolliat. Wadi Wurayah, 35♂, 12–14.iv.2005, LT & MT, leg. T. Pape.

Diagnostic description: Male ($n = 10$). Wing length 1.15–1.42 mm (1.31 mm). Body pale, yellowish–green with pedicel and thorax light brown. AR 0.64–0.74 (0.69). Frontal tubercles absent or small, 3–6 μm long. Length of palpomeres II–V (μm): 36–40 (38), 91–111 (101), 95–115 (107), 163–202 (179). Clypeus with 10–15 setae. Ac 12–15, Dc 7–9, Pa 1, Scts 4–8. LR 2.58–2.74 (2.63); ta_1 of p_2 with 2–5 hook-shaped sensilla chaetica. Gonostylus slender, regularly tapering to tip. Single basilateral seta of anal tergite present. Lateral teeth absent. Anal tergite bands of V-type, separated. Median setae (4–5) moderately long. Anal point variable in shape, with 3–11 spinulae usually placed in row (Figs 26, 27). Superior volsella roundish, with slightly concave median margin and elongated posteromedian lobe, bearing two median setae; digitus long, extending far beyond superior volsella, slightly curved, tapering to blunt apex, bearing single seta placed on tubercle at its base; inferior volsella wide, with slight head directed medially (Fig. 26). Stem of median volsella short, based under superior volsella, bearing three short and folded pectinate lamellae (Fig. 28).

Remarks: *Tanytarsus trifidus* fits well the *chinyensis* species group (Reiss & Fittkau, 1971; Ekrem, 2001b). The species is widely distributed in the Afrotropical region including Madagascar (Ekrem, 2001b). From outside Africa was so far recorded in Saudi Arabia (Baha, Jawf, Makkah, Riyadh) and Oman (Cranston & Judd, 1989). Immatures of *T. trifidus* inhabit lakes and small standing water bodies. Presently recorded as one of the most frequent tanytarsine chironomid in the UAE. Adult males are photophilous.



Figures 26–31. 26–28. *Tanytarsus trifidus* Freeman, 1958. 26: Hypopygium; 27: Anal point, variability; 28: Median volsella in natural position. 29–31. *Virgatanytarsus arduennensis* (Goetghebuer, 1922). 29: Hypopygium; 30: Anal point, lateral view; 31: Median volsella in natural position.

Virgatanytarsus arduennensis (Goetghebuer, 1922)

Figures 29–31

Specimens examined: Wadi Hayl, 1♂, 30.xi.2006, at light, leg. J.-L. Gattolliat. Wadi Madaq, 1♂, 27.xi–22.xii.2005, LT.

Diagnostic description: Male (n = 2). Wing length 1.06–1.15 mm. AR 0.45–0.47. Frontal tubercles well developed, 20–30 µm long. Length of palpomeres II–V (µm): 40, 75–79, 87–91, 147–151. Clypeus with 14–16 setae. Ac 9–11, Dc 7–9, Pa 1–2, Scts 6. LR 2.50 (n = 1); ta₁ of p₂ bearing 3–6 hook-shaped sensilla chaetica. Gonostylus longer than gonocoxite. Anal point with pair of long rod-like processes attached subapically and directed anteriorly; anal point crests short but wide; spinulae long placed in small field between crests (Figs 29, 30). Superior volsella roundish, with slightly elongated posteromedian part; digitus well developed, almost reaching median margin of superior volsella; inferior volsella club-shaped with slight head directed medially (Fig. 29). Stem of median volsella relatively long, bearing curved foliate lamellae (Fig. 31).

Remarks: Depending on the region, adult males of *Virgatanytarsus arduennensis* vary in their colouration and measurements (Kugler & Reiss, 1973). The presently examined specimens are lightly pigmented (yellowish green to pale brown), are relatively small and have low AR. *V. arduennensis* is widespread in the Old World, from temperate regions of the Palearctic to the Oriental region and Afrotropics. In the Middle East the species was so far recorded from Saudi Arabia (Eastern Province, Makkah) and Oman (Cranston & Judd, 1989). Immatures of this species inhabit both lotic (streams, channels) and lentic habitats (lakes, ponds, temporary water bodies). For comments on the systematics and detailed data on geographical distribution and biology see Kugler & Reiss (1973) and Cranston & Judd (1989).

Key to males of the tribe Tanytarsini of the United Arab Emirates

Adult males of the tribe Tanytarsini are separable from other chironomids by the following characters: anal lobe of wing reduced, squama bare (Fig. 4); hypopygium with straight, backward directed gonostylus and four pairs of appendages – volsellae: superior, inferior, median and digitus (Figs 1, 5).

- 1 Median volsella with furcate lamellae (Figs 9, 16); digitus sinuous with slightly swollen finger-like apex (Figs 7, 13, 15) (*Cladotanytarsus*) **2**
- Median volsella bearing subuliform, foliate or pectinate (Figs 19, 25, 28) but never furcate lamellae; digitus straight or slightly curved without finger-like apex (Figs 17, 20, 26, 29) **3**
- 2 Abdominal segments with dark transversal bands distinctly standing out from the lighter background (Fig. 6); hypopygial anal point triangular, bearing numerous spinulae between crests (Figs 7, 8) *Cladotanytarsus pseudomancus* (Goetghebuer)
- Abdominal segments uniformly coloured; hypopygial anal point strongly elongated, lacking crests and spinulae (Figs 13, 14) *Cladotanytarsus sagittifer* nov. spec.
- 3 Anal point of hypopygium bearing flake-shaped crests, spinulae absent (Fig. 17) *Paratanytarsus* with *P. praecellens* nov. spec.
- Anal point of hypopygium bearing spinulae between crests (Figs 21, 24, 27, 30) **4**
- 4 Anal point of hypopygium with pair of rod-like processes (Figs 29, 30) *Virgatanytarsus* with *V. arduennensis* (Goetghebuer)
- Anal point of hypopygium never with rod-like processes (*Tanytarsus*) **5**
- 5 Digitus long, extending far beyond apex of superior volsella, bearing single seta on tubercle placed at its base (Fig. 26); stem of median volsella short, bearing three folded pectinate lamellae (Fig. 28) *Tanytarsus trifidus* Freeman

- Digitus short, hidden under superior volsella, lacking seta at its base (Figs 20, 23); stem of median volsella long, bearing foliate lamellae (Figs 22, 25) **6**
- 6** LR c. 2.5; anal point bearing large, densely placed equidistant spinulae (Fig. 21); superior volsella pear-shaped, with field of microtrichia in anterolateral position (Fig. 20); stem of median volsella slender, bearing bunch of strongly elongated foliate lamellae (Fig. 22) *Tanytarsus formosanus* Kieffer
- LR 2.7 or higher; anal point bearing small, sparsely placed spinulae (Fig. 24); superior volsella with parallel margins, apically rounded, lacking field of microtrichia (Fig. 23); stem of median volsella club-shaped, bearing broad foliate lamellae (Fig. 25) *Tanytarsus mcmillani* Freeman

ACKNOWLEDGEMENTS

I thank Antonius van Harten (Sharjah, UAE) for collecting the material and kind cooperation during preparing the manuscript.

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