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Evaluation of diagnostic characters of the *Tanytarsus chinyensis* group (Diptera: Chironomidae), with description of a new species from Lapland

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Abstract

Tanytarsus salmelai **sp. n.** collected from the northernmost sites of the Finnish Lapland is described. The new species and two sibling *Tanytarsus*, *T. brundini* Lindeberg, 1963 and *T. curticornis* Kieffer, 1911, are compared, diagnosed and illustrated in detail. Morphological variability and diagnostic characters of the three related species are discussed. An emended diagnosis for adult males of the *Tanytarsus chinyensis* species group and a key to determination of European species of the group are also provided.

Key words: Diptera, Chironomidae, *Tanytarsus*, systematics, new species, Lapland

Introduction

The *Tanytarsus chinyensis* species group, proposed by Reiss & Fittkau (1971), includes currently several species, six of which were recorded in Europe (*Tanytarsus brundini* Lindeberg, 1963, *T. chinyensis* Goetghebuer, 1934, *T. cretensis* Reiss, 1987, *T. curticornis* Kieffer, 1911, *T. heusdensis* Goetghebuer, 1923, *T. palettaris* Verneaux, 1969), three in Afrotropics (*Tanytarsus congus* Lehmann, 1981, *T. pseudocongus* Ekrem, 1999, *T. trifidus* Freeman, 1958), and at least three are known from the eastern Palaearctic (*Tanytarsus akantertius* Sasa & Kamimura, 1987, *T. tamadecimus* Sasa, 1980, *T. tusimatneous* Sasa & Suzuki, 1999) (Ekrem 2001, 2002; Giłka, unpubl.). The *chinyensis* group is also represented in the Nearctic region (Oliver et al. 1990), however, the records of *T. brundini* and *T. curticornis* require confirmation (Bilyj, pers. comm.). The Neotropical *riopreto* species group, distinguished by Fittkau & Reiss (1973) and discussed by Sanseverino (2006), appears to be closely related to the *chinyensis* group, nevertheless, phylogenetic relations between the two groups need further studies.

The presence of two setae on the median margin of the hypopygial superior volsella and the single seta on the digitus are adult male characters for the group recently discussed (Ekrem 2001, 2002; Sanseverino 2006). Another diagnostic feature, however, limited to the two European species, is the swollen distal part of the digitus forming a pear-shaped lobe. Based on Kieffer's materials, Edwards (1929) mentioned this character in two forms known under the common name *Tanytarsus curticornis*. Subsequently, Lindeberg (1963) described one of Edwards's varieties as *Tanytarsus brundini*, using a morphometric analysis and a correlation between some hypopygial features and body colouration.

Here we describe another species of the group, which has the pear-shaped digitus. The new species fits concept of the *chinyensis* group well and shows an interesting set of characters which clearly distinguish it from the two congeners. Our study, based on the adults collected in Fennoscandia, resulted in comparative descriptions of the three relatives and their morphological variability. A detailed analysis of male characters of all known species of the *chinyensis* group allow us to emend its diagnosis as well.

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Materials and methods

Specimens, collected with a sweep net, were dissected and slide-mounted in Euparal or in a mixture of phenol and Canada balsam using the method by Wirth & Marston (1968). To preserve the natural shape and configuration of the structures studied, all parts of the dissected specimen were placed under 3 x 3 mm or smaller cover glasses; to prevent flattening the hypopygium, a tiny snip of aluminium foil was used as a prop. Excepting colouration, taken from specimens preserved in alcohol, illustrations, descriptions and measurements were taken from slide-mounted individuals. The wing was measured from the arculus to the tip; lengths of legs segments were rounded off to the nearest 5 μm; lengths of palpomeres II–V, spurs and combs - to 1 μm; and antennal and leg ratio (AR, LR) values - to 0.01. The measurements are given as ranges, followed by the mean (in parentheses) when 3 or more specimens were measured. The terminology with abbreviations follows Sæther (1980) and Giłka (2009). Illustrations were prepared using the technique described by Giłka (2008). The type series and remaining specimens examined are deposited in the collection of the Department of Invertebrate Zoology, University of Gdańsk, Poland.

Systematics

Diagnosis of adult males of the *Tanytarsus chinyensis* group

Anal tergite bands of V-type, widely separated. Median setae short, exceptionally absent (*T. curticornis*). Anal point with well developed crests, bearing at least one (*T. cretensis*) but usually several spinulae placed in a more or less regular row. Superior volsella roundish or heart-shaped, with well developed posteromedian section, sometimes forming a hook-shaped lobe (*T. akantertius*, *T. chinyensis*, *T. cretensis*, *T. tamadecimus*). Superior volsella with one (*T. congus*), three (*T. tusimatneous*) but usually with two setae located anteromedially. Digitus stout, extending far beyond superior volsella, bearing seta either at its base (*T. chinyensis*, *T. cretensis*, *T. pseudocongus*, *T. tamadecimus*) or at its enlarged or pear-shaped apical lobe (*T. brundini*, *T. congus*, *T. curticornis*, *T. salmelai*) or on projection (tubercle) located under anteromedian part of superior volsella (*T. akantertius*, *T. heusdensis*, *T. palettaris*, *T. trifidus*); exceptionally digitus-seta absent (*T. tusimatneous*). Stem of median volsella strongly reduced, always shorter than digitus.

Tanytarsus salmelai sp. n.

(Figs 3, 4, 15–18, 21, 24, 27)

Type material. Holotype male, slide mounted in Canada balsam: Finland, Arcto-Alpine ecoregion, Aksonjunni, 36 km south of Nuorgam, Utsjoki, 2 July 2007. Paratypes. 1 male: same data as holotype; 2 males: Finland, Northern boreal ecoregion, Vasanvuoma near Kittilä, 26 June 2007; 2 males slide mounted in Euparal: Finland, Taljavaaranvuoma near Kittilä, 12 July 2007. Leg. J. Salmela.

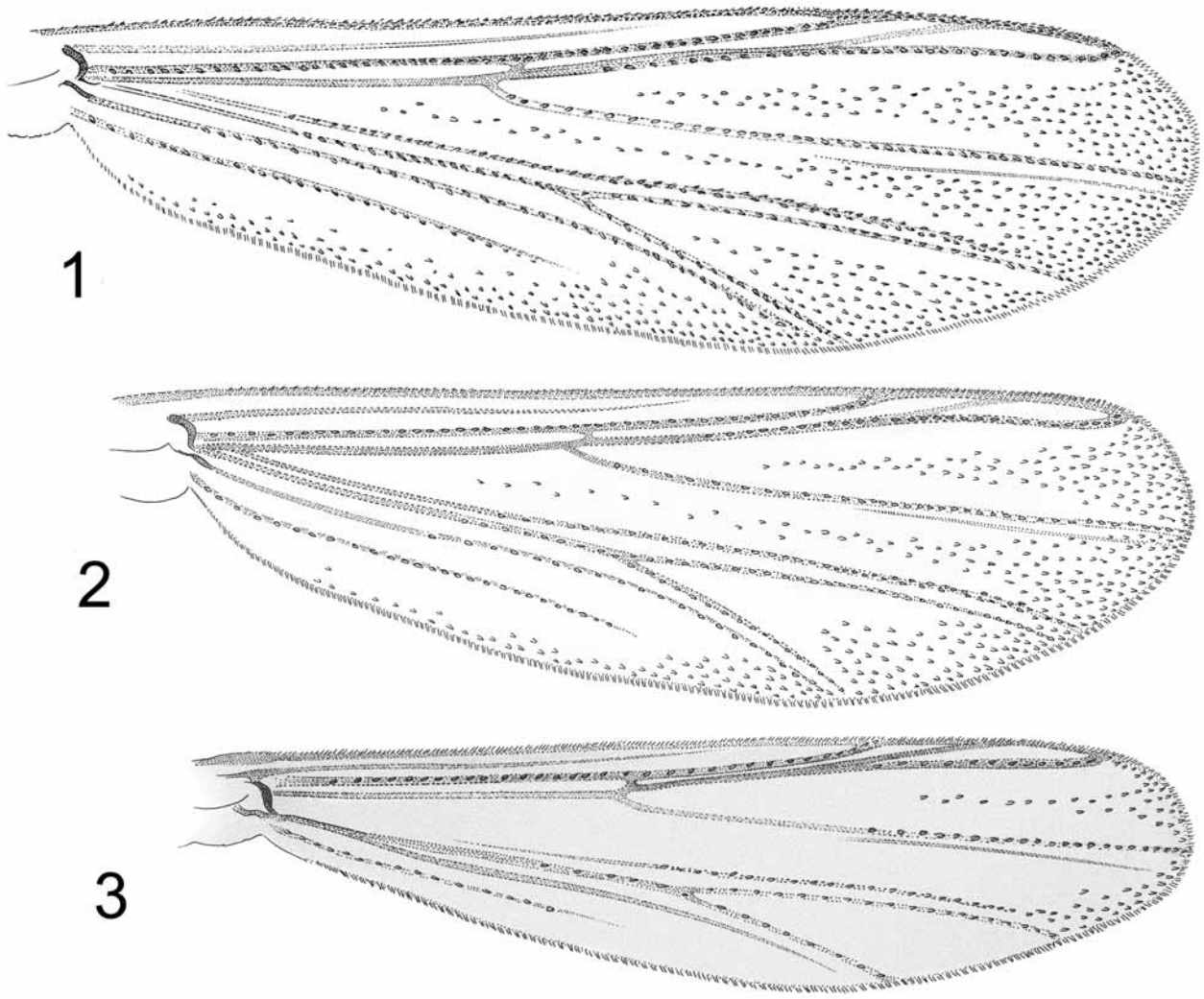
Derivation of the name. The specific name is dedicated to Jukka Salmela (University of Jyväskylä, Finland), who collected the material.

Diagnosis. Darkly coloured species, with wing 1.15–1.50 (1.30) mm long and AR 0.44–0.51 (0.48). Anal wing lobe strongly reduced; membrane brownish, covered with sparse macrotrichia apically. Anal point slender, with narrowed and strongly elongated tip. Superior volsella roundish, bearing two anteromedian setae. Digitus stout, with apical pear-shaped lobe and single seta at its base. Stem of median volsella strongly reduced, with group of short lamellae. Inferior volsella parallel-sided, with transversally cut apex and darkly pigmented dorsomedian ridge.

Description. Adult male (measurements in Table).

TABLE. Comparison of measurable characters of male *Tanytarsus brundini*, *T. curticornis* and *T. salmelai* **sp. n.** (length measurements in µm, except for wing).

Character \ Species		*T. brundini* n = 10 unless otherwise stated	T. curticornis n = 10	*T. salmelai* n = 6 unless otherwise stated
Wing (mm)		1.35–2.15 (1.65)	1.23–1.57 (1.45)	1.15–1.50 (1.30, n = 4)
AR		0.67–0.95 (0.79)	0.66–0.72 (0.69)	0.44–0.51 (0.48, n = 5)
Frontal tubercles		0–3, usually absent	0–2, usually absent	2–6, always present
Palpomere II		32–48 (39)	32–40 (36)	32–36 (33, n = 4)
Palpomere III		95–123 (111)	91–107 (102)	83–103 (90, n = 4)
Palpomere IV		103–143 (117)	103–115 (110)	75–83 (79, n = 4)
Palpomere V		171–222 (192)	171–187 (179)	missing
Clypeals		11–17	12–16	7–13
Acrostichals		13–15	10–13	6–8 (n = 5)
Dorsocentrals		7–10	6–9	4–8
Prealars		1	1	1 (n = 3)
Scutellars		4–8, usually 6	4	2–4 (n = 4)
P_1	fe	625–880 (730)	560–705 (645)	530–670 (585)
	ti	340–550 (415)	310–390 (350)	315–395 (350)
	ta_1	735–1015 (850)	720–785 (745)	490–560 (520, n = 3)
	ta_2	365–505 (435)	380–420 (395)	270–295 (n = 2)
	ta_3	300–410 (355)	300–325 (310)	215–230 (n = 2)
	ta_4	235–325 (275)	240–250 (245)	160–170 (n = 2)
	ta_5	110–145 (125)	115–125 (120)	95 (n = 2)
	LR_1	1.85–2.17 (2.06)	1.96–2.27 (2.11)	1.52–1.59 (1.56, n = 3)
P_2	fe	610–895 (735)	565–705 (655)	515–690 (585)
	ti	480–720 (585)	465–550 (520)	440–550 (485)
	ta_1	300–435 (355)	280–315 (295)	190 (n = 1)
	ta_2	155–235 (190)	155–175 (165)	120 (n = 1)
	ta_3	110–170 (140)	95–125 (115)	90 (n = 1)
	ta_4	80–120 (100)	75–90 (80)	75 (n = 1)
	ta_5	65–95 (80)	65–75 (70)	65 (n = 1)
	LR_2	0.58–0.63 (0.60)	0.55–0.59 (0.56)	0.43 (n = 1)
	Sensilla chaetica on ta_1	3–6, usually 4 or 5	2–3, usually 3	3 (n = 1)
P_3	fe	675–1050 (825)	625–765 (720)	565–755 (645)
	ti	640–1015 (790)	595–735 (685)	535–720 (605)
	ta_1	450–630 (525)	390–500 (455)	295–330 (n = 2)
	ta_2	255–390 (315)	235–310 (280)	190–215 (n = 2)
	ta_3	230–340 (280)	205–265 (240)	175–185 (n = 2)
	ta_4	155–230 (190)	130–175 (160)	110–125 (n = 2)
	ta_5	90–130 (110)	80–110 (95)	80–90 (n = 2)
	LR_3	0.62–0.70 (0.67)	0.63–0.69 (0.66)	0.53–0.55 (n = 2)
Gonostylus		100–135 (n = 65)	80–100	90–110
Basilateral setae		absent (n = 65)	1 on each side	absent
Median setae		2 (n = 65)	absent	2–4
Anal point spinulae		4–7, usually 4 or 5 (n = 65)	4–10, usually 7 or 8	3–5, usually 4



FIGURES 1–3. Male wing. 1: *Tanytarsus brundini*, 2: *T. curticornis*, 3: *T. salmelai* **sp. n.**

Colouration. Ground colour of thorax, scutellum, haltere, legs and abdomen olive brown; antennal pedicel, tentorium, scutal stripes, postnotum and sternum brown to fuscous or black; wing membrane brownish; C, M and radial veins distinctly darker.

Head. Antenna with 13 flagellomeres; ultimate flagellomere relatively short, club-shaped. Frontal tubercles short but always present. Third palpomere longer than fourth.

Wing. Membrane covered with sparse macrotrichia in distal half of cell r_{4+5}, a few macrotrichia in apical part of cell m_{1+2} sometimes present, remaining cells bare. Veins Sc, M, RM, R_{2+3}, proximal half of R_{4+5}, M_{1+2}, Cu and false veins bare, remaining veins bearing sparse macrotrichia. R_{4+5} ending slightly distal of M_{3+4} and well proximal of M_{1+2}, FCu distinctly distal of RM, R_1 and Cu_1 ending about same distance along length of wing. Anal lobe of wing strongly reduced (Fig. 3).

Legs. Spur of fore tibia straight, 20–25 μm long. Combs of mid and hind tibiae separated. Each comb consists of 7–9 teeth 12–15 μm long (mid tibia) and 8–10 teeth 16–20 μm long (hind tibia); each comb bears straight or slightly curved spur, 12–15 μm (mid tibia) to 28–32 μm long (hind tibia). Basitarsus of mid leg with 3 sensilla chaetica (n = 1).

Hypopygium. Gonostylus straight or slightly curved and directed medially, with parallel margins tapering to widely rounded apex. Anal tergite with 2–4 median setae and small microtrichia-free area surrounding its base. Dark tergite bands of V-type, separated by slightly darker median area of anal tergite. Lateral teeth and basilateral setae absent (Fig. 4). Anal point slender, with distinctly narrowed and elongated tip, apically blunt

or transversally cut, armed with 3–5 (usually 4) spinulae placed in row between crests forming a pit (Figs 15–18); 5–8 lateral setae on each side of anal point (Fig. 4). Superior volsella roundish, slightly elongated and directed medially, with median margin transversely cut, bearing 2 strong anteromedian and 4–8 fine dorsal setae. Digitus stout, extending far beyond superior volsella, strongly bent distally, forming relatively small apical pear-shaped lobe with narrowed conical tip and single seta at its base (Fig. 21). Stem of median volsella strongly reduced, 6–8 μm long, located under superior volsella, bearing group of short lamellae; inner margin of coxite above median volsella slightly concave (Fig. 24). Inferior volsella parallel-sided, tapering to transversally cut apex, bearing darkly pigmented ridge in dorsomedian position (Fig. 27).

Discussion. The presence of the pear-shaped apical lobe of the digitus and the very short median volsella makes *Tanytarsus brundini* and *T. curticornis* most similar to *T. salmelai*. The character best separating *Tanytarsus salmelai* is the narrowed and strongly elongated tip of the hypopygial anal point (Figs 15–18). The inferior volsella transversally cut apically (Figs 4, 27), the reduced anal lobe of wing, the brownish wing membrane covered with sparse macrotrichia apically (Fig. 3), the presence of frontal tubercles, the length proportions of the 3rd and 4th palpomere as well as the low AR and LR of all legs (Table) distinguish *Tanytarsus salmelai* from the two relatives compared.

The enlarged apex of digitus, similar to that found in *Tanytarsus salmelai*, can also be observed in the Afrotropical *Tanytarsus congus* and *T. pseudocongus*. Both species fit the *chinyensis* group well in having the digitus-seta, and are easily separable based on highly specific hypopygial features, in particular the shape of their anal points and inferior volsellae (Ekrem 2001).

Although the larval habitat of the new species is not known in any detail, it may be presumed that immatures of *Tanytarsus salmelai* inhabit eutrophic fens, nowadays rare in Finland. The specimens examined were sampled with a sweep net from fens surrounded by small temporary ponds (all sites) and mossy springs (Aksonjunni). Interestingly enough, no adults were collected with Malaise traps set at the same sites throughout the seasons. A correlation between flying activity of the species and its distinct wing surface reduction needs confirmation. This new species is rare. It was recorded only from three out of hundreds of sites distributed across Lapland and visited for several years.

Tanytarsus brundini Lindeberg, 1963

(Figs 1, 5–9, 19, 22, 25)

Tanytarsus (*Tanytarsus*) *curticornis* Kieffer, 1911: Edwards 1929: 415 (*partim*).
Tanytarsus brundini Lindeberg, 1963: 127; Reiss & Fittkau 1971: 98.

Material examined. FINLAND. Hietanen near Peranka, 2 August 2002, 6 males, W. Giłka. Inari, Vuopajanniemi, 28 July 2002, 1 male, 4 August 2003, 12 males, W. Giłka. Jänisjärvi near Näätämö, 26 July 2002, 1 male, W. Giłka. Korettoja on Utsjoki river, 26 July 2003, 1 male, W. Giłka. Kotka, Santalahti, 5 August 2002, 6 males, W. Giłka. Olhava near Oulu, Bothnian Gulf, 13 July 2002, 4 males, W. Giłka. Päijänne, 27 May 2003, 1 male, L. Paasivirta. Supru, Kuosnajärvi, 26 July 2002, 6 males, W. Giłka. Tervola on Kemijoki river, 13 July 2002, 1 male, 22 July 2003, 5 males, 19 July 2006, 4 males, W. Giłka. Vesijärvi near Lahti, 11 July 2002, 1 male, W. Giłka. SWEDEN. Bureå, Skelleftebukten, Bothnian Gulf, 9 August 2003, 11 males, W. Giłka. Ljusnan river, 10 km E of Sveg, 19 July 2003, 2 males, W. Giłka. Sikeå, Bothnian Gulf, 20 August 2004, 3 males, W. Giłka.

Diagnostic description. Adult male (measurements in Table).

Ground colour of thorax, scutellum, haltere, legs and abdomen green to brownish green; antennal pedicel, tentorium, scutal stripes, postnotum and sternum brown to dark brown or black (rarely light brown or orange in freshly emerged specimens); wing membrane pale, greenish, with C, M and radial veins somewhat darker, olive. Frontal tubercles usually absent or present as tiny swellings. Third palpomere shorter than fourth. Wing membrane below veins M and R_{4+5}, including almost entire area under M_{3+4}, Cu_1 and An covered with macrotrichia; very short proximal section of R_{4+5} and 1/3 part of Cu and neighbouring false veins bare (Fig. 1).

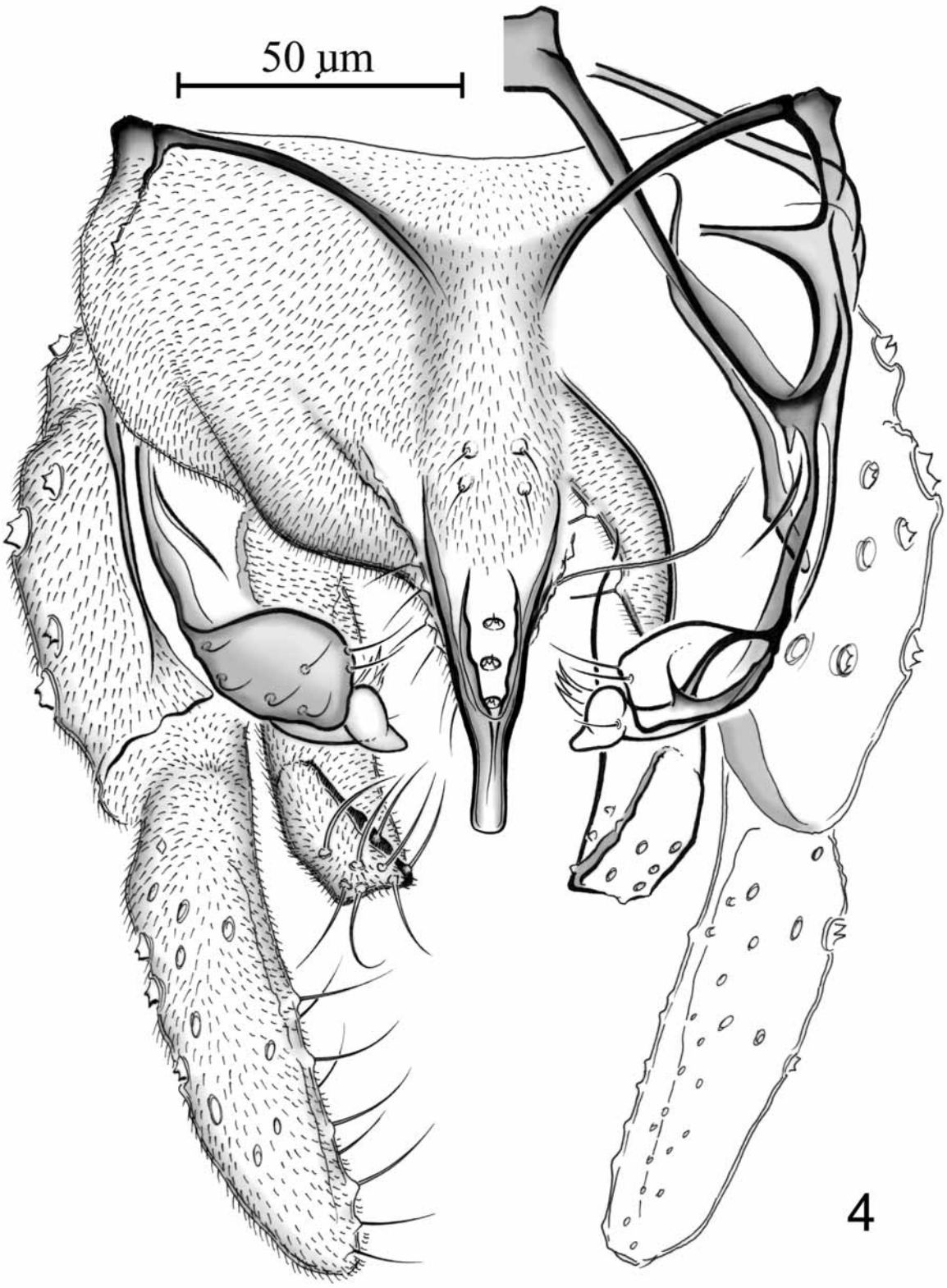
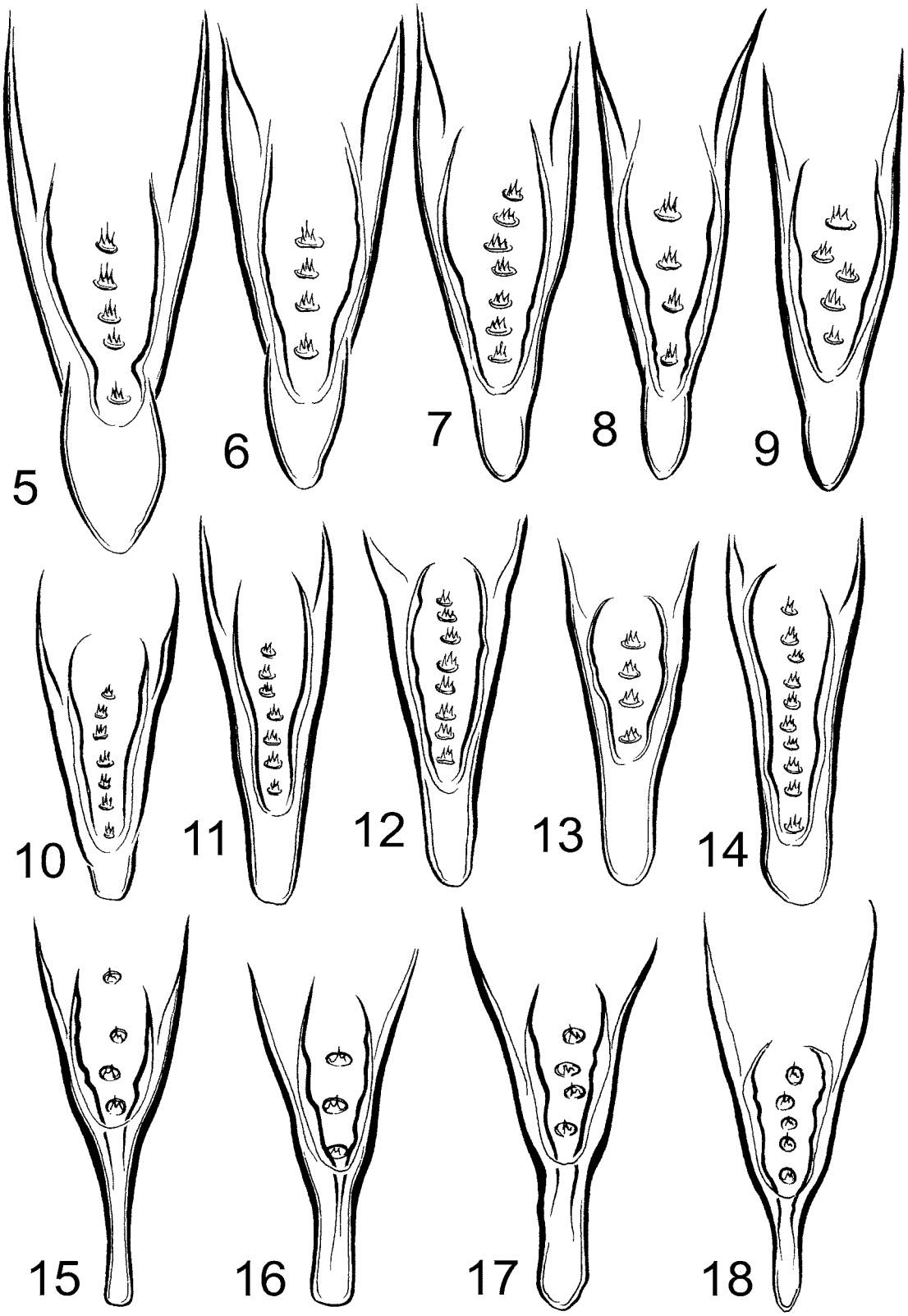


FIGURE 4. *Tanytarsus salmelai* **sp. n.**, male. Hypopygium.

Gonostylus with slight narrowing distally. Anal tergite with pair of median setae. Basilateral setae absent. Anal point stout, armed with 4–7 (usually 4 or 5) spinulae, usually with lanceolate apical expansion (Figs 5–9). Superior volsella with enlarged anterolateral part and posteromedian lobe, median margin concave. Pear-shaped apical lobe of digitus relatively small in comparison with stout superior volsella, bearing narrow

conical tip (Fig. 19). Inner margin of coxite above median volsella distinctly concave (Fig. 22). Inferior volsella slender, apically rounded, slightly wrinkled on its dorsomedian surface (Fig. 25).

Discussion. Lindeberg (1963) considered adult males of *Tanytarsus brundini* and *T. curticornis* as very similar based on their hypopygial structure. The male of *Tanytarsus brundini* (1) can be easily distinguished from those of *T. curticornis* (2) and *T. salmelai* (3) by the combination of characters presented below.



FIGURES 5–18. Variability in hypopygial anal point. 5–9: *Tanytarsus brundini*, 10–14: *T. curticornis*, 15–18: *T. salmelai* **sp. n.**

At least one pair of median setae on the anal tergite present (1, 3) or median setae absent (2). Basilateral setae absent (1, 3) or single strong seta on each side of the anal tergite present (2). Anal point slightly lanceolate, usually with 4 or 5 spinulae (1), anal point broadly rounded or slightly cut apically, usually with 7 or 8 spinulae (2) or anal point distinctly narrowed and strongly elongated, usually with 4 spinulae (3) (Figs 5–9, 10–14, 15–18 respectively). Superior volsella concave (1) or transversally cut (2, 3) (Figs 19–21). Pear-shaped lobe of digitus with narrow conical tip, relatively small in comparison with superior volsella (1, 3) or pear-shaped lobe of digitus roundish, relatively stout in comparison with superior volsella (2) (Figs 19–21). Inner margin of coxite above median volsella distinctly concave (1), straight (2) or slightly concave (3) (Figs 22–24).

The shape of inferior volsellae of the species compared is also distinct when the structures are examined in properly mounted specimens (Figs 25–27). The wing of *Tanytarsus salmelai* has a distinct shape, colouration and chaetotaxy (Fig. 3), whereas the wings of *T. brundini* and *T. curticornis* are very similar (Figs 1 and 2). Slight differences can be observed in the chaetotaxy, i.e. the number of macrotrichia in cells under M_{3+4}, Cu_1, An and on veins R_{4+5}, Cu and neighbouring false veins (higher number in *T. brundini*). For differences in measurable characters of males *Tanytarsus brundini* Lindeberg, *T. curticornis* Kieffer and *T. salmelai*, see Table.

In addition, Lindeberg (l.c.) based his separation of *Tanytarsus brundini* and *T. curticornis* on observations of their swarming behaviour. We confirm that swarms containing both species appear rarely. Only one sample collected at Vesijärvi contained specimens of both species flying together in a large swarm consisting of several tanytarsine species.

Tanytarsus curticornis Kieffer, 1911

(Figs 2, 10–14, 20, 23, 26)

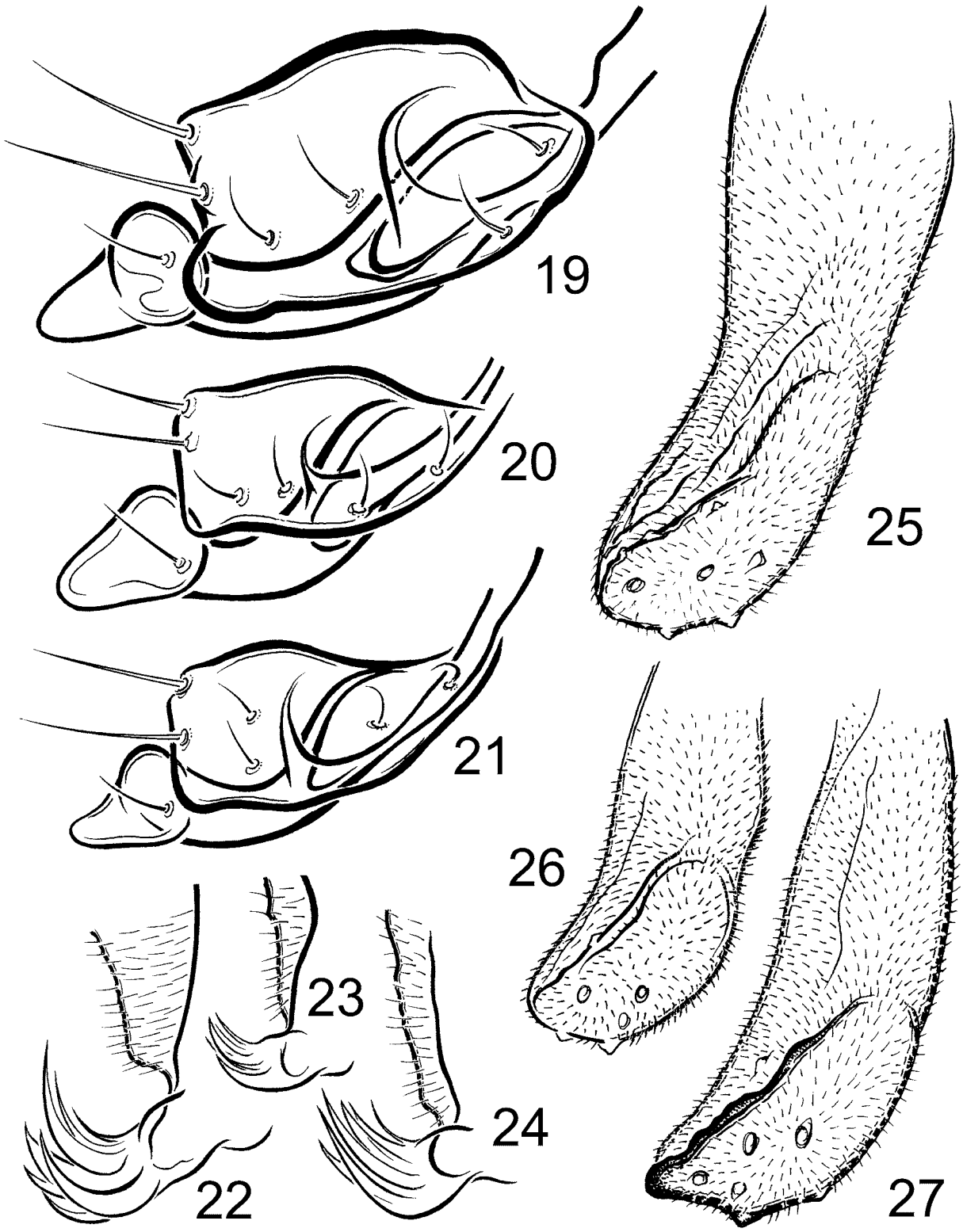
Tanytarsus curticornis Kieffer, 1911: 52; Lindeberg 1963: 127; Reiss & Fittkau 1971: 100.
Tanytarsus (*Tanytarsus*) *curticornis* Kieffer, 1911: Edwards 1929: 415 (*partim*).

Material examined. FINLAND. Puruvesi, Kesälahti, 5 August 2002, 1 male, W. Giłka. Vesijärvi near Lahti, 11 July 2002, 1 male, W. Giłka. SWEDEN. Västerdalälven near Sälen, 1 July 2006, river and fish-ponds, 8 males, W. Giłka.

Diagnostic description. Adult male (measurements in Table).

Ground colour of thorax, scutellum, haltere, legs and abdomen yellowish green; antennal pedicel, tentorium, scutal stripes, postnotum and sternum yellowish green to pale brown; wing membrane pale, with C, M and radial veins somewhat darker. Frontal tubercles usually absent. Third palpomere shorter than fourth. Wing membrane under M_{3+4}, Cu_1 and An partially free of macrotrichia; 1/4 proximal section of R_{4+5}, proximal half of Cu and neighbouring false veins bare (Fig. 2). Gonostylus with slight narrowing in distal part or regularly tapering to slender apex. Anal tergite with single strong basilateral seta on each side. Median setae absent. Anal point armed 4–10 (usually 7 or 8) spinulae, with blunt, widely rounded or slightly cut apex (Figs 10–14). Superior volsella with median margin transversally cut. Pear-shaped apical lobe of digitus roundish, broadly conical, stout in comparison with relatively small superior volsella (Fig. 20). Median volsella very short, inner margin of coxite above median volsella more or less straight (Fig. 23). Inferior volsella short, with broadly rounded apex (Fig. 26).

Discussion. All the examined males of *Tanytarsus curticornis* have the lightly coloured, usually uniformly yellowish-green body, with slightly darker, pale brown tentorium, pedicel and thoracic sclerites. The colouration, however, should be treated with caution in diagnosing the species, particularly in comparison with freshly emerged specimens of *Tanytarsus brundini* (see diagnoses).

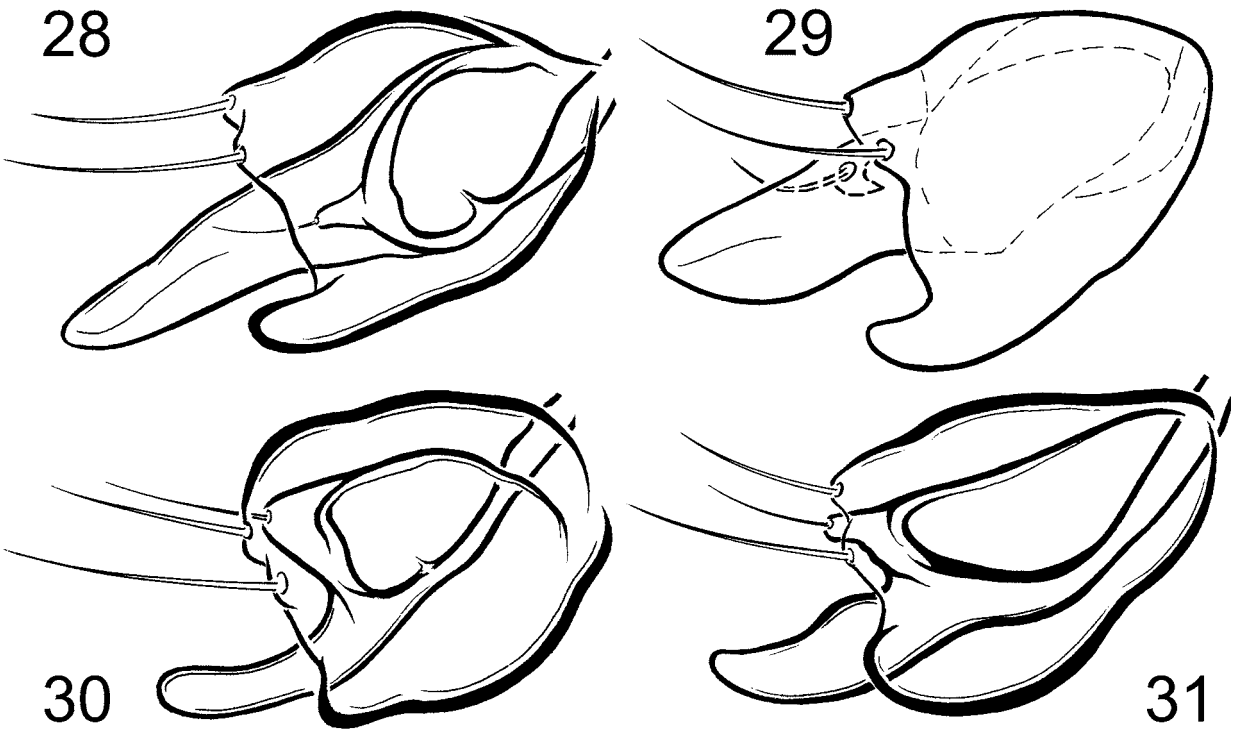


FIGURES 19–27. Hypopygial volsellae. 19–21: superior volsella and digitus, 22–24: median volsella and inner margin of coxite, 25–27: inferior volsella. 19, 22, 25: *Tanytarsus brundini*; 20, 23, 26: *T. curticornis*; 21, 24, 27: *T. salmelai* **sp. n.**

In a number of samples taken in Lapland, we also found a few specimens which may fit Lindeberg's (1963) description of the “Mutenianjoki population”. Our material collected from two distant sites near Tsarmi and Lemmenjoki (Inari distr.) includes pale, yellowish-green specimens with a hypopygial structure

similar to that illustrated by Lindeberg (1963, fig. 6). They are undoubtedly close to *Tanytarsus curticornis*, but differ in having a long triangular and usually acute hypopygial anal point, bearing 4–8 spinulae placed in a row or dispersed at the base of the anal point. The specimens have a slender inferior volsella lacking an apical expansion, 2–3 median setae (which may occasionally be absent) as well as a reduced wing setation. Due to the variable nature of the diagnostic structures, an unambiguous specific diagnosis could not be formulated based on the few specimens examined. Several males were collected from a boggy area of spring brooks (helocrene) at both sites.

Based on pupal descriptions (Bause 1913, Krüger 1945), the record of *T. virens* in Lapland (Thienemann 1941), and his unpublished materials, Lindeberg (l.c.) suggested a close relationship between *Tanytarsus curticornis* and *Tanytarsus virens* Kieffer, 1909. However, the systematic status of *Tanytarsus virens* is not certain. The species has apparently been described (merely included into a key) from adults reared by Thienemann from immatures sampled in the Heilenbecke reservoir in Westphalia (Kieffer 1909). The type series is probably lost. A single pupal exuviae of the Thienemann's sample, which may have been used for Bause's (1913) description, is deposited in the Zoologische Staatssammlung Muenchen. Using Langton (1991), the pupa keys out to *Tanytarsus debilis* (Meigen, 1830) (Spies, pers. comm.), a member of the *Tanytarsus verralli* species group (Reiss & Fittkau 1971).



FIGURES 28–31. Superior volsella and digitus. 28: *Tanytarsus chinyensis*, 29: *T. cretensis* (according to Reiss 1987), 30: *T. heusdensis*, 31: *T. palettaris*.

Discussion on the *Tanytarsus chinyensis* group diagnosis

The original diagnosis of the *chinyensis* group was based on five European species (Reiss & Fittkau 1971). As a consequence of recent amendments, to include the species from other geographical regions, the diagnosis was based on two prime characters of adult males, i.e. the presence of a single seta on the digitus and two setae on the median margin of the superior volsella (Ekrem 2001, 2002; Sanseverino 2006). The combination

of characters fits all the European species of the group well. They all have the digitus-seta and two strong setae placed in the anteromedian part of their superior volsellae. The location of the digitus-seta, nevertheless, differs distinctly in the European species, as shown in Figs 19–21 and 28–31. The seta is placed near the base of the digitus (*Tanytarsus chinyensis*, *T. cretensis*; also *T. pseudocongus*, *T. tamadecimus*), at its enlarged or pear-shaped apical lobe (*Tanytarsus brundini*, *T. curticornis*, *T. salmelai*; also *T. congus*), or is located on its tubercle or the enlarged projection under the anteromedian part of the superior volsella (*Tanytarsus heusdensis*, *T. palettaris*; also *T. akantertius*, *T. trifidus*). The latter feature, however, fits also the species representing other groups of the genus, which have the superior volsella armed with two setae on its anteromedian margin as well (e.g. the *excavatus* species group); the digitus-seta may also be absent in the *chinyensis* group (*Tanytarsus tusimatneous*). Thus, until a phylogenetic analysis of all known members of the *Tanytarsus chinyensis* group has been undertaken, we provide an additional set of diagnostic characters for adult males to define the group (see diagnosis).

Key to males of European species of the *Tanytarsus chinyensis* group

1. Digitus with apical pear-shaped lobe (Figs 19–21) 2
-. Digitus without apical pear-shaped lobe (Figs 28–31) 4
2. Wing membrane covered with macrotrichia apically (Fig. 3); hypopygial anal point with strongly elongated narrow tip (Figs 15–18); inferior volsella with transversally cut apex (Fig. 27) ..... *T. salmelai* **sp. n.**
-. Wing membrane covered with macrotrichia on almost entire area (Figs 1, 2); hypopygial anal point with short lanceolate or broadly rounded tip (Figs 5–14); inferior volsella with widely rounded apex (Figs 25, 26) 3
3. Anal tergite bearing median setae, basilateral setae absent; anal point lanceolate (Figs 5–9); pear-shaped apical lobe of digitus c. 3 times shorter than superior volsella (Fig. 19); inner margin of coxite above median volsella concave (Fig. 22) ..... *T. brundini*
-. Anal tergite bearing basilateral setae, median setae absent; anal point broadly rounded (Figs 10–14); pear-shaped apical lobe of digitus c. 2 times shorter than superior volsella (Fig. 20); inner margin of coxite above median volsella straight (Fig. 23) ..... *T. curticornis*
4. Superior volsella circular, digitus parallel-sided with slightly swollen rounded apex (Fig. 30) ..... *T. heusdensis*
-. Superior volsella heart-shaped, digitus thumb-like tapering to blunt apex (Figs 28, 29, 31) 5
5. Digitus-seta located on enlarged projection under anteromedian part of superior volsella, posteromedian lobe of superior volsella never hook-shaped (Fig. 31) ..... *T. palettaris*
-. Digitus-seta located on cylindrical tubercle at base of digitus, posteromedian lobe of superior volsella hook-shaped (Figs 28, 29) 6
6. Hypopygial anal point acute ..... *T. cretensis* (Reiss 1987: fig. 1)
-. Hypopygial anal point blunt ..... *T. chinyensis* (Reiss 1987: fig. 2)

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