

Chironomidae (Diptera) from Fennoscandia north of 68°N, with a description of ten new species and two new genera

Jari Tuiskunen & Bernhard Lindeberg

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Chironomidae (Diptera) collected in northern Fennoscandia, mainly Finland, have been studied. The material includes about 315 forms (4 Podonominae, about 25 Tanytopodinae, 15 Diamesinae, 1 Prodiamesinae, 173 Orthoclaadiinae, 43 Chironomini and about 54 Tanytarsini), of which 287 are named. 77 species are new to Finland, and 188 to Region 21 of the Limnofauna Europaea. Some comparisons are made with the chironomid Fauna of the Abisko area, Swedish Lapland. Taxonomical problems remain to be solved, but ten new species are described, three of which have been assigned to two new genera: The genera are *Boreosmittia* and *Lappokiefferiella* and the species *Boreosmittia inariensis*, *B. karelioborealis*, *Bryophaenocladus saanae*, *Chaetocladus crassisaetosus*, *C. muliebris*, *Hydrobaenus paucisaeta*, *Lappokiefferiella platytarsus*, *Thienemannia paasivirtai*, *Tokunagaia parexcellens* and *Zalutschia mal-lae*. The author of these new genera and species is Tuiskunen. New combinations: *Rheosmittia halvorseni* Cranston & Saether, 1986 is a *Krenosmittia* and *Orthocladus dentatus* Karl, 1937 a *Bryophaenocladus*.

J. Tuiskunen & B. Lindeberg, Zoological Museum, University of Helsinki, P. Rautatiekatu 13, SF-00100 Helsinki, Finland.

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1. Introduction

Several interesting faunal reports on Chironomidae have been published in the last few years. The present-day taxonomic situation permits the compiling of such reports, although much revisionary work is still needed. Faunal lists are important for the understanding of the species composition of larger regions, such as Europe, and also because natural conditions are changing rapidly.

There are reports from single habitats as well as on whole countries. Some examples can be mentioned for Europe: Säwedal 1978, Douglas & Murray 1980, Halvorsen, Willassen & Saether 1982, Reiss 1982, Reiss & Kohmann 1982 and Burmeister & Reiss 1983. Finnish Chironomidae have been collected for years, but very little has been published about them. Faunal records from some restricted areas (mainly lakes) in southern or Central Finland have been reported by Paasivirta (1976, 1982 and 1983), Bagge et al. 1980 and Kansanen (1985). The distribution of Finnish *Cricotopus* spp. has

been treated by Hirvenoja (1975). With the exception of some reports concerning single species, very few papers deal with the rich chironomid fauna of northernmost Finland. The northern Fennoscandian Tanytarsini have been reported on by Lindeberg (1970), but other groups have not been dealt with at all. Hence in this paper we are restricting our treatment to the species of northern Finnish Lapland, with some observations from northern Sweden and Norway.

A total of 159 species is quoted for region 21 in the Limnofauna Europaea (Illies 1978). Säwedal (1978) reported about 270 named taxa and some thirty unidentified or undescribed taxa from the Abisko area (which is Limnofauna Region 20). We now have a total of about 315 forms, 77 of which are new to Finland and 188 new to Limnofauna Region 21. A number of orthoclads cannot have been identified. Several of them can be easily assigned to known genera, but there are a few whose generic placement is uncertain. For three of these problematic species two new genera have been created. Seven new

species described in this paper may have been assigned to old genera, some of them, however, only tentatively. The author of the new species and genera is Tuiskunen.

2. Material and methods

We have sorted through a large quantity of material of adult chironomids, collected in 1969–85 from different localities in northern Fennoscandia. The total number of specimens examined can be estimated as being about 50 000.

The most abundant material is from Lake Inarijärvi, but the Kilpisjärvi area has also been relatively well sampled. Some comparisons between these two localities can be made, with some discussions of the results obtained for the Abisko area. We have not examined all the Norwegian material, but are presenting some interesting forms from Troms and Finnmark (Fig. 1).

Author B. L. has examined the Tanytarsini and some others, and J. T. has studied the Orthoclaadiinae, Tanytopodinae, Chironomini and the rest of the subfamilies. We have chosen to delimit the area for the purposes of our report to approximately Region 21 of the Limnofauna Europaea (Illies 1978, henceforth "Limnofauna 21"), or, as we prefer to say, north of 68°N. The study area used by Hirvenoja is situated just at this border (Hirvenoja 1960). The material so far identified is not included here, but will be treated separately later. Those species from this locality only, mentioned in "Limnofauna 21", are also omitted.

Representatives of all taxa have been slide mounted for identification purposes. Specimens for descriptions and drawings were cleared in KOH. The terminology and measurements in the descriptions mainly follow Saether (1980). Pinder's (1978) terminology is used for wing venation and certain hypopygial structures.

2.1. Sampling localities and abbreviations

The most frequently used place names are abbreviated as below. For single finds in Finland the localities are written in full, as well as those from Sweden and Norway.

- AIL Li, Inari, River Ailioja (771:56). Water temperature 14.7.71 11°C.
- AK Le, Enontekiö, Lake Ala-Kilpisjärvi (766:25). Southern part of Lake Kilpisjärvi. Sample taken at the shore at the southernmost end.
- AP Le, Enontekiö, a small, about 2 m broad clear stream flowing down the slope of the fell Ailakkavaara (766:25). Material netted at some distance from the highway.
- HA Le, Enontekiö, Lake Harrijärvi (767:24). More detailed description in Lindeberg (1970).
- IN Li, Inari, Lake Inarijärvi. Closer description in the text.
- JA Le, Enontekiö, a small stream with brownish water passing by the village of Jatuni (760:32). Material taken at the highway by sweeping the shore herbage.
- JE Le, Enontekiö, Lake Jehkatsjärvi (767:25). More detailed description in Lindeberg (1970).
- KJ Le, Enontekiö, Lake Kilpisjärvi (767:25). For a more exact description, see the text.

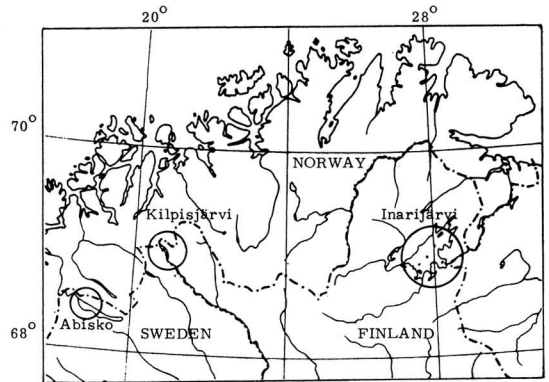


Fig. 1. A map for general orientation.

- KU Li, Inari, River Kulpakkojoki (761:49). A brightwater, swiftly flowing, about 5–10 m wide river. Samples taken along the river at the foot of the fell Hammastunturi.
- LÄ Le, Enontekiö, River Lätäseno (760:30). Broad, slowly flowing river crossing wide swamp areas. Sample taken by sweeping the shore bushes.
- MP Li, Inari, Lake Matala Paltojärvi (761:51). Middle-sized, brightwater oligotrophic lake 6 km west of Ivalo village. Sample taken by sweeping the shore bushes.
- NIL Li, Inari, River Nilijoki (771:56). A short river between Lakes Nilijärvi and Rautaperäjärvi. Water temperature 14.7.71 12°C.
- NÄ Le, Enontekiö, River Näkkäläjoki (759–760:36). Approximately 10–20 m broad, clear river with rapids and quiet waters in approximate 1 : 1 ratio. Submerged vegetation fairly rich. Several samples taken at different localities in the river.
- PE Li, Inari, Lake Peltojärvi (767:48). Fairly large (about 7 km long) and barren lake at the foot of the fell Peltotunturi.
- PJ Li, Inari, River Peltojoki (768:49). Approximately 10–30 m broad rapid river starting from Lake Peltojärvi. Samples netted from different places between Peltojärvi and the highway.
- PML Le, Enontekiö, small ponds on the fell Pikku Malla (767:24). More detailed description in Lindeberg (1970).
- RA Li, Inari, Lake Rautaperäjärvi (770:55).
- SA Le, Enontekiö, Lake Saanajärvi (767:25). More detailed description in Lindeberg (1970).
- SAR Le, Enontekiö, very small, shallow pond on the fell Sarvisoaiivi (762:29). Water temperature 30.8.72 9°C.
- SE Li, Inari, Lake Sevettijärvi (771:56). 15 km long, barren lake.
- SL Le, Enontekiö, two tarns north of Lake Saanajärvi (767:25). Closer description in Lindeberg (1970).
- SO Li, Inari, Lake Sollomjärvi (771:56). Medium-sized, oligotrophic lake.
- SU Li, Inari, Lake Suoppajärvi (767:48). Clearwater, oligotrophic lake 2 km east of Lake Peltojärvi.
- TJ Le, Enontekiö, River Tšahkaljohka (767:25). Very rapid, about 5 m broad river with clear water and without vegetation.

Table 1. Species numbers and percentages in the Inarijärvi and Kilpisjärvi areas, and the species common to these areas and the Abisko area.

	Inarijärvi		Kilpisjärvi		Inarijärvi and Kilpisjärvi		Inarijärvi and Abisko		Kilpisjärvi and Abisko	
	Species	%	Species	%	Species	%	Species	%	Species	%
Podonominae	-	-	2	1	-	-	-	-	2	100
Tanypodinae	9	7	7	5	4	33	4	44		57
Diamesinae	3	2	6	4	1	13	2	67	5	83
Prodiamesinae	1	1	-	-	-	-	1	100	-	-
Orthoclaadiinae	69	51	89	59	45	40	38	55	49	55
Chironomini	27	20	17	11	13	42	6	22	5	29
Tanytarsini	26	19	29	19	13	31	13	50	13	45
Total	135	100	150	99	76		64		78	

TS Li, Inari, Lake Tšuolisjärvi (770:56). 10 km long lake narrowly separated from Lake Inarijärvi.

TSA Le, Enontekiö, Lake Tsahkaljärvi (767:25). For more detailed description see Lindeberg (1970).

VA Li, Inari, some tarns on the fell Vainospää (771:56).

2.2. Collectors and symbols

The names of the collectors responsible for most of the finds are abbreviated to their respective initials. The names of other collaborators are not abbreviated.

BL Bernhard Lindeberg

LP Lauri Paasivirta

VS Veikko Solantie

JT Jari Tuiskunen

PV Pekka Virtanen

The symbols denote distribution data and new finds for different regions.

** new to the fauna of Finland

* new to zone 21 of the Limnofauna Europaea

+ formerly reported from the Abisko area (Säwedal 1978)

++ new to the Abisko area

2.3. Lake Inarijärvi

Most of the material from Lake Inarijärvi was collected by P. Virtanen, an ornithologist, who visited numerous islands, particularly small ones, in the central parts of the lake. He sampled adults and pupal exuviae from 20.VI (time of the break up of the ice) to 12.VIII 1971. Additionally he made excursions to smaller lakes in the area. The number of adults, mostly males, amounts to approximately 30 000.

Inarijärvi is the largest lake in the region, being about 70 km long and up to 30 km wide, over 1000 km² in area, and 115 m a.s.l. It is a complex lake with different types of shores and many islands of varying sizes. The maximum depth is about 100 m. The northern pine limit crosses the area.

About half of the species in the Inarijärvi material are Orthoclaadiinae. This may provide a good estimate for the lake proper, although the material also included species from terrestrial and running water habitats. The number of species of the subfamily Chironominae was perhaps

somewhat higher than expected: 27 Chironomini (about 20%) and 26 Tanytarsini (about 19%). These are higher figures than so far reported for such high latitudes. Other subfamilies, mainly Tanypodinae, represented only about 10% of the total species number (Table 1).

Among Orthoclaadiinae the most typical genera were *Cricotopus*, *Heterotrissocladius*, *Parakiefferiella* and *Psectrocladius*, with several species occurring in large numbers.

The genus *Cricotopus* was rich in species (13 spp.), but only some of them occurred in considerable numbers. *C. polaris* was distinctly the most abundant of them.

Four *Heterotrissocladius* species were identified, all in fairly large numbers. The most abundant species were *H. subpilosus* and *H. grimshawi*.

Parakiefferiella bathophila, *P. gynocera* and *P. scandica* were the most numerous of the seven *Parakiefferiella* species found.

Of the eight *Psectrocladius*, *P. calcaratus*, *P. fennicus* and *P. octomaculatus* were the most important. *P. bisetus* is new to Finland.

Other typical Orthoclaadiinae were *Abiskomyia virgo*, *Mesocricotopus thienemanni*, *Orthoclaadius excavatus*, *Protanytus morio*, *Pseudosmittia brevitarsis*, *Zalutschia tornetraskensis*, and the terrestrial *Gymnometriocnemus volitans*.

Interesting or even surprising finds were such species as *Acamptocladius reissi*, recently described from central Europe (Cranston & Saether 1982), and *Cricotopus pirifer*, previously recorded from Stechlinsee (GDR) and the Pyrenees (Hirvenoja 1973).

The quantities of Chironomini were not particularly high, but *Cladopelma viridula*, *Dicrotendipes pulsus*, *Pagastiella orophila* and *Sergentia coracina* were found in considerable numbers.

Of the Tanytarsini, several species occurred in great abundance, in numbers comparable with the most common Orthoclaadiinae.

Soon after the break up of the ice, *Micropsectra lindebergi* was very abundant. *Constempellina brevicosta* emerged at the beginning of the season, and another species of *Constempellina* was numerous later in the summer (to be described later).

Paratanytarsus penicillatus is a group of species whose taxonomic analysis is being undertaken. One species of the aggregate swarms on the surface of the water, and seems to be the same species as that reported by Butler (1980) from Alaska.

Later in the season very common species include *Paratanytarsus natvigi* and *Tanytarsus usmaensis*. An interest-

ing negative observation can be noted: not a single specimen of *Micropsectra* (*Lauterbornia*) *coracina* could be found. This is a very common species in Lake Kilpisjärvi, for instance.

The Tanypodinae are less numerous in species, but some of them occur in large numbers, e.g. *Arctopelopia barbitarsis*, *Ablabesmyia monilis*, *Paramerina cingulata* and *Procladius* spp. *Zavrelimyia barbatipes*, new to Finland, was represented by one large swarm sample, suggesting it may be common locally.

Pothastia pastoris, so far considered only a British species, together with *P. longimanus* was the most abundant Diamesinae in Lake Inarijärvi.

2.4. Lake Kilpisjärvi and surroundings

Lake Kilpisjärvi is situated in the NW corner of Finnish Lapland. It is 473 m above sea level and 37 km² in area. The limit of the mountain birch occurs at about 600 m a.s.l. The maximum depth of the lake is about 50 m. The ice usually melts around midsummer. Additional information and data are given by Bagge (1968) and Lindeberg (1970). The tarns, ponds, lakes and running waters in the area (AK, AP, HA, JE, PML, SA, SL, TJ, TSA) have been listed and briefly described before (see also Lindeberg 1970). The highest places visited lay at about 700 m a.s.l.

The dominant chironomid group of the area is the Orthoclaadiinae. 89 taxa have been found, and several more likely inhabit the area. From Abisko and its surroundings as many as 185 forms have been reported (Säwedal 1978). The proportion of Orthoclaadiinae at the moment is 59%, thus being somewhat higher than in the Lake Inarijärvi area (see Table 1).

The most important genera in the lake and surrounding standing waters were *Cricotopus*, *Heterotrissocladius*, *Parakiefferiella* and *Psectrocladius*, which are just the same as in Lake Inarijärvi.

Ten species of *Cricotopus* were identified, but only four were the same as those found in Inarijärvi. Most abundant were *C. perniger* and *C. sylvestris*. The situation in respect of *Heterotrissocladius* and *Parakiefferiella* is largely similar in both localities. *H. subpilosus* was very abundant at the beginning of the season, whilst *H. maari* was on the wing at the end of the summer. Seven *Parakiefferiella* species were collected, the most numerous of them being *P. bathophila*, *P. gynocera* and *P. scandica*.

Our material suggests that species of *Psectrocladius* were richest in individuals. Of the five species *P. calcarius* was found in very great numbers in different kinds of standing waters, whilst *P. octomaculatus* was predominantly collected from small lakes, tarns and ponds. Among other important Orthoclaadiinae of the area *Corynoneura carriana*, *Paraphaenocladus irritus* and *Synorthocladus semivirens* can be mentioned. Only female *Abiskomyia virgo* were found, as was originally the case at Abisko. In Lake Inarijärvi both sexes were observed (Lindeberg 1974).

The proportion of the species of Chironominae was somewhat lower than in the Inarijärvi area. The tribe Chironomini was represented by 17 taxa, Tanytarsini by 29 taxa (percentages 11 and 19). This is at least partly due to some samples taken at rivers, where naturally the subfamily Orthoclaadiinae is a very dominant group.

The genera *Chironomus* and *Cladotanytarsus* are difficult. A *Chironomus* seems to be important in Lapland, collected by Thienemann and identified by Edwards as *C. hyperboreus* (Thienemann, 1941). Not very many speci-

mens were taken in the Lake Kilpisjärvi area, but large swarms were seen in Finnmark, particularly in Børselv-fjellet. *C. hyperboreus* was originally described from Greenland. Later on, Kieffer (1911) described *C. islandicus* from Iceland. But they have also been regarded as synonymous. Pedersen (1978), however, has arrived at the result that they are two good species. The identity of another species presented here, *C. staegeri*, is similarly very uncertain.

Fairly abundant Chironomini were also *Cladopelma viridula*, *Microtendipes brevitaris* and *Phaenopsectra punctipes*.

Several Tanytarsini, new to northern Finland, can be listed (since Lindeberg 1970). These include *Paratanytarsus hyperboreus* and *P. natvigi*. There may be a closely related species to *P. laccophilus* to be studied later. *P. penicillatus* with its close relatives requires a special study. Important material from difficult parts of the Holarctic region is available.

Most of the Tanytarsini collected by author B. L. in the Abisko area on 7.–11.8.1973 are mentioned in Säwedal (1978). Since the report by Lindeberg (1970), *Stempellina bausei*, *S. subglabripennis* and *Stempellinella minor* have been observed.

Oeklandia borealis Kieffer, 1922, not detected by us, is a species erroneously supposed by Lindeberg (1970) not to have been found in Fennoscandia; see therefore Brundin (1956b, p. 195) and Säwedal (1978).

The taxonomy of some northern forms of *Tanytarsus* is problematic, and such species are not included in the list below. One very abundant species swarming at Abisko resembles *T. mendax* Kieffer (*T. holochlorus* Edwards) (Säwedal 1978 mentioned only 2 ♂♂). It may be an aberrant northern population of the species or an independent new one. Similarly, at Abisko another form was very numerous. It belongs to the group of species which includes *T. inaequalis* and *T. gregarius* sensu Brundin. Observations on the *T. curticornis* aggregate also indicate that there is a need for further study.

The very abundant species of *Micropsectra* sp. I and sp. II (Lindeberg 1970) have been named by Säwedal (1976) as *M. lindebergi* and *M. insignilobus*, respectively. These and *M. coracina* are on the wing in vast numbers soon after the break-up of the ice. *Paratanytarsus hyperboreus* is an important late season species at Kilpisjärvi and elsewhere.

A number of *Procladius* species were collected, the identity of which must be left open. These were, however, together with *Arctopelopia barbitarsis*, the most abundant Tanypodinae in the area. Diamesinae and Podonominae were collected mainly as single specimens, probably because of unsuitable collecting dates (many Diamesinae seem to emerge either very early or late in the season).

3. The species

Podonominae

*** + *Boreochlus thienemanni* Edwards — 18.8.84 InL, Utsjoki, Pulmankijärvi, L. Huldén leg. 1 ♂. 12.8.85 Norway, Karasjok (JT). Several individuals.

+ *Lasiodiamesa sphagnicola* (Kieffer) — 15.7.69 SL; 30.8.72 SAR (BL). A few specimens.

+ *Parochlus kiefferi* (Garrett) — 20.6.69 KJ (LP); 23.8.83 NÄ; 25.8.83 LÄ; 25.8.83 AP; 25.8.83 AK (JT). Abundant locally.

+ *Trichotanypus posticalis* (Lundbeck) — 30.8.72 SAR (BL); 23.8.83 NÄ (JT). 2 ♂♂.

Tanypodinae

* *Ablabesmyia longistyla* Fittkau — 13.7.82 PJ (JT). Some males.

* + *A. monilis* (Linnaeus) — 21.6.—11.8.71 IN; 11.7.71 IS; 14.7.71 AIL; 15.7.71 SE; 16.7.71 RA (PV); 22.8.83 NÄ (JT). Abundant locally.

* + *A. phatta* (Egger) — 28.6.—9.7.71 IN; 11.7.71 IS; 14.7.71 AIL; 12.—16.7.71 VA; 17.7.71 IS (PV); 16.7.69 PML; 17.7.69 ISA; 18.7.69 JE (BL); 15.7.82 PJ (JT). A common species in most collecting localities of the Inarijärvi area.

+ *Arctopelopia barbitarsis* (Zetterstedt) — 22.6.—11.8.71 IN; 12.7.71 SO; 14.7.71 AIL; 16.7.71 VA (PV); 9.—19.7.69 KJ; 9.7.69 HA; 17.7.69 TSA; 18.7.69 JE (BL); 13.—15.7.82 PJ (JT). Abundant especially in Inarijärvi. We have seen specimens similar to *Arctopelopia* sp. *a* as described by Pinder 1978: Fig. 81 D, but are inclined to believe that the differences in the gonocoxite lobes are caused by differing mounting techniques.

** + *A. melanosoma* (Goetghebuer) — 12.7.71 SO (PV); 29.8.72 KJ (BL); 25.8.83 AK; 25.8.83 TJ (JT). A few specimens.

* ** + *Conchapelopia intermedia* Fittkau — Norway, Porsanger, Billefjord, 7.8.72 (BL); Kuusamo, Juuma (735:60), 8.8.85 (JT). Fairly abundant.

The latter locality is south of 68°N, but the rare species is new to Finland.

* *C. melanops* (Meigen) — 13.7.82 PJ (JT). 2 ♂♂.

* *C. pallidula* (Meigen) — 13.—15.7.82 PJ (JT). A few specimens.

C. sp. pr. *abiskoensis* (Goetghebuer) — 13.—15.7.82 (JT). Swarming in large numbers in the River Peltojoki. This is not conspecific with the new species *C. aagaardi* from Finnmark to be described by D. A. Murray (verbal note by D. A. M.).

* *Nilotanypus dubius* (Meigen) — 14.7.71 AIL; 17.7.71 TS (PV). 2 ♂♂.

* *Paramerina cingulata* (Walker) — 18.7.—7.8.71 IN; 12.7.71 SO; 12.7.71 VA; 14.7.71 AIL; 17.7.71 TS (PV); 4.—29.8.72 KJ; 30.8.72 SAR (BL). Abundant at Inarijärvi, much rarer in the Kilpisjärvi localities.

Procladius fimbriatus Wülker — 15.7.69 SL (BL); 25.8.83 AK; 25.8.83 TJ (JT). A few specimens.

P. spp. (approximately 4—5 additional species, most of them in the Inarijärvi area).

* *Psilotanypus flavifrons* (Edwards) — 26.6.71 IN (PV). 1 ♂.

P. sp. — 7.7.71 IN; 14.7.71 AIL (PV). 2 ♂♂.

* *Rheopelopia ornata* (Meigen) — 13.8.85, Le, Muonio, Muonionjoki (755:35) (JT). Rather common.

Rheopelopia sp. pr. *ornata* (Meigen) — 13.—15.7.82 PJ (JT). Rather common. This species much resembles *R. ornata*, but differs from it in the lack of pulvilli.

* *Thienemannimyia carnea* (Fabricius) — 25.7.—11.8.71 IN (PV). In small numbers.

* + *T. fusciceps* (Edwards) — 23.7.—11.8.71 IN (PV); 15.7.82 SU (JT); 18.7.69 JE (BL); 25.8.83 AK (JT). Fairly abundant especially in Inarijärvi.

* ** *Trissopelopia longimanus* (Staeger) — 15.7.82 PJ (JT). 1 ♂.

* ** *Zavrelimyia barbatipes* (Kieffer) — 6.—8.7.71 IN (PV). Seems to be common locally.

* + *Z. melanura* (Meigen) 14.7.82 PE (JT). A few males.

Diamesinae

+ *Diamesa aberrata* Lundbeck — Wülker (1959a).

** + *D. bertrami* Edwards — 25.8.83 TJ (JT). 1 ♂.

+ *D. bohemani* Goetghebuer — Wülker (1959b).

*** + *D. serratosioi* Willassen — 25.8.83 AK (JT). 1 ♂.

* ** + *D. incallida* (Walker) — 31.3.75 Li, Utsjoki, Tsuokkaljärvi (H. Ojala leg.); 6.4.82 Utsjoki, Kevo (S. Koponen leg.). — Some individuals on snow. Hatching seems to begin unusually early for the latitude.

** + *D. ?latitarsis* (Goetghebuer) — 25.8.83 TJ (JT). 1 ♂.

*** *D. ?spinacies* Saether — 25.8.83 AP (JT), 1 ♂; 7.9.84 KJ (VS), in large amounts.

** + *D. thienemanni* Kieffer — 30.3.75 Li, Utsjoki, Tsuoggajärvi (H. Ojala leg.). One male on snow.

+ *Potthastia longimanus* Kieffer — 30.6.—31.7.71 IN (PV). Some large swarm samples present in the material, otherwise only single specimens.

* ** *P. pastoris* (Edwards) — 28.6.—31.7.71 IN (PV). Approximately as common as *P. longimanus*.

+ *Protanypus caudatus* Edwards — 23.8.83 NÄ; 25.8.83 AK (JT). Single individuals.

+ *Protanypus morio* (Zetterstedt) — 20.6.—2.8.71 IN (PV); 22.—26.6.69 KJ (LP); 11.7.69 SA (BL); 25.8.83 AK (JT). Rather common locally.

+ *Pseudodiamesa branickii* (Nowicki) — Wülker (1959b); 1.9.81 KU (JT). 1 ♂.

+ *Pseudokiefferiella parva* (Edwards) — Wülker (1958).

* ** *Sympotthastia huldeni* Tuiskunen — Tuiskunen (1986b).

Prodiamesinae

+ *Monodiamesa bathyphila* (Kieffer) — 11.8.71 IN (PV). 1 ♂.

Orthoclaadiinae

+ *Abiskomyia virgo* Edwards — 24.6.—4.7.71 IN (PV); 26.6.—5.7.69 KJ (BL, LP). Abundant in both lakes.

*** *Acamptocladus reissi* Cranston & Saether — 15.7.71 VA (PV). 1 ♂.

*** + *A. submontanus* (Edwards) — 21.6.—12.8.71 IN (PV); 25.8.83 LÄ (JT). Single individuals.

*** *Boreosmittia inariensis* gen. n., sp. n. — see p. 374.

*** *B. karelioborealis* gen. n., sp. n. — see p. 376.

* *Bryophaenocladus aestivus* Brundin — 23.8.83 NÄ (JT). 2 ♂♂.

*** *B. dentatus* (Karl) n. comb. — 4.8.72 IN (BL). 1 ♂. The species could be *Orthocladus* (*Chaetocladus*) *dentatus* Karl, 1937. Therefore we tentatively give it in the new combination. Hypopygium in Fig. 3, p. 373.

* *B. flexidens* (Brundin) — 1.9.81 KU; 21.—23.8.83 NÄ; 25.8.83 LÄ; 25.8.83 AP; 25.8.83 TJ (JT). Common late summer species in the Kilpisjärvi area.

B. ictericus (Meigen) — 21.—22.8.83 NÄ (JT). A few individuals.

* *B. inconstans* (Brundin) — 8.7.71 IN (PV); 17.7.82 SU (JT); 12.7.69 PML (BL). Single individuals.

* *B. nitidicollis* (Goetghebuer) — 6.7.71 IN (PV). 2 ♂♂.

*** *B. psilacrus* Saether — 23.8.83 NÄ (JT). Some males. The species is originally known from South Carolina, U.S.A. (Saether 1982). New for the Palaearctic.

*** *B. saanae* sp. n. — see p. 376.

* + *B. scanicus* (Brundin) — 22.6.69 KJ (LP). 1 ♂.

*** *B. subvernalis* (Edwards) — 29.8.72 KJ; 30.8.72 SAR (BL). Relatively abundant locally.

*** *B. tuberculatus* (Edwards) — 23.8.83 NÄ (JT). 1 ♂.

*** + *Chaetocladus acuminatus* Brundin — 23.8.83 NÄ; 12.8.85 Norway, Karasjok, Jeggul (JT). Abundant.

* *C. britae* Säwedal — 30.8.72 EnL, Enontekiö, Iitto (BL). 1 ♂.

** *C. crassisaetosus* sp. n. — see p. 378.

* ** + *C. gracilis* Brundin — 25.8.83 TJ (JT); 28.8.85 Norway, Tana, Rastigaisa (VS). Several specimens.

* + *C. grandilobus* Brundin — 6.7.69 KJ (BL); 22.8.83 NÄ; 12.8.85 Norway, Karasjok, Jeggul (JT). Single individuals.

* + *C. laminatus* Brundin — 28.8.85 Norway, Tana, Rastigaisa (VS). 1 ♂.

*** *C. maari* Brundin — 25.8.83 AK (JT). 1 ♂.

* *C. muliebris* sp. n. — see p. 380.

* + *C. suecicus* (Kieffer) — 29.8.72 KJ (BL); 21.—23.8.83 NÄ; 25.8.83 JA; 25.8.83 LÄ; 25.8.83 AK; 25.8.83 TJ (JT). Common late summer species.

*** *C. tenuistylus* Brundin — 29.8.72 KJ; 30.8.72 SA (BL); 4.9.81 MP; 25.8.83 AP; 25.8.83 AK (JT). Single individuals.

* *Corynoneura carriana* Edwards — 6.—15.7.69 SL; 9.—19.7.69 HA; 12.—16.7.69 PML (BL). Fairly abundant species in lakes and ponds in the Kilpisjärvi area.

* + *C. celeripes* Winnertz — 26.6.—18.7.71 IN; 17.7.71 TS (PV). Rather common in both localities.

*** *C. gynocera* Tuiskunen — Tuiskunen (1983).

* + *C. lacustris* Edwards — 24.7.71 IN (PV); 10.—19.7.69 KJ; 17.7.69 TSA (BL); 25.8.83 LÄ; 25.8.83 AK (JT). Rare in Inarijärvi but more common in Kilpisjärvi area.

* + *C. lobata* Edwards — 21.—23.8.83 NÄ; 25.8.83 TJ (JT). Rather common locally.

* + *C. longipennis* Tokunaga — 3.7.—10.8.71 IN (PV). Single individuals.

*** *C. magna* Brundin — 28.6.—3.7.71 IN (PV). Single individuals.

* + *C. scutellata* Winnertz — 8.—24.7.71 IN; 14.7.71 AIL; 16.7.71 VA; 17.7.71 TS (PV); 7.—10.7.69 KJ; 11.—15.7.69 SL; 17.7.69 TSA (BL); 22.—23.8.83 NÄ (JT). Abundant.

+ *Cricotopus* (*Cricotopus*) *albiforceps* (Kieffer) — 14.7.71 AIL; 16.7.71 VA (PV). In rather small numbers.

C. (C.) annulator Goetghebuer — 17.7.69 TSA; 18.7.69 KJ (BL). In small numbers.

C. (C.) bicinctus (Meigen) — 1.9.81 KU (JT). Several individuals.

C. (C.) coronatus Hirvenoja — 18.—24.7.71 IN (PV); 13.—16.7.82 PJ (JT); 15.7.69 SL (BL); 22.8.83 NÄ; 25.8.83 JA (JT). Rather common in the Inarijärvi area.

- * ** *C. (C.) cumulatus* Hirvenoja — 18.7.69 KJ (BL). Some individuals. The species is formerly reported from Greenland and Sweden (Hirvenoja 1973).
- C. (C.) ephippium* (Zetterstedt) — 29.8.72 KJ (BL). Obviously an abundant late summer species in Kilpisjärvi.
- C. (C.) festivellus* (Kieffer) — 15.7.71 RA; 17.7.71 TS (PV). Some individuals.
- * *C. (C.) flavocinctus* (Kieffer) — 12.7.71 VA; 24.7.71 TS (PV). Some individuals.
- C. (C.) magus* Hirvenoja — 6.7.71 IN (PV); 6.—11.7.69 SL (BL). Rare in Inarijärvi but fairly abundant in SL.
- C. (C.) patens* Hirvenoja — 11.7.71 TS; 12.7.71 SO; 14.7.71 AIL; 14.7.71 NIL; 15.7.71 RA (PV); 12.—16.7.69 PML (BL). A common species in smaller lakes and ponds.
- C. (C.)* sp. pr. *patens* Hirvenoja — 9.—19.7.69 HA (BL). Rather abundant.
- C. (C.) pilidorsum* Hirvenoja — 20.—28.7.71. IN (PV). Fairly few in numbers.
- C. (C.) pilosellus* Brundin — 12.—16.7.69 PML; 18.7.69 JE (BL); 21.—23.8.83 NÄ (JT). Fairly few in numbers.
- * ** *C. (C.) pirifer* Hirvenoja — 6.7.71 IN (PV). 1 ♂.
- + *C. (C.) polaris* (Kieffer) — 28.6.—23.7.71 IN; 12.7.71 SO; 15.7.71 RA; 16.7.71 VA; 17.7.71 TS (PV); 15.7.82 PJ; 15.7.82 SU (JT); 9.—19.7.69 KJ; 16.7.69 PML; 17.7.69 TSA; 19.7.69 HA (BL). Very abundant especially in Inarijärvi but exists commonly also in most other collecting localities.
- * ** *C. (C.) pulchripes* Verrall — 1.9.81 KU (JT). 1 ♂.
- * *C. (C.) tremulus* (Linnaeus) — 13.7.82 PJ (JT). 2 ♂ ♂.
- C. (C.) triannulatus* (Macquart) — 14.7.71 AIL (PV). A few individuals.
- C. (C.) villosus* Hirvenoja — 11.8.71 IN (PV); 14.7.69 HA; 16.7.69 PML; 18.7.69 JE (BL). Rather common locally.
- C. (Isocladius) intersectus* (Staeger) — 15.7.69 SL (BL). A few specimens.
- + *C. (I.) laricomalis* Edwards — 1.—6.7.71 IN; 11.—17.7.71 TS; 12.7.71 SO; 15.7.71 RA (PV); 15.7.82 SU (JT); 9.—19.7.69 RA; 16.7.69 PML (BL). Abundant in most localities.
- C. (I.) obnixus* (Walker) — 28.6.—12.8.71 IN (PV). Rather common.
- * *C. (I.) perniger* Zetterstedt — 9.—19.7.69 HA; 12.—16.7.69 PML (BL). Several specimens.
- C. (I.) pilitarsis* (Zetterstedt) — 28.6.71 IN; 15.7.71 RA (PV); 14.7.69 HA (BL); 22.—23.8.83 NÄ (JT). Several specimens.
- + *C. (I.) reversus* Hirvenoja — 2.7.71 IN (PV). 1 ♂.
- + *C. (I.) sylvestris* (Fabricius) — 5.7.69 KJ; 16.7.69 PML; 18.7.69 JE (BL). Common in smaller lakes and ponds in Kilpisjärvi area.
- + *C. (I.) tricinctus* (Meigen) — 12.8.71 IN; 12.7.71 VA (PV). One large swarm sample from Inarijärvi.
- C. (I.)* sp. (*cylindraceus*-group) — 17.7.71 TS (PV). A few individuals.
- * + *Diplocladius cultriger* Kieffer — 28.8.85, Norway, Tana, Rastigaisa (VS). Several.
- * ** *Doncricotopus dentatus* Tuiskunen — Tuiskunen (1985b); also from Norway, Karasjok, Jeggul, 12.8.85 (JT). Single individuals. New for Norway.
- * ** *Eukiefferiella boeurensis* Brundin — 16.7.69 PML (BL). 1 ♂.
- * ** + *E. brevicealcar* (Kieffer) — 15.7.82 PJ; 25.8.83 AP (JT). A few individuals.
- + *E. claripennis* (Lundbeck) — 21.—23.8.83 NÄ; 25.8.83 JA; 25.8.83 LÄ; 25.8.83 AP (JT). Most abundant *Eukiefferiella* in our samples.
- * ** + *E. devonica* (Edwards) — 13.—16.7.82 PJ; 21.—23.8.83 NÄ; 25.8.83 JA (JT). A few individuals.
- * ** *E. sivertseni* Aagaard — 1973, Li, Inari, Karigasniemi, E. Jaakkola leg.; 14.7.82 PE; 16.7.82 PJ (JT). Fairly abundant locally.
- * ** *Gymnometriocnemus brumalis* Edwards — 20.—26.6.69 KJ (LP); 29.8.72 KJ; 30.8.72 SAR (BL). Rather abundant locally.
- * + *G. volitans* (Goetghebuer) — 21.6.—1.7.71 IN (PV); 15.7.82 SU (JT). In large numbers, especially at the beginning of the season.
- * ** *Heleniella ornatcollis* (Edwards) — 15.7.82 SU (JT). 1 ♂.
- * + *Heterotanytarsus apicalis* (Kieffer) — 20.6.—7.7.71 IN (PV); 1.9.81 KU (JT); 7.7.69 KJ; 16.7.69 PML; 17.7.69 TSA; 29.8.72 KJ (BL); 21.—23.8.83 NÄ; 25.8.83 AK (JT). Not very common but appeared frequently in samples.
- * ** + *H. brundini* Fittkau — 1.9.81 KU; 21.8.83 NÄ; 12.8.85 Norway, Karasjok, Jeggul (JT). Abundant. The species has probably not been reported since the original description from Abisko (Fittkau 1956). However, it seems to be an abundant species late in the season.
- * + *Heterotrissocladus grimshawi* (Edwards) — 20.6.—11.8.71 IN (PV); 26.6.—8.7.69 KJ; 11.7.69 SA; 18.7.69 JE (BL). Abundant especially in greater lakes.
- + *H. maari* Brundin — 18.7.—11.8.71 IN (PV); 29.8.72 KJ (BL); 25.8.83 AP; 25.8.83 AK (JT). Relatively abundant, especially in Kilpisjärvi area.
- * + *H. marcidus* (Walker) — 20.6.—9.7.71 IN (PV); 30.8.72 KJ (BL); 22.8.83 NÄ; 25.8.83 LÄ (JT). Rather abundant in both lakes and River Näkkäläjoki.

- + *H. subpilosus* (Kieffer) — 20.6.—8.7.71 IN (PV); 20.6.—26.6.69 KJ (LP); 7.7.69 KJ; 11.7.69 SA (BL). Very abundant in Inarijärvi and Kilpisjärvi.
- * + *Hydrobaenus conformis* (Holmgren) — 20.6.—7.7.71 IN (PV); 14.7.82 PE (JT); 17.7.69 TSA (BL); 25.8.83 LÄ (JT). Abundant in Inarijärvi but only single individuals from other localities.
- * + *H. lapponicus* (Brundin) — 28.8.85 Norway, Tana, Rastigaissa (VS); 10.8.73 Sweden, Abisko, Katterjaure (BL). A few individuals.
- * *H. paucisaeta* sp. n. — see p. 381.
- *** *H. spinnatis* Saether — 22.6.69 KJ (LP). 2 ♂♂. The nearest collecting localities of this species are in the Alps (Saether 1976).
- *** *Krenosmittia halvorseni* (Cranston & Saether 1986) comb. n. — see p. 382.
- ** + *Limnophyes difficilis* Brundin — 7.—18.7.71 IN; 16.7.71 VA (PV); 16.7.69 PML (BL). Fairly rare in all localities where found. This genus is under revision by O. A. Saether, and most of these names will revert to synonyms in the future (Saether in letter).
- *** *L. er* Saether — Saether (1984).
- * *L. exiguus* (Goetghebuer) — 28.6.—17.7.71 IN; 12.7.71 SO; 12.—16.7.71 VA; 15.7.71 RA; 17.7.71 TS (PV); 7.7.69 KJ; 11.7.69 SA; 14.7.69 HA; 16.7.69 PML; 17.7.69 TSA (BL). Present in abundance in most collecting localities.
- * *L. globifer* (Lundström) — 4.7.—12.8.71 IN; 12.7.71 SO; 14.7.71 AIL; 14.7.71 NIL; 15.7.71 RA; 16.7.71 VA; 17.7.71 TS (PV). Abundant.
- + *L. pumilio* (Holmgren) — 16.7.71 VA (PV); 20.—26.6.69 KJ (LP); 12.7.69 PML; 14.7.69 HA (BL). Fairly few in numbers.
- * *L. smolandicus* Brundin — 21.6.—12.8.71 IN; 12.7.71 VA; 14.7.71 AIL; 16.7.71 VA; 17.7.71 SO (PV); 25.6.69 KJ (LP); 15.7.69 SL; 14.7.71 HA; 16.7.69 PML (BL). A common species in several localities.
- L.* sp. — 14.7.69 HA (BL). 1 ♂.
- * + *Mesocricotopus thienemanni* (Goetghebuer) — 4.7.—11.8.71 IN; 17.7.71 TS (PV); 18.7.69 JE; 29.8.72 KJ (BL); 25.8.83 AK (JT). Abundant in Inarijärvi area but not very numerous in Kilpisjärvi area.
- + *Metriocnemus fuscipes* (Meigen) — 15.7.82 SU (JT). A few individuals.
- * + *M. hygropetricus* (Kieffer) — 23.6.69 KJ (LP); 16.7.69 PML; 29.8.72 KJ (BL). A few specimens.
- *** *M. ursinus* (Holmgren) — 20.6.69 KJ (LP). A few specimens.
- M.* sp. — 8.7.71 IN (PV); 25.8.83 JA (JT). 2 ♂♂.
- * + *Nanocladius bicolor* (Zetterstedt) — 6.—24.7.71 IN (PV); 13.7.82 PJ; 14.7.82 PE; 15.7.82 SU (JT); 5.7.69 KJ; 16.7.69 PML; 17.7.69 TSA; 30.8.72 SAR (BL); 25.8.83 JA; 25.8.83 LÄ (JT). Not very abundant but appeared frequently in samples.
- *** *N. rectinervis* (Kieffer) — 12.7.71 SO (PV); 13.7.82 PJ; 22.8.83 NÄ; 25.8.83 LÄ (JT). Rather common locally.
- *** *Orthocladus (Eudactylocladius) olivaceus* (Kieff.) — 9., 18.7.71 IN (PV); 12.7.69 PML (BL). 5 exuviae. (Comments, see below).
- O. (E.)* sp. (cf. *mixtus* and *olivaceus*). — 7.7.71 IN (PV); 12.—15.7.71 VA (PV); 15.7.82 PJ (JT); 14.7.69 HA; 16.7.69 PML (BL). Some males.
- We originally recognized *Orthocladus (Eudactylocladius) mixtus* from our material on the basis of the illustration by Brundin (1956a: Fig.60). However, its identity is uncertain because the adult male is said to be inseparable from *O. olivaceus* (Kieffer) (Cranston 1984). Furthermore, the copious material of pupal exuviae from Tvärminne is S.W. Finland shows that all the specimens can be identified as *O. olivaceus*, and there are similar exuviae from Lapland, too.
- Since the association of the exuviae and males in Tvärminne is reliable, the adults must be named *O. olivaceus*. However, the Lapland males are a little different from those in the south, and there is no evidence of association of the two last instars. Hence, the northern males may represent a divergent population of *O. olivaceus*, or they may be *O. mixtus*, or even an undescribed species.
- ** + *O. (Orthocladus) decoratus* (Holmgren) — 13.—15.7.82 PJ (JT). Single individuals.
- * *O. (O.) dentifer* Brundin — 24.—28.6.71 IN (PV). Not common.
- * + *O. (O.) excavatus* Brundin — 28.6.—21.7.71 IN (PV); 23.—26.6.69 KJ (LP); 8.7.69 KJ (BL). Fairly numerous in both lakes.
- * + *O. (O.) lapponicus* Goetghebuer — 29.8.72 KJ (BL). A few individuals.
- O. (O.) oblidens* (Walker) — 18.7.71 IN (PV). 1 ♂.
- *** + *O. (O.) saxicola* Kieffer 9.7.69 HA (BL). 1 ♂.
- + *O. (Pogonocladus) consobrinus* (Holmgren) — 1.9.81 KU (JT); 7.7.69 KJ; 18.7.69 JE (BL); 25.8.83 LÄ (JT). A few individuals.
- ** + *Paracladius alpicola* (Zetterstedt) — 29.8.69 KJ (BL). Several individuals.
- * *P. conversus* (Walker) — 14.7.69 KJ (BL). A few individuals.
- * + *P. quadrimodosus* Hirvenoja — 25.6.—31.7.71 IN; 17.7.71 TS (PV); 14.7.82 PE (JT); 18.—19.7.69 KJ (BL); 25.8.83 AK (JT). Fairly abundant in Inarijärvi samples.
- *** *Paracricotopus uliginosus* (Brundin) — 14.7.82 PE (JT); 14.7.69 HA (BL). 3 ♂♂. The northernmost finds so far are from southern and central Sweden.
- + *Parakiefferiella bathophila* (Kieffer) — 21.6.—11.8.71 IN; 12.7.71 SO; 15.7.71 RA; 17.7.71 TS (PV); 13.7.82 PJ

- (JT); 9.—19.7.69 HA; 15.7.69 PML; 18.7.69 KJ; 18.7.69 JE (BL). Very abundant in many localities.
- *** *P. bilobata* Tuiskunen — Tuiskunen (1986a).
- * *P. coronata* (Edwards) — 28.6.—24.7.71 IN; 15.7.71 RA; 17.7.71 TS (PV); 6.—15.7.69 SL (BL). Fairly abundant.
- *** ++ *P. fennica* Tuiskunen — Tuiskunen (1986a).
- * *P. finnmarmica* Tuiskunen — Tuiskunen (1986a).
- * + *P. gynocera* (Edwards) — 28.6.—8.7.71 IN (PV); 26.6.69 KJ (LP); 7.7.69 KJ (BL). Abundant species in both lakes at the beginning of the season.
- * + *P. nigra* Brundin — 20.6.—2.7.71 IN (PV); 13.—19.7.69 KJ (BL). Rather common early summer species.
- *** ++ *P. scandica* Brundin — 26.6.—10.8.71 IN; 14.7.71 AIL; 15.7.71 RA; 17.7.71 IS (PV); 6.—15.7.69 SL; 9.—19.7.69 HA; 10.7.69 KJ; 17.7.69 TSA; 18.7.69 JE; 7.—10.8.73, Abisko, Torneträsk (BL); 25.8.83 AK (JT). Very abundant in most collecting localities.
- * *P. smolandica* (Brundin) — 1.—24.7.71 IN (PV); 17.7.69 TSA (BL). Not very common, abundant only in some samples collected from Inarjärvi.
- *** + *Parametricnemus boreoalpinus* Gowin — 11.8.85 Li, Utsjoki, Kalddasjohka (776:53) (JT). 1 ♂.
- * + *P. stylatus* (Kieffer) — 4.8.72 IN; 24.6.69 KJ (BL); 25.5.83 JA (JT). Not common.
- * + *Paraphaenocladus impensus* (Walker) — 2.—20.7.71 IN; 15.7.71 RA (PV); 15.7.82 PJ (JT); 15.7.69 SL; 18.7.69 JE; 19.7.69 HA (BL). Single specimens.
- *** + *P. irritus* (Walker) — 1.9.81 KU; 14.7.82 PE; 22.8.83 NÄ; 25.8.83 LÄ; 25.8.83 AK; 25.8.83 AP; 25.8.83 TJ (JT). Abundant late summer species.
- * *Paratrichocladus rufiventris* (Meigen) — 13.—15.7.82 PJ (JT). Rather abundant.
- * ++ *Prosmittia nansenii* (Kieffer) — 11.8.73 Sweden, Abisko, Torneträsk; 1.7.68 and 7.8.72 Norway, Porsanger, Billefjord (BL). 3 ♂♂. The species is originally from Ellesmere Island, N.W.T. Canada (Saether et al. 1984), but is now recorded for the first time from the Palaearctic.
- *** *P. rectangularis* Tuiskunen — Tuiskunen (1985a).
- * + *Psectrocladius barbimanus* (Edwards) — 9.—16.7.69 KJ; 17.7.69 TSA (BL). Abundant.
- *** + *P. bisetus* Wülker — 12.7.71 VA (PV). 1 ♂.
- * + *P. calcaratus* (Edwards) — 21.6.—11.8.71 IN; 12.7.71 SO; 12.—16.7.71 VA; 14.7.71 AIL; 17.7.71 TS (PV); 9.—19.7.69 HA; 12.—16.7.69 PML; 15.7.69 SL (BL). Very abundant in many localities.
- * *P. edwardsi* Brundin — 28.6.—6.7.71 IN (PV); 25.8.83 LÄ (JT). Single individuals.
- + *P. fennicus* Storå — 20.6.—11.8.71 IN; 11.7.71 TS; 12.7.71 SO; 15.7.71 RA (PV); 14.7.69 HA; 16.7.69 PML; 18.7.69 JE (BL). Abundant, especially in the Inarjärvi area.
- + *P. oxyura* Langton — 20.6.—6.7.71 IN; 12.7.71 SO (PV). Fairly abundant at the beginning of the season.
- + *P. octomaculatus* Wülker — 25.6.—9.7.71 IN; 16.7.71 VA (PV); 13.7.82 PJ (JT); 9.—14.7.69 HA; 15.7.69 SL; 18.7.69 JE (BL). Abundant.
- * + *P. obvius* (Walker) — 26.6.—14.7.71 IN; 12.—16.7.71 VA; 14.7.71 AIL (PV); 14.7.82 PE (JT); 14.7.69 HA; 15.7.69 SL; 16.7.69 PML; 30.8.72 EnL; Sinettö (BL). Abundant, especially in the Inarjärvi area.
- * + *P. zetterstedti* Brundin — 2.7.68 F, Sör-Varanger, Bugöyford-Hauksjö (BL). Several individuals.
- P. sp.* — 14.7.82 PE (JT). 1 ♂.
- * ** + *Pseudorthocladus curtistylus* (Goetghebuer) — 28.6.—14.7.71 IN; 14.7.71 AIL; (PV); 13.7.82 PJ; 14.7.82 PE (JT). Single individuals.
- *** *P. pilosipennis* Brundin — 21.6.71 IN (PV). 1 ♂.
- * *Pseudosmittia brevitarsis* Brundin — 27.6.—21.7.71 IN (PV); 7.—19.7.69 KJ; 9.7.69 HA; 17.7.69 TSA (BL). Fairly abundant.
- * *P. forcipata* (Goetghebuer) — 17.7.71 TS (PV); 14.7.82 PE; 15.7.82 PJ (JT); 8.7.69 PML (BL). Single individuals.
- * ** *P. mathildae* Albu — 13.8.85 Le, Muonio, River Muoniojoki (753:35) (JT). 1 ♂.
- *** *P. recta* (Edwards) — 25.8.83 LÄ; 25.8.83 JA (JT). A few specimens.
- *** + *P. ruttneri* Strenzke — 20.6.—12.8.71 IN; 15.7.71 RA; 17.7.71 TS (PV); 14.7.82 PE; 15.7.82 PJ (JT); 6.7.69 KJ; 12.7.69 PML; 15.7.69 SL; 17.7.69 TSA (BL). Abundant species in many localities.
- *** *Psilometricnemus europaeus* Tuiskunen — Tuiskunen (1985b); also 12.8.85 Norway, Karasjok, Jerggul (JT). Fairly abundant. New to Norway.
- * *Rheocricotopus chalybeatus* (Edwards) — 4.8.72 IN (BL). 1 ♂.
- * *R. chapmani* (Edwards) — 16.7.69 PML (BL); 14.7.82 PJ (JT). Single individuals.
- * *R. effusus* (Walker) — 14.7.71 AIL (PV); 14.7.82 PE (JT). 2 ♂♂.
- + *R. fuscipes* (Kieffer) — 25.8.83 JA (JT). Single individuals.
- *** *R. tirolus* Lehmann — 30.8.72 SAR (BL). 1 ♂. The species has been described from Oberurgl, Tirol (Lehmann 1969).
- *** *Rheosmittia spinicornis* Brundin — 11.8.85 Li, Utsjoki, at river Tenojoki (777:52); 11.8.85 Utsjoki, Pulman-kijärvi (776:53); 12.8.86 Utsjoki, Hanasoja (773:46); 11.8.85 Norway, Tana, at Polmakelva (JT). Several individuals.

* *Smittia aterrima* (Meigen) — 1.9.81 KU (JT); 10.8.72 Le, Enontekiö, Sinettä (BL); 22.8.83 NÄ; 25.8.83 LÄ (JT). A few individuals.

*** + *S. betuletorum* Edwards — 20.6.69 KJ (LP). Several.

* *S. edwardsi* Goetghebuer — 20.6.—17.7.71 IN; 17.7.71 TS (PV); 7.7.69 KJ; 29.8.72 KJ (BL); 23.8.83 NÄ; 25.8.83 LÄ (JT). Seems to be the most abundant *Smittia* in Lapland.

* *S. pratorum* (Goetghebuer) — 29.6.71 IN (PV). 1 ♂.

S. sp. 1 — 28.6.71 IN (PV). 1 ♂.

S. sp. 2 — 28.8.85 Norway, Tana, Rastigaisa (VS). 1 ♂.

* + *Synorthocladius semivirens* (Kieffer) — 24.6.—11.8.71 IN; 12.7.71 SO; 17.7.71 TS (PV); 15.—16.7.82 PJ (JT); 9.7.69 HA; 17.7.69 TSA; 30.8.72 SAR (BL); 25.8.83 JA; 25.8.83 LÄ, 25.8.83 AP; 25.8.83 AK (JT). Very common in lakes.

* *Thienemanniella majuscula* (Edwards) — 30.8.72 Le, Saarikoski (BL); 13.—15.7.82 PJ; 21.—23.8.83 NÄ; 25.8.83 LÄ; 25.8.83 TJ (JT). Common locally.

* + *T. vittata* (Edwards) — 25.8.83 JA; 25.8.83 LÄ (JT). Fairly common.

* + *Tokunagaia excellens* (Brundin) — 25.8.83 Norway, Storfjord, at the river Skibotnelva (JT); 28.8.85 Tana, Rastigaisa (VS). Fairly abundant.

*** *T. parexcellens* sp. n. — see p. 387.

*** + *T. rectangularis* (Goetghebuer) — 11.7.69 KJ (BL). 2 ♂♂.

*** *T. tonollii* (Rossaro) — 28.8.85 Norway, Tana, Rastigaisa (VS). This recently described species from Chiareggio, Italy (Rossaro 1983) was one of the most abundant chironomids on the fell Rastigaisa. Hypopygium Fig. 2, p. 373.

T. sp. near rectangularis (Goetghebuer) — 28.8.85 Norway, Tana, Rastigaisa (VS). 1 ♂. The hypopygium of this perhaps unknown species is presented in Fig. 4, p. 373. It is close to *T. rectangularis*, but differs in some details in the hypopygium.

*** + *Tvetenia bavarica* (Goetghebuer) — 26.6.69 KJ (LP); 25.8.83 AK (JT). Single males.

*** + *T. calvescens* (Edwards) — 13.7.82 PJ; 14.7.82 PE (JT); 7.7.69 KJ (BL); 23.8.83 NÄ; 25.8.83 AP (JT). Rather common locally.

T. duodenaria Kieffer — Wülker (1959a) (sub *Eukiefferiella saanensis*); 24.8.83 Le, Enontekiö, Hetta (759:35) (JT). Very abundant in Hetta.

*** + *T. verralli* (Edwards) — 25.8.83 JA (JT). 1 ♂.

*** *Zalutschia mallae* sp. n. — For description and distribution see p. 388. Very common species in many localities of the Inarijärvi and Kilpisjärvi areas.

+ *Z. tatraica* (Pagast) — 22.6.—19.7.71 IN; 12.—16.7.71 VA; 14.7.71 NIL (PV); 12.7.69 PML; 14.7.69 HA; 15.7.69 SL (BL); 23.8.83 NÄ (JT). Abundant in some samples.

* + *Z. tonetraskensis* (Edwards) — 20.6.—9.7.71 IN (PV); 26.6.69 KJ (LP); 7.7.69 KJ (BL). Abundant early summer species in Inarijärvi.

* *Z. zalutschicola* Lipina — 21.6.—11.8.71 IN; 17.7.71 TS (PV); 15.7.82 SU (JT). Common in Suoppajärvi, rare in other localities.

Z. sp. — 4.—21.7.71 IN (PV); 9.—14.7.69 HA (BL). In small numbers. This species is near *Z. humphriesiae* Dowling & Murray (Dowling & Murray 1978), but differs in certain details of the hypopygium.

Chironominae, Chironomini

* *Chaetolabis macani* (Freeman) — 8.7.71 IN (PV). Single males.

* *Chironomus anthracinus* Zetterstedt — 1.—24.7.71 IN (PV). Single individuals.

C. sp. cf. hyperboreus Staeger (or *islandicus* Kieffer) — 1.7.71 IN (PV). Rather common.

* *C. jonmartini* Lindeberg — 25.6.71 IN; 17.7.71 TS (PV). A few individuals.

+ *C. lugubris* Zetterstedt — 24.—30.6.71 IN (PV). Some individuals. Lindeberg (1959) reported this species from Tvärminne, southern Finland. Later, similar specimens have been found from other localities in the country, including Lapland. However, a new species *C. saxatilis* Wülker, Ryser & Scholl, 1981 has been described from Tvärminne, based on salivary gland chromosome patterns. It seems to be the same as that formerly identified as *C. lugubris*. As we have no cytological information on our northern specimens, we prefer to call them *C. lugubris*.

C. sp. cf. staegeri Lundbeck — 12.7.69 PML (BL). Dense swarms.

C. sp. pseudothummi-group — 6.—11.7.69 SL (BL). Single individuals.

C. sp.-spp. (probably additional species)

* *Cladopelma bicarinata* (Brundin) — 21.6.71 IN (PV). A few individuals.

* + *C. viridula* (Linnaeus) — 21.6.—10.8.71 IN; 12.7.71 SO; 14.7.71 AIL; 15.7.71 RA; 16.7.71 VA; 17.7.71 TS (PV); 15.7.82 SU (JT); 14.7.69 HA; 16.7.69 PML; 19.7.69 HA (BL); 25.8.83 LÄ (JT). Abundant, especially in smaller lakes.

* *Cryptochironomus supplicans* (Meigen) — 26.6.71 IN (PV). 1 ♂.

* *Demeijerea rufipes* (Linnaeus) — 7.8.72 F, Porsanger, Billefjord (BL). 1 ♂.

- * *Demicryptochironomus vulneratus* (Zetterstedt) — 26.6.—11.8.71 IN (PV). Rather few in numbers.
- * *Dicrotendipes lobiger* (Kieffer) — 15.7.82 PJ (JT). — Rather common.
- * *D. nervosus* (Staeger) — 14.7.69 HA (BL). 2 ♂♂.
- * + *D. pulsus* (Walker) — 21.6.—11.8.71 IN; 11.—17.7.71 TS; 12.7.71 SO; 14.7.71 AIL; 15.7.71 RA; 16.7.71 VA (PV); 16.7.82 PJ (JT); 16.7.69 PML; 17.7.69 TSA (BL). Abundant in Inarijärvi and some surrounding localities, much rarer in Kilpisjärvi area.
- * *Einfeldia mendax* Storå — 26.6.—8.7.71 IN; 12.7.71 SO (PV). Single individuals.
- E. sp.* — 25.7.71 IN (PV). 1 ♂.
- * *Endochironomus impar* (Walker) — 30.6.—11.8.71 IN; 14.7.71 AIL; 14.7.71 NIL; 16.7.71 VA; 17.7.71 TS (PV); 13.—15.7.82 PJ; 14.7.82 PE (JT); 7.7.69 KJ; 9.7.69 HA; 12.—16.7.69 PML; 15.7.69 SL; 17.7.69 TSA (BL). Not very abundant but appeared frequently in most collecting localities.
- * *Glyptotendipes paripes* (Edwards) — 15.7.71 RA (PV). 1 ♂.
- * *Microtendipes brevitarsis* Brundin — 20.6.—21.7.71 IN (PV); 5.—8.7.69 KJ; 17.7.69 TSA (BL). Abundant species in larger lakes.
- ***Pagastiella orophila* (Edwards) — 21.6.—31.7.71 IN; 12.7.71 SO; 14.7.71 AIL; 15.7.71 RA; 17.7.71 TS (PV); 15.7.82 SU (JT); 6.7.69 SL; 9.—19.7.69 HA; 12.—16.7.69 PML; 17.7.69 TSA (BL). Abundant in most localities.
- * *Parachironomus parilis* (Walker) — 15.7.71 RA (PV). 1 ♂.
- ** *P. subalbinus* Goetghebuer — 25.8.83 LÄ (JT). Single individuals.
- + *P. vitiosus* Goetghebuer — 25.8.83 LÄ (JT). Single individuals.
- P. sp.* — 25.8.83 LÄ (JT). 1 ♂.
- * *Paracladopelma galaptera* (Townes) — 25.6.—23.7.71 IN (PV); 7.—19.7.69 KJ (BL). Fairly rare. There have been some difficulties with the nomenclature of *Paracladopelma* spp., and in fact all the taxonomic problems have not been finally solved. We have chosen to apply the name *P. galaptera* to a couple of specimens from Inarijärvi and Kilpisjärvi, which may perhaps belong to *P. obscura* Brundin, 1949 that, in turn, has been synonymized to *P. nigrifula* (Goetghebuer, 1942). A number of specimens are best regarded as *P. nigrifula* until shown otherwise.
- * *P. laminata* (Kieffer) — 31.7.—11.8.71 IN (PV). Single individuals.
- * *P. nigrifula* (Goetghebuer) — 1.—25.7.71 IN (PV); 25.8.83 LÄ; 25.8.83 AK (JT). Rather few in numbers.
- * + *Paratendipes albimanus* (Meigen) — 8.—26.7.71 IN; 12.7.71 SO; 15.7.71 RA; 15.7.71 VA; 17.7.71 TS (PV); 14.—19.7.69 HA (BL). Not common but frequent.
- * *Pentapedilum sordens* (van der Wulp) — 19.7.71 IN; 14.7.71 AIL; 14.7.71 SE; 15.7.71 RA; 16.7.71 VA (PV). Very abundant in Sevetijärvi, otherwise only single individuals.
- * *P. uncinatum* Goetghebuer — 14.7.69 HA (BL). A few individuals.
- * *Phaenopsectra flavipes* (Meigen) 7.—26.7.71 IN; 12.—15.7.71 VA (PV); 30.8.81 Le, Ivalojoiki (JT); 9.—19.7.69 HA; 18.7.69 JE (BL). Dense swarms near River Ivalojoiki, otherwise not very common.
- * ** *Polypedilum albicorne* (Meigen) — 25.8.83 AP; 25.8.83 TJ (JT). Single individuals.
- * ** *P. arundineti* (Goetghebuer) — 7.7.71 IN (PV). Abundant in one sample.
- * *P. cultellatum* Goetghebuer — 7.7.71 IN (PV). Single individuals.
- P. pullum* (Zetterstedt) — 18.7.—10.8.71 IN (PV); 18.7.69 JE (BL). In small numbers.
- P. tetracrenatum* Hirvenoja — 5.7.71 IN (PV); 12.—16.7.69 PML (BL). In small numbers.
- * *Pseudochironomus prasinatus* (Staeger) — 14.7.71 AIL (PV). 1 ♂.
- Saetheria* sp. — 15.7.71 RA (PV). 1 ♂. We have a typical *S. reissi* Jackson from Lake Puruvesi, S. E. Finland (unpublished), but the identity of the present specimen must be left open.
- + *Sergentia coracina* (Zetterstedt) — 20.—30.6.71 IN; 12.7.71 SO (PV); 25.6.69 KJ (LP); 11.7.69 SA (BL). Abundant in Inarijärvi; only single specimens from other localities.
- * + *Stictochironomus rosenscholdi* (Zetterstedt) — 6.7.—11.8.71 IN (PV); 15.7.82 SU (JT); 16.7.69 PML; 17.7.69 TSA; 18.7.69 JE (BL); 25.8.83 LÄ (JT). Fairly abundant.
- * *S. sticticus* (Fabricius) — 15.7.71 VA (PV); 13.—15.7.82 PJ (JT). Rather few in numbers.

Tanytarsini

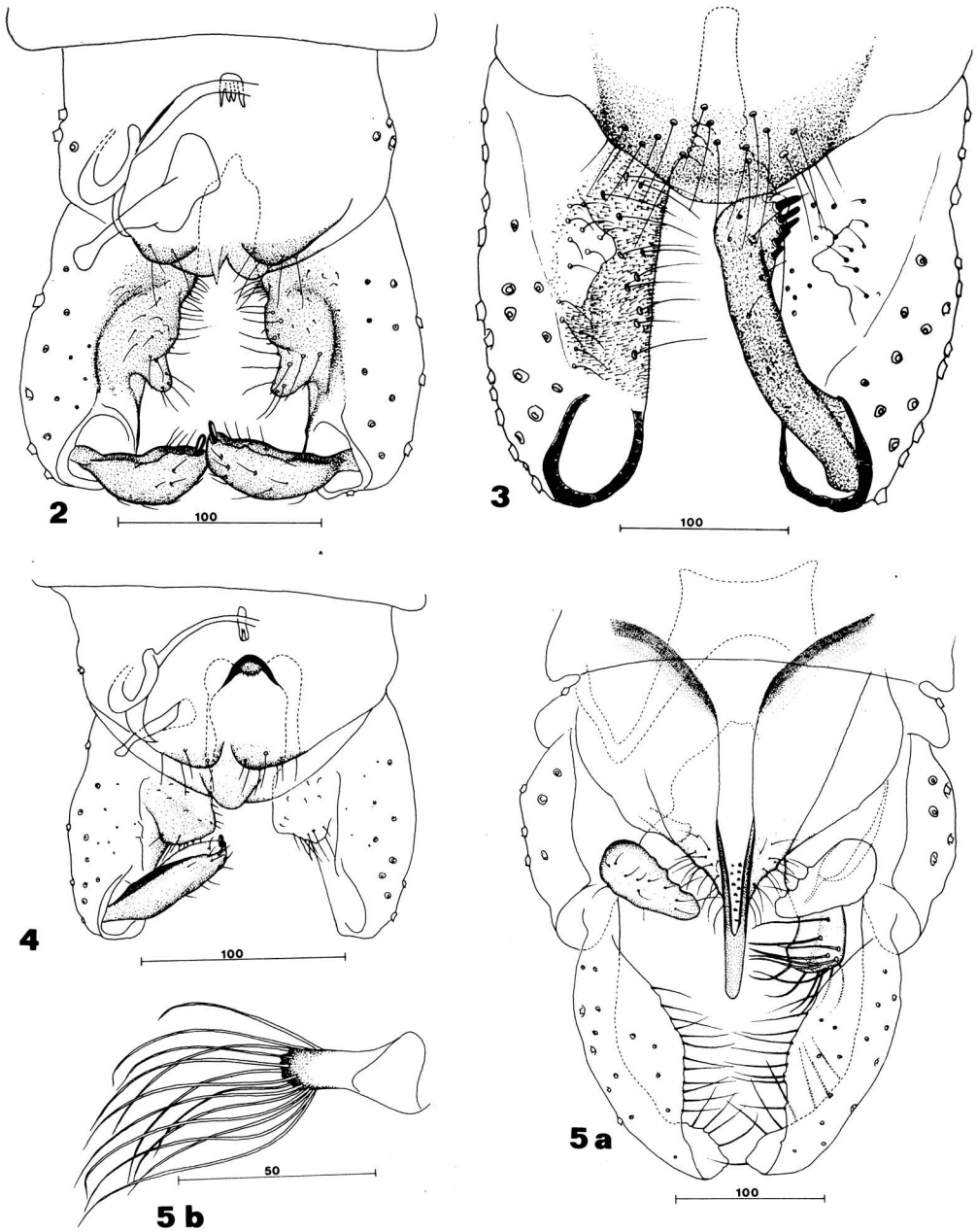
* *Cladotanytarsus atridorsum* Kieffer — 6.7.70 InL, Utsjoki, Pulmankijärvi, V. Varis leg. Large sample.

C. difficilis Brundin — 19.7.69 HA (BL). 8 ♂♂.

* *C. iucundus* Hirvenoja — 14.7.71 AIL (PV). Rather few in numbers.

C. molestus Hirvenoja — 12.—16.7.69 PML (BL). 5 ♂♂.

- C. teres* Hirvenoja — 15.7.82 SU (JT); 9.—14.7.69 HA (BL). 6 ♂♂.
- C. spp.* (2—3 additional species)
- + *Constempellina brevicosta* (Edwards) — 28.6.—9.7.71 KJ; 11.7.71 TS (PV); 15.7.82 SU (JT). One of the most abundant species in Inarijärvi.
- C. sp.* — 17.7.71 TS; 18.7.—10.8.71 IN (PV); 7.—18.7.69 KJ; 17.7.69 TSA (BL); 25.8.83 JA (JT). Very abundant in Inarijärvi, but on wing towards the end of the season. Probably a third species occurs at Katterjaure (see discussion in previous chapter).
- + *Corynocera ambigua* Zetterstedt — 20.6.—7.7.71 IN (PV); 26.6.69 KJ (LP); 13.7.69 KJ (BL). A numerous species in both lakes.
- + *C. oliveri* Lindeberg — 5.7.69 KJ (BL). 1 ♂. The paratype locality in Norway, Finnmark can be now given more precisely: a roadside tarn, 14 km east of F, Leseby, Ifjord, about 350 m a.s.l., Lindeberg (1970).
- Micropsectra apposita* (Walker) — 4.7.69 KJ (BL). Several individuals.
- M. bidentata* Goetghebuer — Lindeberg (1970).
- + *M. (=Lauterbornia) coracina* Kieffer — 21.6.—4.7.69 KJ (BL). Very abundant soon after break-up of ice. Very surprisingly no records from Inarijärvi.
- + *M. groenlandica* Andersen — 3.—8.7.71 IN (PV); 1.9.81 KU (JT); 9.7.69 HA; 10.7.69 KJ; 18.7.69 JE (BL); 21.—23.8.83 NÄ; 25.8.83 JA; 25.8.83 LÄ (JT). In small numbers.
- + *M. insignilobus* Kieffer — 21.6.—4.7.69 KJ (BL). Very abundant.
- + *M. junci* (Meigen) — 13.7.82 PJ (JT); 28.6.69 TSA (BL). A few individuals.
- M. lindebergi* Säwedäl — 24.6.—9.7.71 IN (PV); 21.6.—4.7.69 KJ (BL). Very abundant species together with *L. coracina* and *M. insignilobus*.
- + *M. recurvata* (Goetghebuer) — 15.7.82 SU (JT); 11.7.69 SA (BL). A few individuals.
- Parapsectra nana* (Meigen) — 15.7.71 VA (PV); 18.7.69 JE (BL). A few individuals.
- + *Paratanytarsus austriacus* Kieffer — 15.7.82 SU (JT). 1 ♂; see also Lindeberg (1970).
- + *P. hyperboreus* Brundin — 23.7.—3.8.71 IN (PV); 29.8.72 KJ, very numerous; 6.8.72 Norway, Finnmark, Vardö; 28.8.72 Norway, Troms, Balsfjord, Myre (BL). Abundant.
- + *P. laccophilus* (Edwards) — 25.6.—20.7.71 IN; 12.7.71 SO; 17.7.71 TS (PV); 9.—19.7.69 HA; 12.—19.7.69 PML; 15.7.69 SL (BL). — Not very numerous, but regularly present in many samples.
- P. lauterborni* (Kieffer) — 15.7.82 SU (JT); 9.—14.7.69 HA; 12.—16.7.69 PML; 15.7.69 SL (BL). Rather common locally.
- P. sp. pr. lauterborni* — 14.7.69 HA (BL). 1 ♂, 1 exuviae.
- * + *P. natvigi* (Goetghebuer) — 4.—19.7.71 IN (PV). Several individuals.
- + *P. penicillatus* (Goetghebuer) — 27.6.—12.8.71 IN; 10.—17.7.71 TS; 12.7.71 SO, 14.7.71 AIL; 16.7.71 VA (PV); 6.7.69 SL; 9.—14.7.69 HA; 12.—16.7.69 PML (BL). One of the most abundant species in Inarijärvi area and some tarns and lakes in Kilpisjärvi area. Under this name there are three or four species.
- + *P. tenuis* (Meigen) — 4.7.—5.8.71 IN; 11.7.71 TS; 12.7.71 SO; 15.7.71 RA; 17.7.71 TS (PV); 12.7.69 PML; 14.7.69 HA; 17.7.69 TSA (BL). Rather numerous locally.
- * *Stempellina bausei* (Kieffer) — 12.7.—7.8.71 IN (PV). In small numbers.
- * *S. subglabripennis* (Brundin) — 17.7.71 TS (PV). Abundant.
- Stempellinella minor* (Edwards) — 15.7.71 RA; 17.7.71 TS; 23.7.—12.8.71 IN (PV). Rather numerous in some samples.
- Tanytarsus aberrans* Lindeberg — 28.6.—6.7.71 IN (PV); 14.—19.7.69 HA (BL). Rather common.
- * + *T. aculeatus* Brundin — 2.8.72 IN (BL); 21.8.83 NÄ (JT); Norway; from several localities, for instance 28.8.72 Troms, Storfjord, Galgojavvre, Perskogen; 7.8.72 Finnmark, Indre Billefjord (BL).
- + *T. bathophilus* Kieffer — 25.6.—9.7.71 IN (PV); 30.6.—10.7.69 KJ; 12.7.69 PML; 14.—19.7.69 HA; 17.7.69 TSA; 18.7.69 JE (BL). Probably the most abundant *Tanytarsus* species in Inarijärvi, rather numerous also in Kilpisjärvi area.
- * + *T. brundini* Lindeberg — 12.7.71 SO; 14.7.71 SE; 15.7.71 RA; 17.7.71 TS; 18.7.—11.8.71 IN (PV). Fairly abundant.
- * *T. debilis* (Meigen) — 17.7.71 IN; 12.7.71 SO; 26.7.71 RA (PV). In small numbers.
- * *T. eminulus* (Walker) — 14.7.71 AIL (PV). 1 ♂.
- T. fennicus* Lindeberg — 25.—30.6.71 IN (PV). In small numbers (Lindeberg 1970).
- + *T. gregarius* s. Brundin — 14.—19.7.69 HA (BL). Single individuals.
- T. gregarius* s. Reiss — 12.7.71 SO; 15.7.71 VA; 16.7.71 VA; 17.7.71 TS; 21.7.—10.8.71 IN (PV); 9.—19.7.69 HA; 15.7.69 SL; 16.7.69 PML (BL). Rather abundant in both areas.
- T. lapponicus* Lindeberg — 28.6.—4.7.71 IN (PV); Numerously in some samples (Lindeberg 1970).
- ** + *T. latiforceps* (Edwards) — This species was found at Abisko in 1938 (Thienemann 1941), but has not been rediscovered until now (Säwedäl 1978). We take this opportunity to report the species, not from the North, but from the S.W. Archipelago of Finland. One male was



Figs. 2—5. Chironomidae spp. Male hypopygia. — 2. *Tokunagaia tonollii* (Rossaro). — 3. *Bryophaeocladius dentatus* (Karl) comb. n. — 4. *Tokunagaia* sp. — 5. a: *Tanytarsus latiforceps* Edwards; b: appendage 2a of *T. latiforceps*. Scale in μm .

taken by a group of entomologists at Vänö, 59° 52' N, 22° 14' E, on 11.6.1983. See Figs. 5a and 5b.

+ *T. lugens* Kieffer — 17.7.71 TS; 21.7.—11.8.71 IN (PV); 22.8.83 NÄ (JT). Rather abundant late summer species.

* *T. miriforceps* (Kieffer) — 4.6.80 Lk, Sirkka, Immelänlommelom (752:40) (BL). Abundant.

* *T. nemorosus* Edwards — 26.6.71 IN (PV). 4 ♂♂.

T. niger Andersen — 2.7.69 Li, Utsjoki, Kevo (Lindeberg 1970). 7 ♂♂.

* ++ *T. occultus* Brundin — 12.8.71 IN (PV); 11.8.73 Sweden, Abisko (BL). Common in Abisko.

* *T. palmeni* Lindeberg — 28.7.—11.8.71 IN (PV). Several individuals.

T. quadridentatus Brundin — 14.—19.7.69 HA (BL). 3 ♂♂.

+ *T. recurvatus* Brundin — 14.7.71 AIL; 15.7.71 RA; 17.7.71 TS; 26.7.71 KA; 31.7.—9.8.71 IN (PV); 14.7.69 HA; 14.—16.7.69 PML (BL). Rather common, especially in Inarijärvi area.

T. simulans Lindeberg — 7.—19.7.71 IN; 15.—16.7.71 VA (PV); 14.—19.7.69 HA (BL). Abundant especially in smaller lakes.

* *T. socialis* Lindeberg — 31.7.—12.8.71 IN (PV). Not very common.

* *T. striatulus* Lindeberg — 4.7.72 Li, Inari, Väylä (BL). Large swarm.

T. usmaensis Pagast — 11.—17.7.71 TS; 16.7.71 VA; 18.7.—5.8.71 IN (PV); 9.—19.7.69 HA; 12.—16.7.69 PML (BL). Very abundant in smaller waters of both areas.

T. verralli Goetghebuer — 15.7.71 RA (PV); 19.7.69 HA (BL). Common in Lake Rautaperäjärvi.

4. Taxonomy

Boreosmittia gen. n.

Type species: *B. inariensis* sp. n.

Generic diagnosis

Adult male: Small species, wing length 1.2–1.5 mm. Eyes bare, without dorsal projection. Inner verticals, outer verticals and postorbitals present. Palps of normal length, 5-segmented. Segment 3 without sensilla clavata. Antennal flagellum 13-segmented, with weak and pale apical setae but without strong straight subapical seta. AR less than 1. Ante-

pronotum normal, with some anteprenotals. Scutellars in a row. Very weak acrostichals present, starting in front at anteprenotum. Dorsocentrals uni- or biserial. Wing membrane void of setae, very finely granular. Anal lobe reduced. Costa produced, in *B. inariensis* only slightly, ending above tip of Cu₁. Cu₂ strongly curved. Squama without setae. Pulvilli and sensilla chaetica of legs absent. Tibial spurs normal. Anal point fairly weak, tapering smoothly distally. Apical part bare, setae proximally. Transverse sternapodeme slightly convex, oral projection of lateral sternapodemes weak. Gonocoxites without lobes. Styles with long and low crista dorsalis.

Remarks

This genus has been created for two species, which will key close to *Pseudosmittia* Goetghebuer, *Prosmittia* Brundin and *Mesosmittia* Brundin, but does not fit in well with any of them. Also *Camptocladius* is close relative to *Boreosmittia* (cf. trend 5 of Saether 1977, fig. 36). From *Pseudosmittia* and *Prosmittia* this new genus is easily separated by the presence of acrostichals starting in front at anteprenotum, and by the structure of the hypopygium (absence of gonocoxite lobes, better developed anal point).

The genus *Mesosmittia* has recently been revised by Saether (1985b). According to the generic diagnosis *Mesosmittia* differs from *Boreosmittia* by having setae on squama, very characteristic sensilla chaetica on antennal flagellomeres 2 and 3, distinctly better developed acrostichals, tergite 9 with ridgelike elevation but without anal point proper, and presence of gonocoxite lobes.

B. inariensis sp. n. is readily separable from *B. karelioborealis* sp. n. by following characters (*B. karelioborealis* in parentheses): Clypeals 4–5 (6–12), AR 0.42–0.48 (0.56–0.65), dorsocentrals 7–11 (12–22), prealars 2–4 (6–8), LR P₂ 0.51–0.55 (0.39–0.43), hind tibia without distinct comb (comb normal), styles straight distally (styles curved distally).

Boreosmittia inariensis sp. n. (Fig. 6)

Holotype: Male; Norway, Finnmark Sör-Varanger, 10 km north of Neiden, 11.8.1985, J. Tuiskunen leg. Mounted in Euparal on microscope slide, deposited in the Zoological Museum of the University of Bergen, Norway.

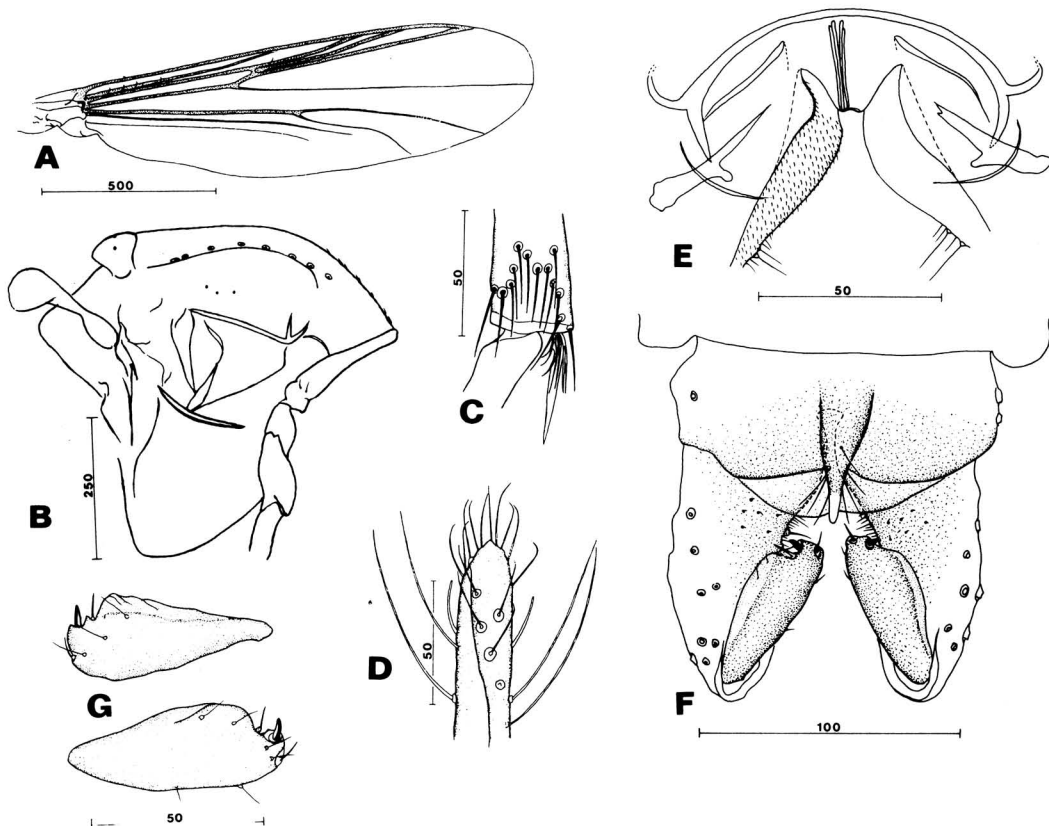


Fig. 6. *Boreosmittia inariensis* gen. n., sp. n. Male. — A. Wing. — B: Thorax. — C. Tip of hind tibia. — D. Tip of antenna. — E. Internal structures of hypopygium. — F. Hypopygium. — G. Styles. Scale in μm .

Paratypes: 6 males; 2 ♂♂ from Li, Inari, Inarijärvi, Vasikkasaaret, 19.7.1971, P. Virtanen leg.; 2 ♂♂ from Inarijärvi, Lintusaaret (765:52), 22.7.1971, P. Virtanen leg.; 1 ♂ from Inarijärvi, Tourissaaret (765:52), 9.7.1971, P. Virtanen leg.; 1 ♂ from Ta, Kangasala, Ponsa, Vuorijärvi (683:35), 2.7.1982, J. Tuiskunen leg. Mounted in Euparal, deposited in the Zoological Museum of the University of Helsinki.

Description of male ($n=7$)

Total length 1.5–1.9 mm. Colour: Completely dark brown species. Wings transparent.

Head: Inner verticals 3–7, outer verticals 1–2, postorbitals 2–3. Eyes without dorsal projection, bare. Clypeus with 4–5 setae. Palps well developed, 5-segmented. Lengths of four free segment: 25–30 μm , 55–65 μm , 60–72 μm , 85–110 μm . Sensilla clavata absent. Antennal flagellum 13-segmented, with numerous setae apically (Fig. 6D). Sensilla chaetica in segments 2, 3 and 13. AR 0.42–0.48.

Thorax (Fig. 6B): Very weak acrostichals present, beginning at antepronotum and continuing about 1/4 of the way up mesonotum. Antepronotum normally developed, both lobes joined mesally. Antepronotals 0–3. Dorsocentrals 7–11 in one row, arising from pale spots. Scutellum with 2–5 setae. Prealars 2–4.

Wing (Fig. 6A): Membrane without macrotrichia, very finely granular (visible at a magnification of $\times 400$). Vein R with 0–5, R_1 with 0–2, R_{2+3} with 0–1 and R_{4+5} with 0–1 macrotrichia. Brachiolum with 1–2 setae. Squama naked. Costa only slightly produced (extended part 36–60 μm), ending about above the tip of Cu_1 . R_{2+3} mostly well separated, ending midway or distal to midway between tips of R_1 and R_{4+5} . Cu_2 strongly curved. Anal vein ending below or somewhat distad FCu. Anal lobe weakly developed. Wing length 1.3–1.5 mm.

Legs: LR P_1 0.50–0.53, P_2 0.51–0.55, P_3 0.58–0.60. Front tibial spur 40–46 μm , mid tibial spurs 15–20 μm and 30–34 μm , hind tibial spurs 16–18 μm and 38–45 μm . Hind tibia without distinct comb (Fig. 6C). 10–12 setae of the comb irregularly arranged. Sensilla chaetica absent. BR of hind tarsus about 4–5. Pulvilli absent.

Hypopygium (Fig. 6F): Anal point of moderate size, pointed apically. Distal 1/4 of anal point almost bare, basal part with macrotrichia and 4–11 setae. No setae on ninth tergite. Internal structures of hypopygium as in Fig. 6E. Transverse sternapodeme convex, narrow, not separated from lateral sternapodeme. Virga with pale, poorly visible spinules. Gonocoxite lobes absent. Styles as in Figs. 6F and 6G, with long and low crista dorsalis reaching from tip to base.

Remarks

See p. 374.

Ecology and distribution

Ecology unknown. Single imagines have been found from the beginning of July to the middle of August. Most of the records are from Finnish Lapland, but one male has been collected at Kangasala, southern Finland. One specimen, the holotype, is from northern Norway.

Boreosmittia karelioborealis sp. n. (Fig. 7)

Holotype: Male; Finland, Li, Inari, at lake Suoppajärvi (767:48), 15.7.1982, J. Tuiskunen leg. Mounted in Euparal on microscope slide. Deposited in the Zoological Museum of the University of Helsinki.

Paratypes: 4 males; 1 ♂ from Ka, Vehkalahti, Suuri Karjalansuo (672:51), 5.6.1983, J. Tuiskunen leg.; 2 ♂♂ from Kb, Ilomantsi, Koitajoki (697:69), 2.7.1972, B. Lindeberg leg.; 1 ♂ from Norway, Alta, Kåfjord, 30.6.1968, B. Lindeberg leg. Deposited as holotype, except the Norwegian specimen, which is in the Zoological Museum of Bergen.

Description of male ($n=5$)

Total length 1.7–1.9 mm. Colour: Uniformly brown to dark brown species without separated scutal stripes. Wings transparent.

Head: Inner verticals 1–5, outer verticals 2–4, postorbitals 3–5. Eyes naked, without dorsal projection. Clypeals 6–12. Palps well developed, 5-segmented. Lengths of four free segments: 35–45 μm , 74–80 μm , 80–85 μm , 95–110 μm . Sensilla clavata of segment 3 absent. Antennal flagellum 13-segmented. Tip of ultimate segment rounded, with several sensilla chaetica (Fig. 7B). Sensilla chaetica also in segments 2 and 3. AR 0.56–0.65.

Thorax (Fig. 7C): Very weak acrostichals present, starting near antepronotum and reaching almost to top of scutum. Dorsocentrals 12–22 uni- or biserial, arising from pale spots. Prealars 6–8 in two, often indistinctly separate rows. Scutellars 6–8. Antepronotum normal, both lobes joining medially, with 2 anteprenotals. Mesonotal hump lacking.

Wing (Fig. 7A): Membrane with very fine granulation (visible at $\times 400$), without macrotrichiae. Vein R with 6–9 setae, R_1 with 1–4 setae, R_{4+5} with rarely 1 seta. Other veins and squama naked. Brachiolum with 0–1 long (95–100 μm) seta. Costa distinctly produced (extension 60–70 μm), ending about above the level of tip of Cu_1 . R_{2+3} running close to R_{4+5} , sometimes only poorly separable from it, ending near the tip of R_{4+5} . Cu_2 strongly curved. Anal vein ending below or slightly proximal to FCu. Anal lobe smoothly rounded. Wing length 1.2–1.3 mm.

Legs: LR P_1 0.44–0.49, P_2 0.39–0.43, P_3 0.53–0.56. Front tibial spur 38–44 μm , mid tibial spurs 20–22 μm and 28–30 μm , hind tibial spurs 24–26 μm and 46–50 μm . Hind tibial comb with 12–14 setae in a regular row. Tibia and tarsus of mid and hind legs bearded, BR about 5–6. Sensilla chaetica absent. Pulvilli absent.

Hypopygium (Fig. 7F): Anal point fairly small and weak, narrowly triangular, apical part almost bare, proximal part with macrotrichiae and setae. Some setae also on tergite 9. Internal structures of hypopygium as in Fig. 7D. Transverse sternapodeme convex, 80–86 μm long, without distinct oral projections. Virga 38–42 μm long, pale, consisting of 3–4 spinules. Gonocoxites without distinct lobe (sometimes only as a low elevation). Styles as in Figs. 7E and 7F, with long and narrow crista dorsalis. Distal part of styles bent in ventral direction.

Remarks

See p. 374.

Ecology and distribution

Ecology unknown, but the larvae are probably inhabitants of swampy situations. Adults have been collected from early June to mid July. Found from south to north of Finland. One specimen is from Norwegian Lapland.

Bryophaenocladus saanae sp. n. (Fig. 8)

Holotype: Male; Finland, Le, Enontekiö, Kilpisjärvi, at the Biological Station (767:25); 8.7.1969, B. Lindeberg leg. Mounted in Euparal on microscope slide, deposited in the Zoological Museum of the University of Helsinki.

Description of male ($n=1$)

Total length 3.0 mm. Colour (after 16 years' preservation in ethanol): Thorax uniformly dark brown. Probably black in life. Legs and abdomen somewhat paler. Wings very slightly brownish by transmitted light.

Head: Inner verticals 2–3, outer verticals 2, postorbitals 6–7. Clypeus with 10 setae. Eyes with moderately developed dorsal projection, bare. Palps well developed, lengths of four free segments: 48 μm , 115 μm , ? , 160 μm . Segment 3 with 3–4 sensilla clavata apically. Antennal flagellum 13-segmented, tip of last segment as in Fig. 8A. Sensilla chaetica present in segments 2, 3 and 13. AR 1.25.

Thorax (Fig. 8C): Dorsocentrals 7, arising from pale spots. Moderately developed acrostichals present from very front to centre of scutum. Antepronotum normal, with 3 anteprenotals. Prealars 5, scutellars 8 in one row.

Wing (Fig. 8B): Membrane coarsely granular (visible at a magnification of $\times 100$), without macrotrichia. Vein R with 6–7 setae, other veins bare. Brachiolum with 1 seta, squama with 10–11 setae. Costa very slightly produced, ending somewhat proximal to the tip of M. R_{2+3} ending in costa in the midway between tips of R_1 and R_{4+5} . Cu_2 nearly straight. Anal vein ending distinctly distal to FCu. Anal lobe well developed, roundedly right-angled. Wing length 2.0 mm.

Legs: LR P_1 0.68, P_2 0.47, P_3 0.56. Tibial spurs normal. Front tibial spur 56 μm , mid tibial spurs 24–27 μm , hind tibial spurs 22–24 μm and 57–60 μm . Tarsal segment 1 of hind leg with 3–6 sensilla chaetica. Hind tibial comb with 10–11 setae. BR of hind tibia 3.7. Pulvilli absent.

Hypopygium (Fig. 8D): Anal point small and bare. Anal tergite with 7–9 setae on each side. Transverse sternapodeme slightly convex, 100 μm long. Virga 55 μm ,

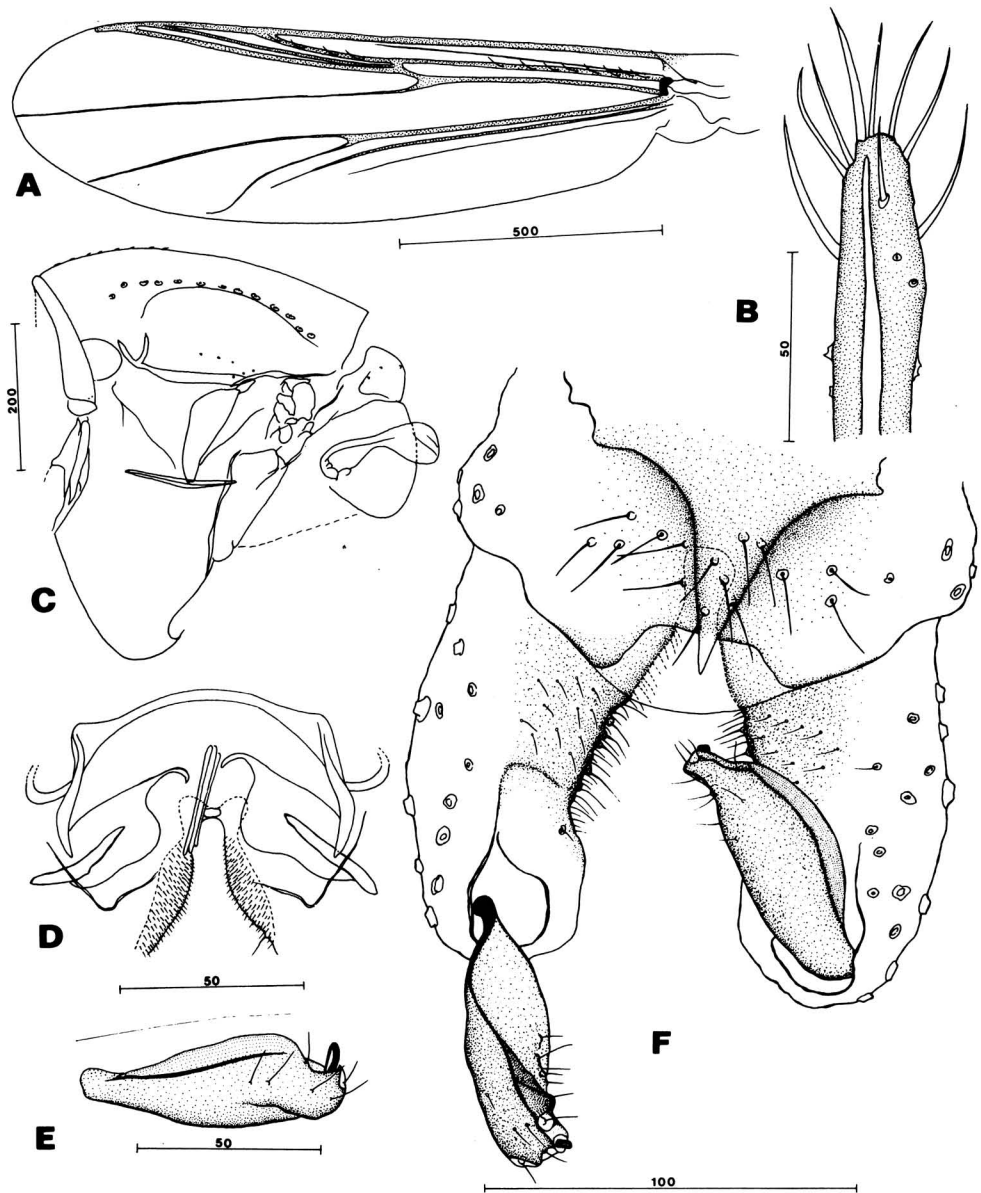


Fig. 7. *Boreosmittia karelioborealis* gen. n., sp. n. Male. — A. Wing. — B. Tip of antenna. — C. Thorax. — D. Internal structures of hypopygium. — E. Stylus laterally. — F. Hypopygium. Scale in μm .

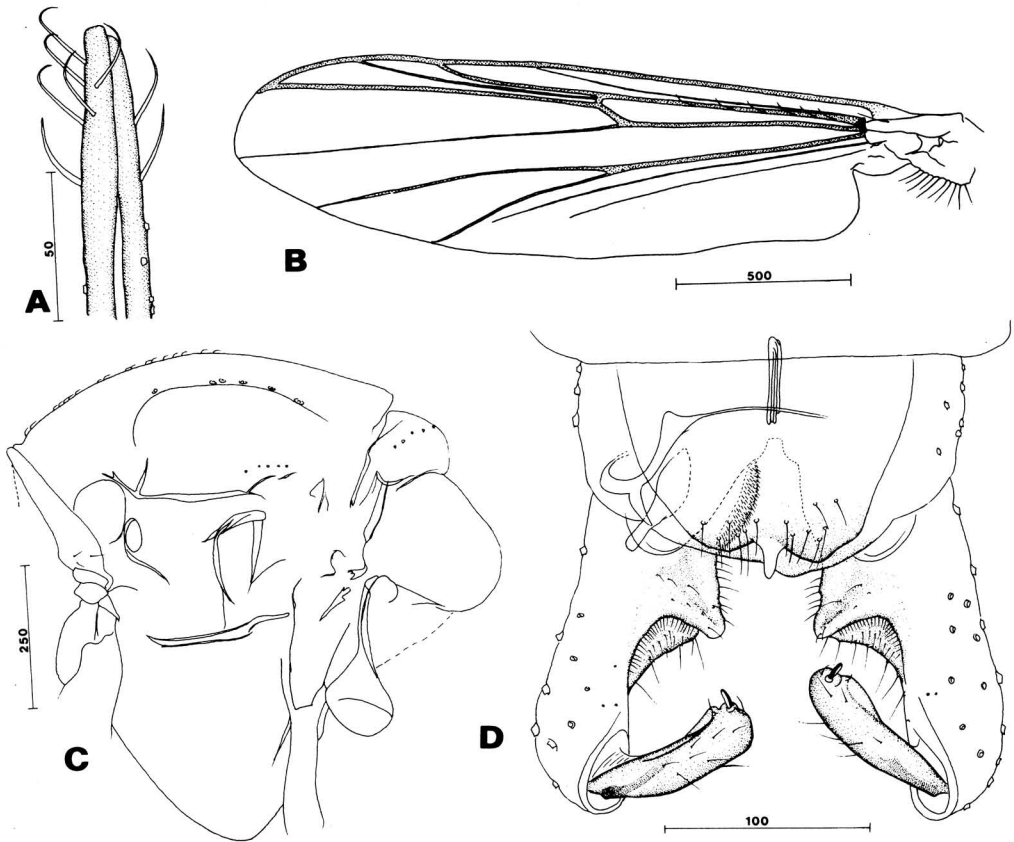


Fig. 8. *Bryophaenocladus saanae* sp. n. Male. — A. Tip of antenna. — B. Wing. — C. Thorax. — D. Hypopygium. Scale in μm .

with 4 spines. Gonocoxite lobes with transverse elevations and plenty of delicate setae on caudal margin. Small subapical crista dorsalis in styles.

Remarks

The generic position of this new species has been somewhat problematic. It could have been taken for a *Chaetocladus* because of its hypopygium and many other characters, but, for instance, the denticles of the mid and hind tibial spurs, typical of *Chaetocladus*, are lacking. Hence, we suggest it is best considered as a *Bryophaenocladus*.

Ecology

The larval habitat is unknown, but the specimen was netted in the birch zone of the fell Saana, with wet soil, springs and brooklets.

Chaetocladus crassisaetosus sp. n. (Fig. 9)

Holotype; Male; Finland, Li, Inari, Ivalojoiki at Kultala (760:48), 30.8.1981, J. Tuiskunen leg. Preserved in Euparal on microscope slide, deposited in the Zoological Museum of the University of Helsinki. (The new specific name has been chosen to lay stress on the presence of the remarkable teeth on the gonostyles.)

Paratypes: 6 males; 1 ♂ from the type locality; 4 ♂♂ from Le, Enontekiö, Ailakkavaara (766:25), 25.8.1983; 1 ♂ from Norway, Tri, Storfjord, on River Skibotnelva, 25.8.1983, J. Tuiskunen leg. Mounted in Euparal, deposited as the holotype, but the Norwegian specimen in the Zoological Museum of the University of Bergen.

Description of male ($n=7$)

Total length 2.4–3.0 mm. Colour: Ground colour of thorax greenish, scutal stripes (sometimes not separated) brown to dark brown. Scutellum often pale. Abdomen greyish brown to brown, setae arising from pale spots. Legs brown, halteres pale brown. Wings slightly brownish.

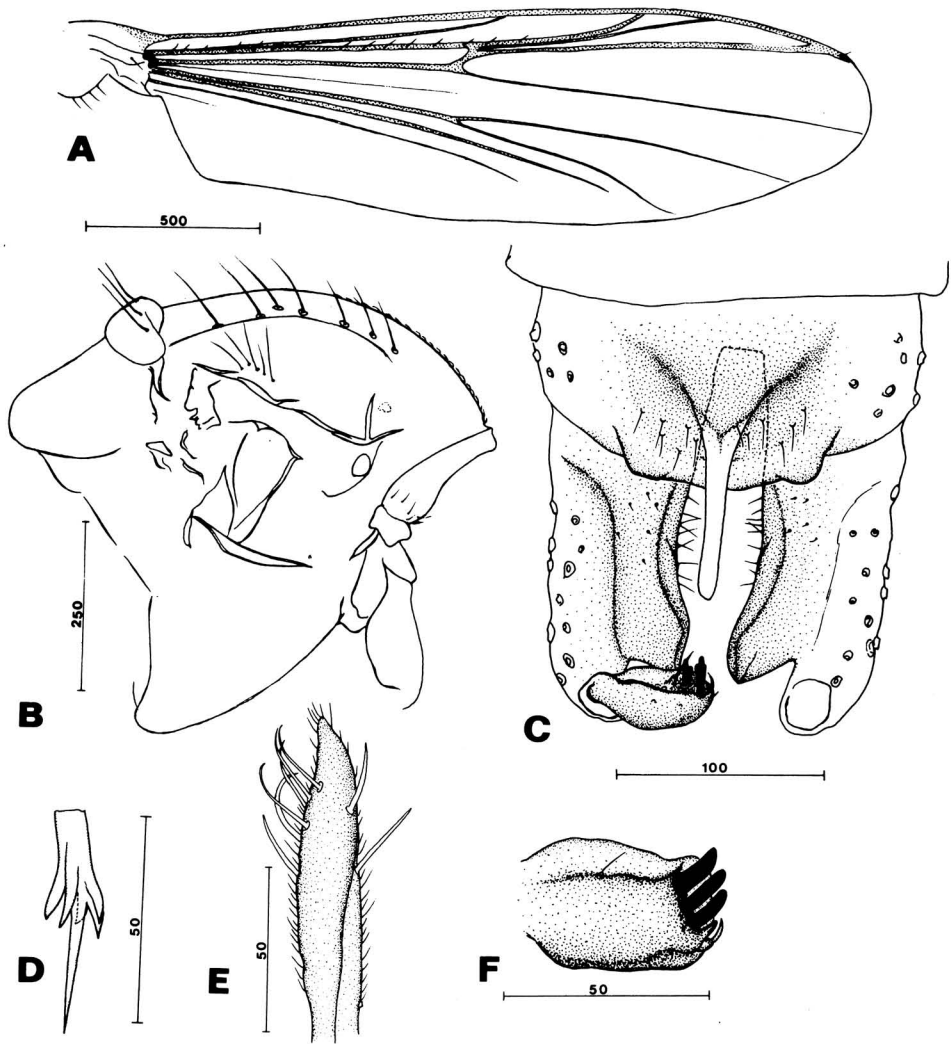


Fig. 9. *Chaetocladius crassisaetosus* sp. n. Male. — A. Wing. — B. Thorax. — C. Hypopygium. — D. Hind tibial spur. — E. Tip of antenna. — F. Stylus. Scale in μm .

Head: Eyes naked, well elongated dorsally. Temporals 11–14 in close row. Clypeus with 3–5 setae. Palps well developed, lengths of last four segments: 40–56 μm , 112–130 μm , 100–120 μm , 150–168 μm . Segment 3 with 3–7 sensilla clavata subapically. Antennal flagellum 13-segmented. Tip of ultimate segment pointed, with a group of subapical sensilla chaetica (Fig. 9E). Sensilla chaetica present also on segments 2 and 3. Antennal plume normal. AR 0.95–1.13.

Thorax (Fig. 9B): Antepronotum normally developed, with 6–9 setae in its ventral part. Numerous weak acrostichals present, beginning at antepronotum and reaching about midway between antepronotum and scutellum. Humeral pit present but indistinct. Dorsocentrals 6–9

arising from pale spots. Prealars 4–6. Scutellars 6–7 in one row.

Wing (Fig. 9A): Membrane coarsely granular (visible at a magnification of $\times 100$), without macrotrichiae. Vein R with 12–17, R_1 with 1–3 setae. Other veins bare. Squama with 2–5, brachiolum with 1–2 setae. Costa only slightly produced, ending somewhat proximal to the tip of M. R_{2+3} well separated, proximal part sometimes fused to R_1 as in Fig. 9A. Cu_2 nearly straight, but its extreme tip curved forward and not reaching wing margin. Anal vein ending distinctly distal FCu. Anal lobe not very well developed. Wing length 1.9–2.3 mm.

Legs: LR P_1 0.62–0.68, P_2 0.44–0.47, P_3 0.58–0.60. Tibial spurs of normal *Chaetocladius* type. Longer spur

of hind tibia as in Fig. 9D. Legs not bearded, without sensilla chaetica. Pulvilli absent.

Hypopygium (Fig. 9C): Anal point long and strong, parallel-sided and almost bare. Gonocoxite lobes unusually well developed, projecting far caudally so that tips of gonocoxites reach the level of bases of styles. Styles short but fairly thick, with 4–5 megasetae in an irregularly arranged group (see also Fig. 9F). Proximal to them one additional seta with a strong base. No crista dorsalis.

Remarks

This species is unique among *Chaetocladus* in having an unusual number (4–5) of megasetae on the styles. The character is known also in some other orthoclad genera, eg. *Bryophaenocladus dentatus* (Karl), *Doncricotopus dentatus* Tuiskunen and *Tvetenia duodenaria* Kieffer. A larger number of megasetae can also sometimes be seen in other species, though very rarely. Strenzke (1951) described *Smittia duplicata* on the basis of one male, primarily because of the presence of the double megaseta in the styles. As discussed by Strenzke, the species is otherwise very close to *S. aquatilis* Goetghebuer and can be separated only by the number of megasetae and somewhat higher AR. It is very probable that these two *Smittia* are identical.

Ecology and distribution

The species is known only from the type localities in Finnish and Norwegian Lapland. Larvae probably inhabit streams and rivers. Imagines have been found only in late August, in running waters.

Chaetocladus muliebris sp. n. (Fig. 10)

Holotype: Male; Norway, Tana, Rastigaisa, 28.8.1985, V. Solantie leg. Mounted in Euparal on microscope slide. Deposited in the Zoological Museum of the University of Helsinki. (The new specific name refers to the femalized antennae of the adult male).

Paratypes: 3 males from the type locality. Mounted in Euparal, deposited in the Zoological Museum of the University of Bergen, Norway.

Description of male ($n=4$)

Total length 3.4–3.7 mm. Colour: Dark brown to black species, wings brown.

Head: Temporals 9–13 in one row, including 2–4 shorter inner verticals. Eyes naked, weakly produced dorsally. Clypeals 9–12, irregularly arranged. Palps normal, lengths of last four segments: 48–52 μm , 105–112 μm , 96–116 μm , 135–148 μm . Group of sensilla clavata apically on segment 3. Antennae (Fig. 10B) female-like, with

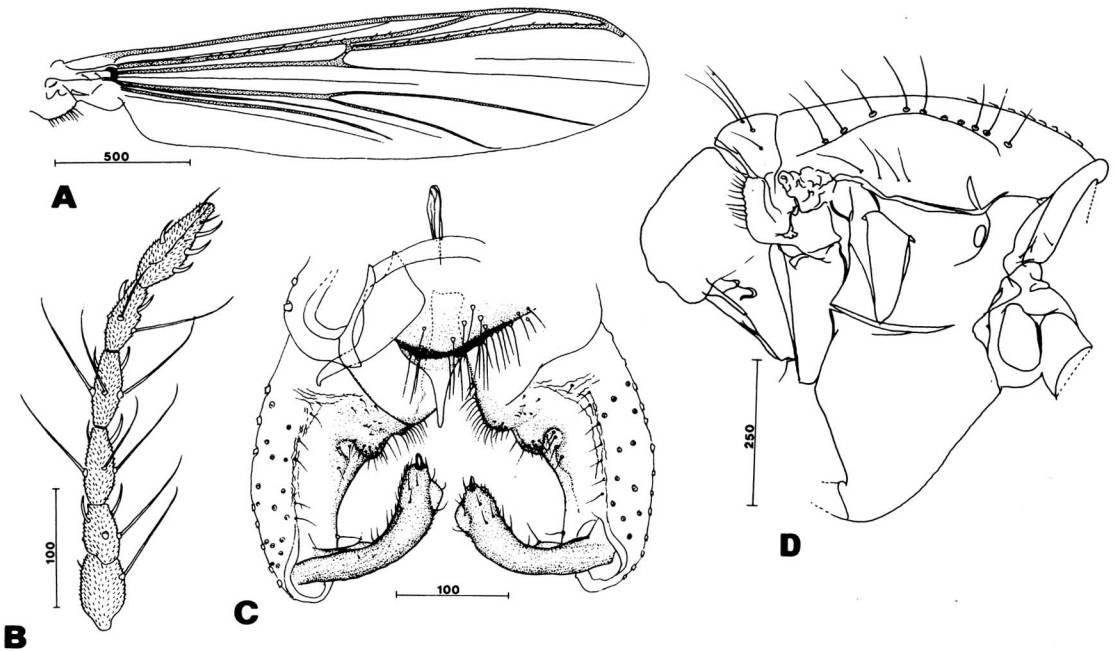


Fig. 10. *Chaetocladus muliebris* sp. n. Male. — A. Wing. — B. Antenna. — C. Hypopygium. — D. Thorax. Scale in μm .

6 flagellar segments. Segments 1 and 2 often indistinctly separated. Sensilla chaetica well developed, 2 in segments 1–4, about 6–7 in segment 5. AR 0.32–0.34.

Thorax (Fig. 10D): Acrostichals fairly weak and incurved, starting near anteprenotum and continuing about midway between anteprenotum and scutellum. Dorsocentrals 9–11 arising from pale spots. Anteprenotum well developed, with 4–7 anteprenotals. Prelars 4–5, scutellars 5–9 in a row.

Wing (Fig. 10A): Membrane coarsely granular, without macrotrichia. Vein R with 15–18, R_1 with 1–2, R_{4+5} with 13–18 macrotrichia, other veins bare. Squama with 10–12, brachiolum with 1 seta. Costa weakly produced (extended part 40–60 μm), ending somewhat proximad the tip of M. R_{2+3} well separated, ending about midway between R_1 and R_{4+5} . Cu_2 almost straight, but extreme tip curved forward and not reaching wing margin. An ending well distad FCu. Anal lobe fairly weakly developed. Wing length 2.0–2.2 mm.

Legs: LR P_1 0.64–0.72, P_2 0.42–0.46, P_3 0.50–0.52. Length of front tibial spur 55–60 μm , middle tibial spurs 26–34 μm , hind tibial spurs 26–28 and 53–60 μm . Mid and hind tibial spurs of normal *Chaetocladus* type (see Fig. 88a by Brundin 1956a). Hind tibial comb with 13–15 setae. Pulvilli absent.

Hypopygium (Fig. 10C): Anal point bare, of moderate size, pointed apically. Anal tergite with well developed elevation with several setae. Virga long but rather narrow ($L : B = 68\text{--}72 \mu\text{m} : 12\text{--}15 \mu\text{m}$), with long median spinules. Transverse sternapodeme convex, 115–130 μm . Gonocoxite lobes (Fig. 10C), indistinctly bipartite, with numerous setae. Additionally one small lobe proximad the bipartite anterior lobe. Styles long and slender, without crista dorsalis but with subapical swelling on outer margin. Apical megaseta fairly short (12–14 μm).

Remarks

The species is primarily characterized by the femalized antennae, and features of the somewhat enlarged hypopygium. The hypopygium is comparable to that of *C. tenuistylus* (Brundin 1947, Fig. 49), but is different in having a subapical enlargement of the gonostyles. Also the gonocoxite lobes are different, and there is an elevation on the anal tergite indicated in the figure (Fig. 10C).

The female-like antennae can be due to mermithid infection. In this case such an infection seems very improbable.

Ecology and distribution

The larvae are most probably inhabitants of flowing waters, since adults were collected by sweeping at a high mountain stream on the fell Rastigaisa, 600 m above sea level. Short antennae and slightly enlarged hypopygium support the idea that *C. muliebris* is a substrate swarmer.

Hydrobaenus paucisaeta sp. n. (Fig. 11)

Holotype: Male; Norway, Skipagurra, at River Tana, 11.8.1985, J. Tuiskunen leg. Mounted in Euparal on microscope slide, deposited in the Zoological Museum of the University of Helsinki. (The new specific name refers to the very low number of clypeal setae).

Description of male ($n=1$)

Total length 2.4 mm. Colour: Dark brown species without separated scutal stripes. Wings colourless.

Head: Inner verticals 2–3, outer verticals 1, postorbitals 2–3. Postorbitals distinctly longer than inner and outer verticals. Eyes with dorsal elongation, naked. Clypeus with 4 setae. Palps normally developed. Lengths of the four free segments: 40 μm , 80 μm , 75 μm , 75 μm . Tip of segment 3 with 1 sensilla clavata. Antennal flagellum 13-segmented, tip as in Fig. 11B. Sensilla chaetica present in segment 2, 3 and 13. AR 1.04.

Thorax (Fig. 11D): Anteprenotum normally developed, with 6 anteprenotals. Acrostichals 7, about in the middle of scutum. Dorsocentrals 4–5, arising from pale spots. Scutellars 6, prealars 2.

Wing (Fig. 11A): Membrane naked, finely granular (visible at a magnification of $\times 200$). R with 5, squama with 15–16 setae. Brachiolum with 1 seta. Costa slightly produced (extended part 30–32 μm), ending about above midway between tips of M and Cu_1 . Proximal part of R_{2+3} more or less fused to R_1 , apical part separated, ending distinctly proximad midway between R_1 and R_{4+5} . Cu_2 somewhat curved. An ending far distad FCu. Anal lobe moderately developed. Wing length 1.7 mm.

Legs: LR P_1 0.63, P_2 0.46, P_3 0.49. Front tibial spur 40 μm , mid tibial spurs both 18–20 μm , hind tibial spurs 15 μm and 44 μm . 4–5 sensilla chaetica on first tarsal segment of hind leg. Hind tibial comb with 11 setae. Pulvilli absent. Claws serrated distally.

Hypopygium (Fig. 11C): Anal point short and slender, almost bare. Tergite 9 with 12 setae. Virga 30 μm long. Transverse sternapodeme convex, 75 μm long. Gonocoxites with tongue-shaped anterior lobe, and low, rounded posterior lobe. Styles (Fig. 11E) with small, tooth-shaped crista dorsalis. Megaseta 16 μm .

Remarks

In spite of certain peculiar features of the hypopygium this species is a typical *Hydrobaenus* as delimited by Saether (1976). According to his key the new species would come near to the originally Nearctic species *H. martini* Saether and *H. spinnatis* Saether. However, it differs from these in the hypopygium and lower AR.

The digitiform crista dorsalis of the styles of *H. paucisaeta* sp. n. is a unique characteristic in the genus. In most *Hydrobaenus* a distinct crista dorsalis is lacking (there are only very small, almost circular structures dorsal to the apical megaseta). In a few species crista dorsalis is, however, better developed, being a low

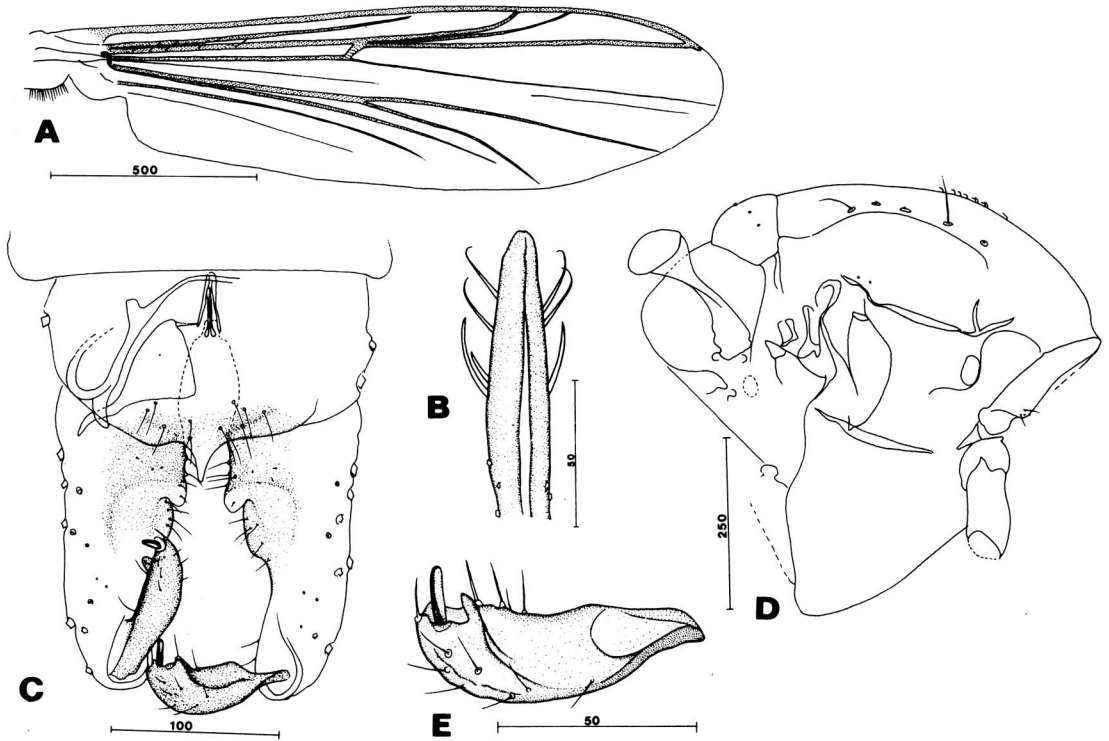


Fig. 11. *Hydrobaenus paucisaeta* sp. n. Male. — A. Wing. — B. Tip of antenna. — C. Hypopygium. — D. Thorax. — E. Stylus. Scale in μm .

and longish elevation on apical 1/3 of styles (eg. *H. conformis* (Holmgren) and *H. johannseni* (Sublette)).

The gonocoxite lobes of *H. paucisaeta* much resemble those of *H. lapponicus* Brun-
din (cf. Fig. 30 in Saether 1976), but these species are readily separable by the anal point and styles.

In addition to the hypopygial features the very low number of clypeal setae (4) separates the present new species from the others of the genus.

***Krenosmittia halvorseni* (Cranston & Saether, 1986) comb. n.** (Fig. 12)

The male and female of this species have been described by Cranston & Saether (1986). Illustrations of a Finnish specimen (male) are given in Figs. 12A—D.

Description of pupal exuviae ($n=4$)

Total length 2.1—2.2 mm. Colour: abdominal segments greyish brown, with pale caudal margins. Thorax paler than abdomen, wing sheaths with darker stripes.

Cephalothorax: Thoracic horn very long and narrow (Fig. 12G). Frontal setae long (180—200 μm) and strong, arising from distinct cephalic tubercles. Postorbitals 2, weak and about 40—50 μm . 2 median anteprenotals, stronger (95—110 μm) and weaker (70—80 μm). 2 lateral anteprenotals, very weak. 3 dorsocentrals. 3 precorneals with one strong (80—100 μm), and 2 very weak, setae.

Abdomen: Tergal shagreenation as in Fig. 12F. Tergite 1 without posterior transverse toothed mound. Teeth of mound in tergite 2 considerably smaller than in remaining tergites. Mounds most distinctly divided medially in tergites 2—5, poorly or not at all in other tergites. Sternites 3—8 as in Fig. 12E. Sternites 1 and 2 without toothed mounds. Very weak shagreenation present on sternites 2 and 5—8 (not drawn in Fig. 12E).

Number of setae on abdominal segments 1—8:

dorsal setae	5	5	5	5	5	5	5	5
lateral "	2-3	3-4	3-4	3-4	3-4	3-4	3-4	3
ventral "	?	4	4	4	4	4	4	1

2 oralmost lateral setae long and strong, third lateral seta considerably weaker. In addition to these 1 very weak and

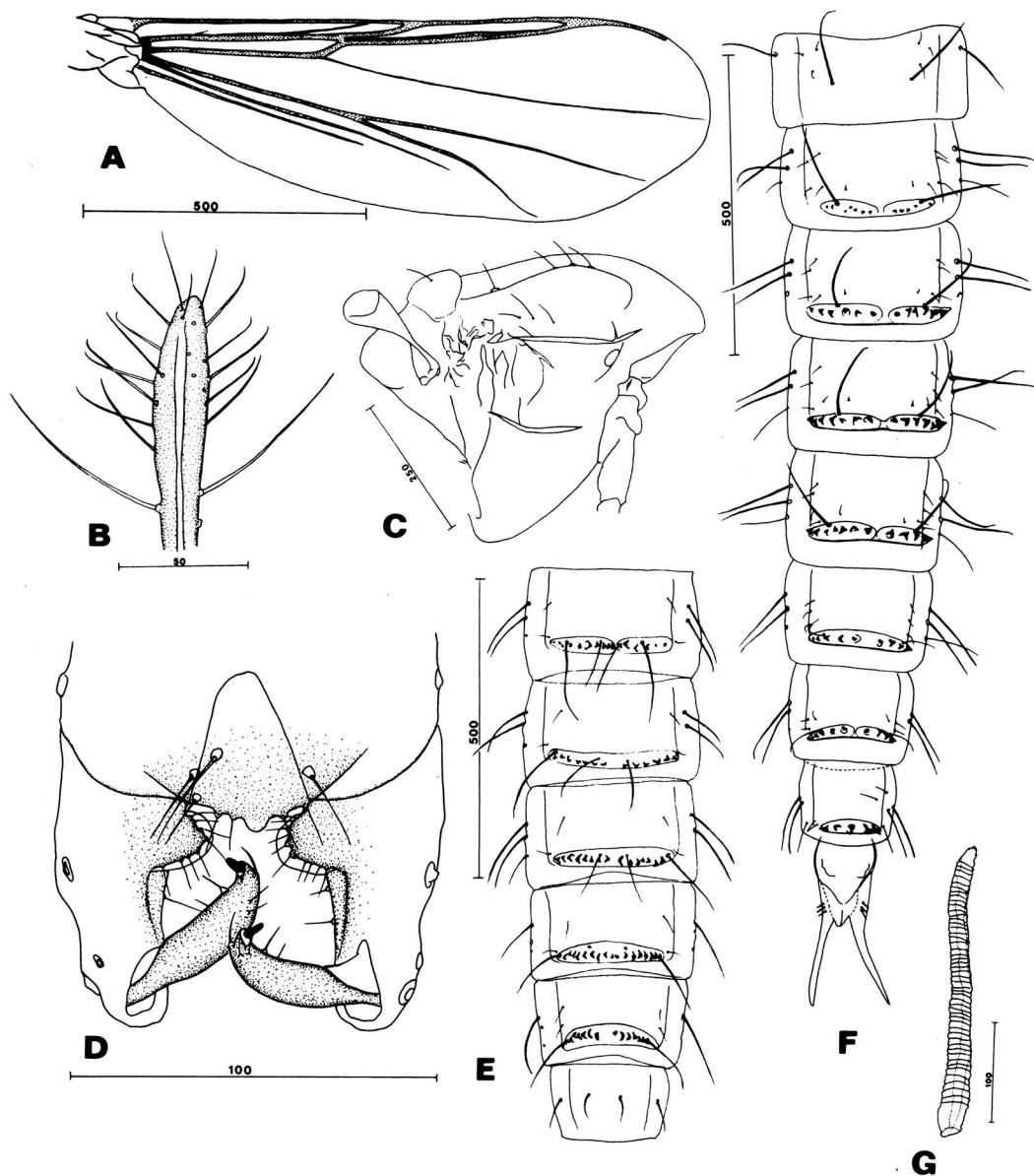


Fig. 12. *Krenosmittia halvorseni* (Cranston & Saether). Male. — A. Wing. — B. Tip of antenna. — C. Thorax. — D. Hypopygium. — Pupal exuviae. — E. Sternites 3–8. — F. Tergites 1–9. — G. Thoracic horn. Scale in μm .

short seta often present. D_5 -setae very strong and long in segments 1–5, weaker in segments 6–8. Pedes spurii A and B absent. Anal lobe with long (70–80 μm) and narrow elongations and 3 very short (25–30 μm) anal macrosetae.

Remarks

Cranston & Saether (1986) described this species in the genus *Rheosmittia* Cranston & Saether as *R. halvorseni*. However, they were

not in possession of pupal exuviae to show the relationship with *Krenosmittia* Thienemann & Krüger.

The exuviae of *K. halvorseni* (Cranston & Saether) is very near that of *K. camptophlebs* (Edwards) (see Fig. 19 in Thienemann 1944, sub. *K. boreoalpina* Goetghebuer, and Fig. 122 in Brundin 1956a), but differs by having only 3 well developed lateral hairs (the fourth is ex-

tremely weak or absent). The colour of the exuviae of *K. camptophleps* is "bläss und durchsichtig" (Thienemann 1944), whereas that of *K. halvorseni* is dark.

Thus far four species of *Krenosmittia* have been described from Europe, and the males can be identified as follows:

- 1. Antennal flagellum 12-segmented. Gonocoxite lobes surrounded apically by a transparent membrane. Hypopygium Fig. 12D. *K. halvorseni* (Cranston & Saether)
- Antennal flagellum 13-segmented. Gonocoxite lobes without such membrane 2
- 2. Anal point large, long and very broad. Gonocoxite lobes rounded, without caudal extension. Wing length 1.5 mm. Hypopygium Wülker (1957), Fig. 10. *K. hispanica* Wülker
- Anal point small or almost absent. Gonocoxite lobes extended caudally. Wing length 1.0–1.3 mm. .. 3
- 3. AR 0.40. Wing length 1.2–1.3 mm. Hypopygium Brundin (1956a), Fig. 114. *K. camptophleps* (Edw.)
- AR 0.20. Wing length 1.0 mm. Hypopygium Brundin (1956a), Fig. 115. *K. boreoalpina* Goetgh.

Ecology and distribution

K. halvorseni is a common species in northern Fennoscandia. It has been collected by author JT from the following localities in Finland:

Ks, Salla, Oulankajoki (737:58), 8.8.1985; Ob, Ylitornio, Torniojoki (734:35), 14.8.1985; Ob, Karunki, Kukkolankoski (732:36), 14.8.1985; Li, Inari, Alajoki (760:52), 9.8.1985; Inari, Niipijoki (766:52), 10.8.1985; Inari, Nilijoki (771:56), 10.8.1985; Li, Utsjoki, Kalldasjohka (776:53), 11.8.1985; Utsjoki, Skaidejohka (777:53), 12.8.1985; Utsjoki, Pulmankijärvi (776:53), 11.8.1985; Utsjoki, small stream (777:51), 12.8.1985; Utsjoki, Vetsikko (776:51), 12.8.1985; Utsjoki, Outakoski (772:46), 12.8.1985.

Norway: Finnmark, Skogeröya, at Neidenelva, 11.8.1985; Nesseby, at Reppenelva, 11.8.1985.

The larvae probably inhabit both running water and strongly oligotrophic lakes. Emergence seems to take place from July to mid August. Very large swarms were observed at Lake Pulmankijärvi on 12.8.1985, but a fortnight later in the same place not a single specimen was found by V. Solantie.

Lappokiefferiella gen. n.

Type species: *L. platytarsus* sp. n.

Generic diagnosis

Adult male: Small species, wing length 1.4 mm. Eyes naked, without dorsal projection. Postorbitals present, inner and outer verticals absent. Palps normal, 5-segmented, with 1 sensilla clavata apical of segment 3. Antennal flagellum 13-segmented, with several pale setae at apex. AR about 1. Anteprenotum normal, with some anteprenotals. Dorsocentrals and scutellars uniserial. Acrostichals absent. Mesonotum with hairy tuft midway between anteprenotum and scutellum. Wing membrane without macrotrichia, finely granular. R with some macrotrichia, other veins naked. R₂₊₃ separated. Costa weakly produced. Cu₂ curved. Squama without setae. Anal lobe of wing well developed. Legs with flattened tarsal segment 5. Pulvilli present. Anal point about as long as broad, with some lateral setae. Gonocoxite lobes well developed. Styles with strong crista dorsalis apically. Virga present. Transverse sternapodeme slightly convex.

Table 2. Characters separating *Acamptocladius* Brundin, *Lapposmittia* Thienemann and *Parakiefferiella* Thienemann from *Lappokiefferiella* gen. n.

<i>Acamptocladius</i>	<i>Lapposmittia</i>	<i>Parakiefferiella</i>
- colour	- colour	- costa moderately or strongly produced
- oral projection of transverse sternapodeme very strong	- antennal plume sparse and AR lower	- T ₅ -segments not flattened
- anal point different	- very short palps	- crista dorsalis mainly lacking
- crista dorsalis absent	- crista dorsalis absent	
- gonocoxite lobes poorly developed		
- virga absent		

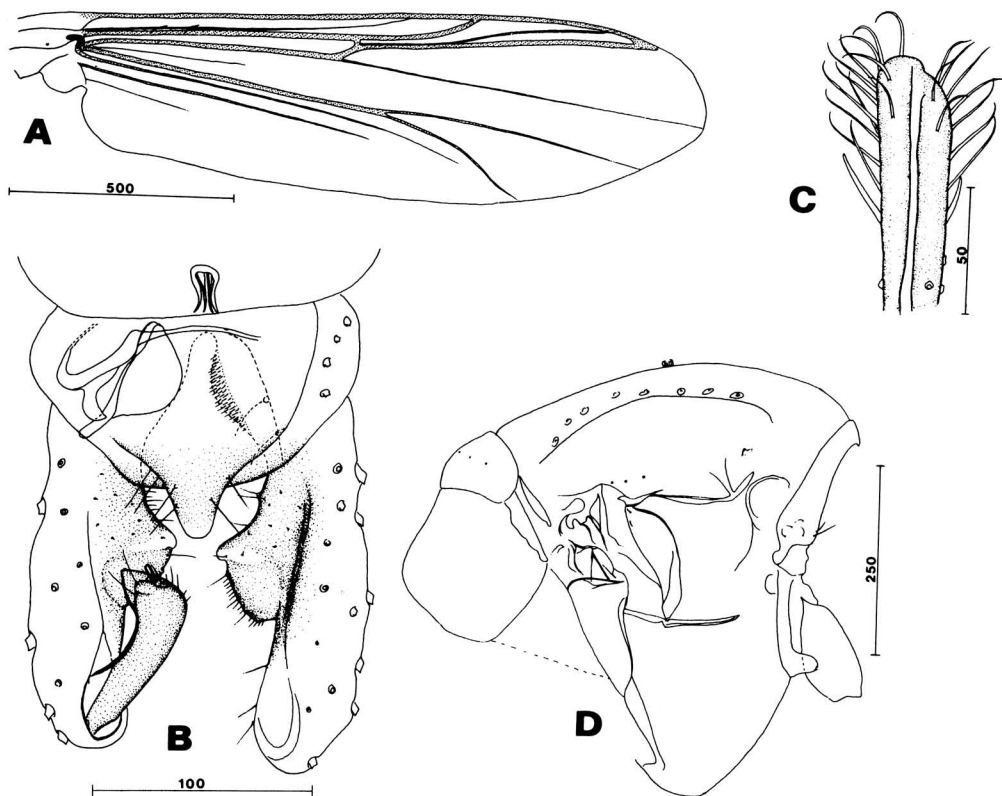


Fig. 13. *Lappokiefferiella platytarsus* gen. n., sp. n. Male. — A. Wing. — B. Hypopygium. — C. Tip of antenna. — D. Thorax. Scale in μm .

***Lappokiefferiella platytarsus* gen. n., sp. n. (Fig. 13)**

Holotype: Male; Norway, Finnmark, Sör-Varanger, Klokkelva, 11.8.1985, J. Tuiskunen leg. Mounted in Euparal on microscope slide, deposited in the Zoological Museum of the University of Helsinki.

Description of male ($n=1$)

Total length 2.4 mm. Colour: Dark brown species with poorly separated scutal stripes. Wings colourless.

Head: Inner and outer verticals absent, postorbitals 5–7. Eyes naked, without dorsal projection. Clypeus with 13 setae. Palps normal, lengths of four free segments: 40 μm , 70–72 μm , 74–76 μm , 90 μm . Tip of segment 3 with one well developed sensilla clavata. Antennal flagellum 13-segmented. Tip of antenna as in Fig. 13C. Sensilla chaetica present in segments 2, 3 and 13. AR 1.08.

Thorax (Fig. 13D): Antepronotum normally developed, with 5 antepronotals. Dorsocentrals 6–8 in regular row, arising from pale spots. Acrostichals absent. Mesonotum with dense hair tuft but without hump. Prealar 5, scutellars 6. Median anepisternum II with 2 very weak setae near dorso-posterior margin.

Wing (Fig. 13A): Membrane finely granular (visible at a magnification of $\times 200$), without macrotrichia. R with 2–3 macrotrichia. Other veins and squama naked. Brachiolum with 1 seta. Costa weakly produced (extended part 25–35 μm), ending slightly distal to tip of vein Cu_1 . Proximal part of R_{2+3} fused with R_{4+5} , distal part separated, ending somewhat proximal to tip of R_{4+5} . Cu_2 moderately sinuate. An ending approximately below FCu. Anal lobe well developed. Wing length 1.4 mm.

Legs: LR P_1 0.52, P_2 0.44, P_3 0.48. Front tibial spur 42 μm , mid tibial spurs 18–20 μm , hind tibial spurs 12–14 μm and 50–54 μm . BR of hind tarsus 3.6–3.8. Hind tibial comb with 9–10 setae. Tarsal segment 5 dorsoventrally flattened in all legs. Pulvilli well developed.

Abdomen: Hairs of tergites 2–7 in two regular transverse rows, arising from pale spots.

Hypopygium (Fig. 13B): Anal point broad, apically rounded, tip naked, with 2–4 setae on each side. Virga fairly short, 22 μm . Transverse sternapodeme slightly convex, length 60 μm . Basal median lobe (according to Soponis 1977) weakly developed, rounded. Gonocoxite lobes well developed, caudal margin joining gonocoxite in obtuse angle. Styles with triangular, sharp-pointed apical crista dorsalis. Megaseta 10 μm .

Remarks

The generic placement of this species has been very difficult. The species would fit into any of three alternative genera: *Acamptocladius* Brundin, *Lapposmittia* Thienemann and *Parakiefferiella* Thienemann (Edwards et al. 1939, Brundin 1956a). The fourth alternative, a new genus, which was kindly suggested by O. A. Saether, was chosen to solve the problem. Table 2 shows the most important differences between *Lappokiefferiella* gen. n. and the generic characters of the other three genera mentioned.

On the basis of the hypopygium the genus *Parakiefferiella* seems to be the nearest relative to *Lappokiefferiella*, the only diverging feature being the very well developed crista dorsalis on the styles.

Thienemannia paasivirtai sp. n. (Fig. 14)

Holotype: Male; Finland, Le, Enontekiö, Pikku Malla, Kaakkurilampi (767:25), 22.6.1969, L. Paasivirta leg. Mounted in Euparal on microscope slide, deposited in the Zoological Museum of the University of Helsinki.

Paratype: 1 male; locality as holotype. Mounted in Euparal and deposited as holotype.

Description of male ($n=2$)

Total length: 2.8–3.0 mm. Colour (after 15 years' preservation in ethanol): Uniformly brown without separated scutal stripes. Wings pale brown.

Head: Inner verticals 3–5, outer verticals 1–2, postorbitals 3–4. Length of inner verticals 45–55 μm , outer verticals and postorbitals 25–35 μm . Eyes pubescent, somewhat produced dorsally. Clypeus with 2 setae. Palps moderately short, lengths of last four segments 45–50 μm , 85–90 μm , 70–75 μm , 95–100 μm . Third segment with only 1 sensilla clavata. Flagellum 13-segmented. Distal part of the ultimate segment with some fairly weakly developed sensilla chaetica. Sensilla chaetica present also in segments 2 and 3. AR 1.30–1.40.

Thorax (Fig. 14B): Antepronotum normally developed, with 4–5 antepronotals. Acrostichals fairly weak, curved, starting at antepronotum and continuing to about middle of scutum. Dorsocentrals 5–7, arising from pale spots. Prealaris 3–4, scutellars 4–8. Postnotum with some roughness on surface.

Wing (Fig. 14A): Membrane coarsely granular, bare. Vein R with 2–4 macrotrichia basally, other veins naked. Brachiolium with 1–2 setae. Squama with 2–7 setae. Costa slightly produced (extended part 55–65 μm), ending about above tip of M. R_{2+3} ending slightly proximal to midway between tips of R_1 and R_{4+5} . Cu_2 weakly curved. Anal vein ending somewhat distal to FCu. Anal lobe distinct, almost rectangular. Wing length 2.2–2.3 mm.

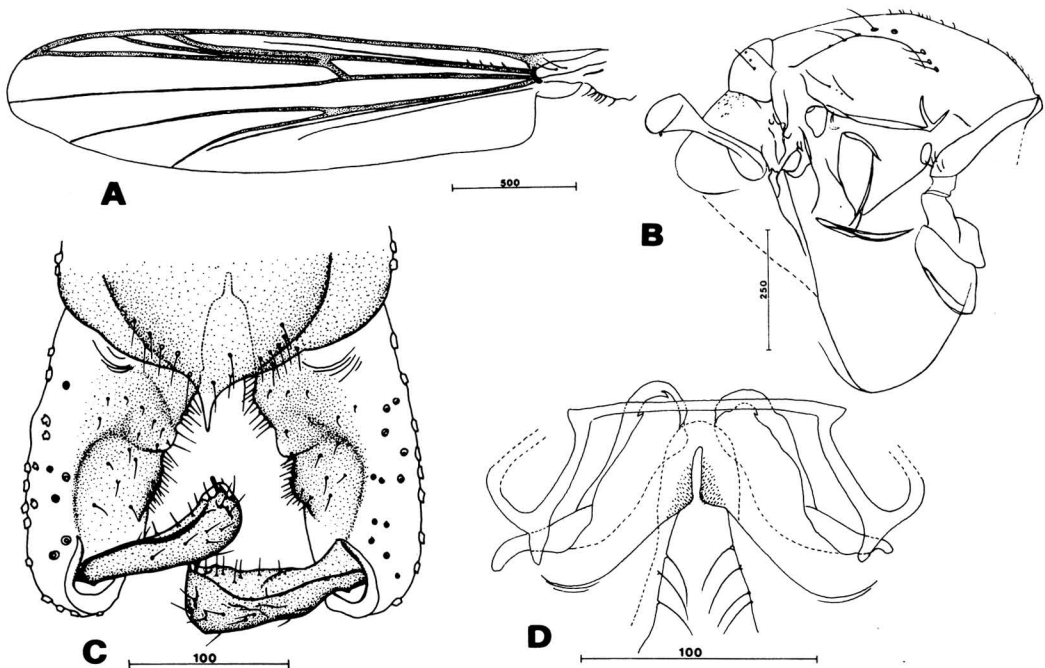


Fig. 14. *Thienemannia paasivirtai* sp. n. Male. — A. Wing. — B. Thorax. — C. Hypopygium. — D. Internal structures of hypopygium. Scale in μm .

Legs: LR P₁ 0.57–0.61, P₂ 0.46–0.48, P₃ 0.49–0.54. Front tibial spur 52–54 μ m, mid tibial spurs both 22–25 μ m, hind tibial spur 52–54 μ m. Shorter hind tibial spur seems to be lacking. Hind tibial comb with 9–10 setae. Pulvilli absent.

Hypopygium (Fig. 14C): Anal point short and slender, almost bare, 6–10 setae on each side. Transverse sternapodeme straight, 100–105 μ m long. Oral projections of transverse sternapodeme absent. Virga 40 μ m long, pale and scarcely visible. Basal median lobe angular (Fig. 14D). Gonocoxite lobes poorly developed, bipartite. Anterior lobe more or less rectangular, with naked distal area. Posterior lobe only low, rounded elevation. Styles as in Fig. 14C, without crista dorsalis.

Remarks

This species is tentatively placed in the genus *Thienemannia* Kieffer, where it belongs according to the key by Brundin (1956a). However, *T. paasivirtai* sp. n. differs from the generic definition of *Thienemannia* in having a coarsely granular wing membrane without macrotrichiae, normally developed antennae, only slightly extended costa, straight transverse sternapodeme without oral projections, and uniformly brown colour (cf. Saether 1985a). Since the larval and pupal instars are unknown, the present decision, for the time being, seems to be the best one.

Ecology and distribution

Known only from the type locality. Emergence seems to take place very early in the spring, perhaps just after the melting of the ice. There is no information on where the larvae live.

Tokunagaia parexcellens sp. n. (Fig. 15)

Holotype: Male; Finland, Le, Enontekiö, Jatuni (760:32), 24.8.1983, J. Tuiskunen leg. Mounted in Euparal on microscope slide, deposited in the Zoological Museum of the University of Helsinki. (The new specific name reflects the close relationship with *E. excellens* Brundin, 1956).

Paratypes: 5 males from the type locality, 2 ♂♂ from Norway, Tana, Rastigaisa, 28.8.1985, V. Solantie leg. Mounted in Euparal, deposited as the holotype, except the Norwegian specimens, which are in the collections of the Zoological Museum of Bergen.

Description of male ($n=7$)

Total length 2.7–3.0 mm. Colour: Brown to dark brown species with unseparated scutal stripes. Wings slightly brownish.

Head: Inner verticals 2–6, shorter than other temporals. Outer verticals 1–4, postorbitals 5–8. Eyes naked, with distinct dorsal elongation. Clypeus with 5–9 setae. Palps normally developed, lengths of the four free segments: 44–60 μ m, 85–96 μ m, 80–88 μ m, 125–150 μ m. Segment 3 with a group of sensilla clavata subapically. Antennal flagellum 13-segmented, with normal plume. Sensilla chaetica present in segments 2, 3 and 13. Tip of antenna as in Fig. 15D. AR 0.80–1.00.

Thorax (Fig. 15B): Antepronotum well developed, with 1–4 antepronotals. Several acrostichals, starting fairly close to antepronotum and reaching about middle of scutum. Dorsocentrals 4–7, arising from pale spots. Scutellars 8–12, prealars 2–3. Small and indistinct humeral pit present.

Wing (Fig. 15A): Membrane bare, with fine granulation (visible at a magnification of $\times 200$). Vein R with 2–6 setae (length 30–60 μ m, R₄₊₅ with 1–5 setae (length 15–25 μ m). Other veins naked. Brachiolum with 1, squama with 2–7, setae. Costa only slightly produced (extended part 40–60 μ m), ending approximately above tip of Cu₁. R₂₊₃ present, its proximal part joined to R₄₊₅. Cu₂ somewhat curved, ultimate part curved forward. An ending approximately below FCu. Anal lobe moderately developed. Wing length 2.0–2.2 mm.

Legs: LR P₁ 0.64–0.70, P₂ 0.50–0.55, P₃ 0.57–0.60. Front tibial spur 44–52 μ m, mid tibial spurs 10–12 μ m and 28–32 μ m, hind tibial spurs 12–14 μ m and 48–53 μ m long. Shorter spurs of mid and hind tibia very difficult to see and sometimes possibly absent. Longer spurs of mid and hind tibia of *Chaetocladius* type (Fig. 15E). Comb of hind tibia 12–15 setae. Pulvilli absent.

Hypopygium (Fig. 15C): Anal point absent. Ninth tergite with 5–9 setae on both sides. Virga well developed, length 44–52 μ m. Gonocoxite with well developed, approximately rectangular lobe. Styles with broad and high crista dorsalis, highest point situated proximal to midpoint of stylus (Figs. 15C and 15F).

Remarks

The genus *Tokunagaia* Saether is under redefinition and revision by Halvorsen and Saether (MS). According to the idea of these authors the genus includes eg. the species of the *Eukiefferiella rectangularis*-group, to which this new species also clearly belongs.

T. parexcellens sp. n. is closely related to *T. excellens* (Brundin) originally *Eukiefferiella* (Brundin 1956a, Lehmann 1972), but is readily separable from it as follows (*T. excellens* in parentheses): Gonocoxites with one rectangular lobe (two lobes); the highest point of crista dorsalis situated distinctly proximal (some variation appears) to the middle of the stylus (highest point situated about in the middle of the stylus); AR 0.80–1.00 (0.6–0.7).

Ecology and distribution

Locally abundant species in northern Fennoscandia, inhabiting barren, fast-flowing streams and rivers and emerging in late summer. In Norway, Rastigaisa (400–600 m

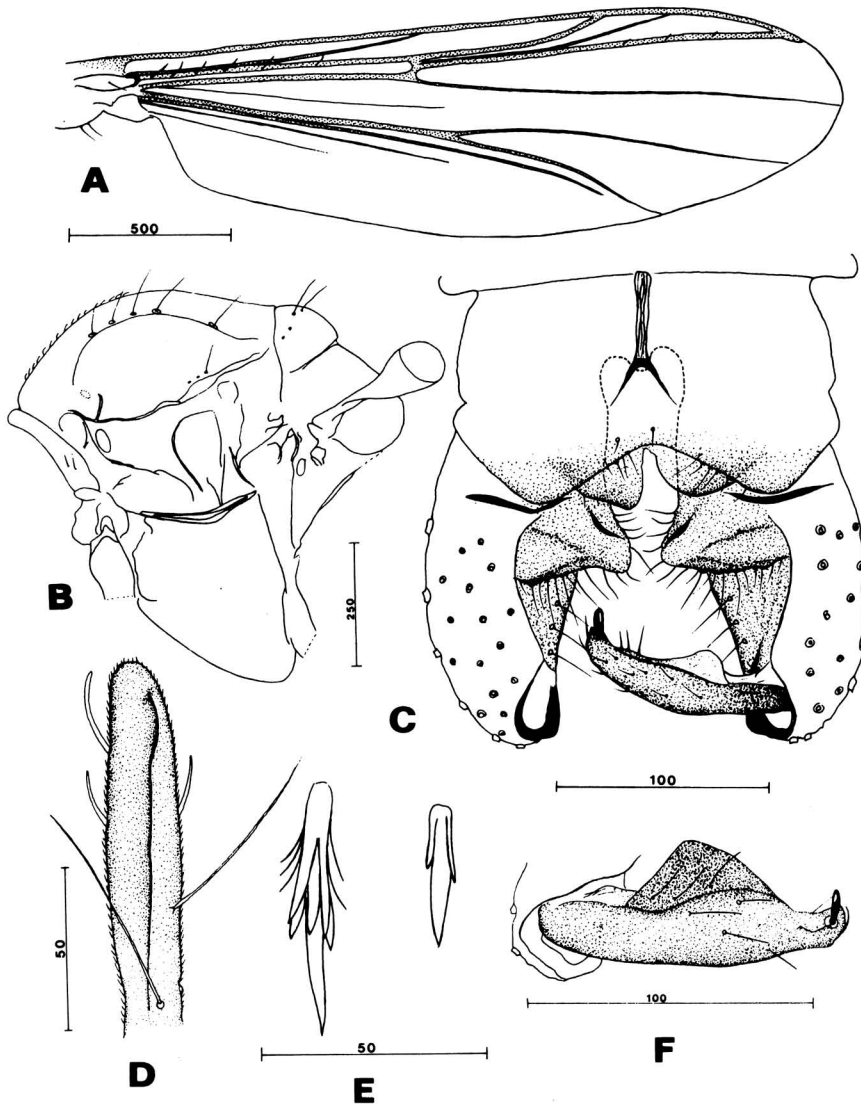


Fig. 15. *Tokunagaia parexcellens* sp. n. Male. — A. Wing. — B. Thorax. — C. Hypopygium. — D. Tip of antenna. — E. Mid and hind tibial spurs. — F. Stylus. Scale in μm .

above sea level) *T. parexcellens* was one of the most abundant chironomids, flying together with *Chaetocladius acuminatus* Brundin, *Tokunagaia excellens* Brundin, *T. tonollii* Ros-saro and *Diplocladius cultriger* Kieffer.

***Zalutschia mallae* sp. n. (Figs. 16, 17)**

Holotype: Male; Finland, Le, Enontekiö, Kilpisjärvi, Pikku Malla (767:25), 16.7.1969, B. Lindeberg leg. Mounted in Euparal on microscope slide, deposited in the Zoological Museum of the University of Helsinki.

Paratypes: 15 males; 5 from the type locality 12.7. and 16.7.1969, B. Lindeberg leg.; 6 from Li, Inari, at shallow pond (764:50), 26.6.1971, P. Virtanen leg.; 1 from Inari, Inarijärvi, Naudshusaari, 18.7.1971, P. Virtanen leg.; 1 from Inari, Vainospää, 16.7.1971, P. Virtanen leg.; 2 from Inari, Sevetijärvi (771:56), 14.7.1971, P. Virtanen leg.; 2 females and 12 pupal exuviae from the holotype locality 12.7.1969, B. Lindeberg leg.

Description of male ($n=16$)

Total length 2.4–2.8 mm. Colour (after 13 years' preservation in ethanol): Thorax, legs and abdomen brown to dark brown. Scutal stripes unseparated. Wings weakly brownish by transmitted light.

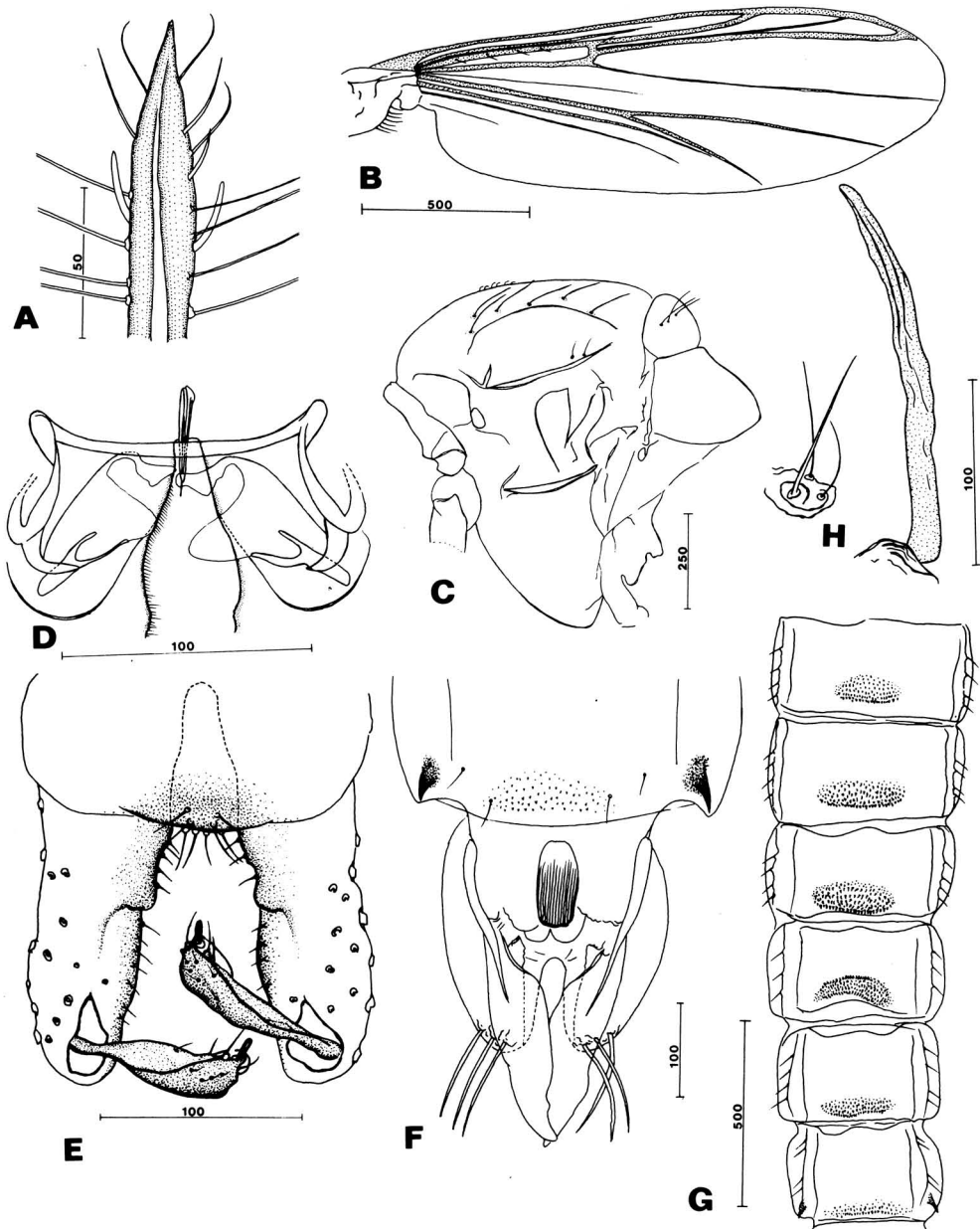


Fig. 16. *Zalutschia mallae* sp. n. Male. — A. Tip of antenna. — B. Wing. — C. Thorax. — D. Internal structures of hypopygium. — E. Hypopygium. — Pupal exuviae. — F. Anal lobe. — G. Tergites 2–7. — H. Thoracic horn and precorneals. Scale in μm .

Head: Eyes very slightly produced dorsally, bare. Inner verticals 1–3, outer verticals 0–3, postorbitals 2–5. Clypeus with 2–9 setae. Palps 5-segmented, fairly short. Lengths of four free segments: 30–35 μm , 40–50 μm , 35–50 μm , 70–90 μm . Sensilla clavata absent. Antennal flagellum 13-segmented. Tip of antenna pointed, with some subapical sensilla chaetica (Fig. 16A). Antennal plume well developed, dense. Plumal setae reaching near

tip of antenna. Sensilla chaetica in segments 3 and 13. AR 1.26–1.42.

Thorax (Fig. 16C): Antepronotum normally developed, with 0–3 antepronotals. Dorsocentrals 5–7 arising from pale spots. Acrostichals 3–12 in the centre of scutum. Prealars 1–3. Scutellars 4–8 in a row.

Wing (Fig. 16B): Membrane moderately granular (visible at $\times 100$), without macrotrichiae. Vein R with

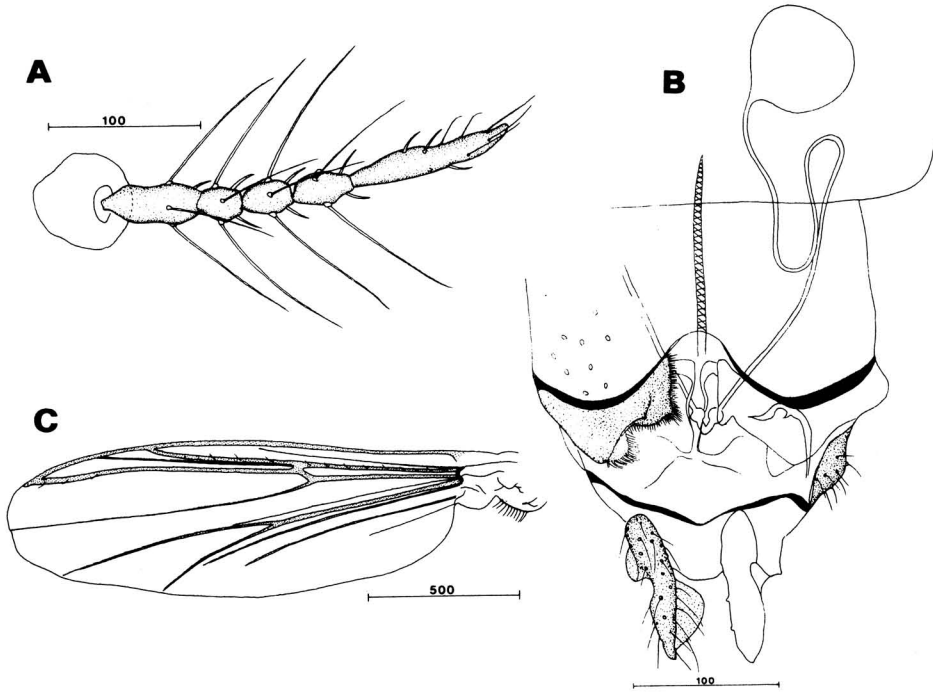


Fig. 17. *Zalutschia mallae* sp. n. Female. — A. Antenna. — B. Genitalia. — C. Wing. Scale in μm .

3–13 macrotrichiae, other veins naked. Squama with a fringe of 6–13 setae. Brachiolum with 1–2 setae. Costa slightly produced (extended part 30–45 μm), ending distad the tip of Cu_1 . R_{2+3} ending about midway between tips of R_1 and R_{4+5} . Cu_2 nearly straight. Anal vein ending far beyond FCu. Anal lobe moderately developed. Wing length 1.8–2.0 mm.

Legs: LR P_1 0.54–0.62, P_2 0.39–0.43, P_3 0.47–0.54. Front tibial spur 40–44 μm , mid tibial spurs 18–20 μm , hind tibial spurs 50–55 μm and 20–25 μm long. BR of hind tarsus 3–4. Hind tibial comb normal, with 9–12 setae. Pulvilli absent.

Hypopygium (Fig. 16E): Anal point absent. Tergite 9 with 12–20 setae. Transverse sternapodeme straight or very slightly concave, 85–100 μm long, with well developed oral projections (see Fig. 16D). Virga 45–55 μm long. Gonocoxite lobe poorly developed, bare apically. Styles as in Fig. 16E, without crista dorsalis.

Description of female ($n=2$)

Total length 2.4–2.5 mm. Coloration as in male.

Head: Eyes naked, without dorsal projection. Inner verticals absent, outer verticals 2–3, postorbitals 1–2 arising from pale spots. Pedicel length/width: 48–64 μm /60–64 μm . Antennal flagellum 5-segmented (Fig. 17C), length/width of segments: 60–62 μm /26–128 μm , 30–36 μm /24–25 μm , 36–40 μm /23–25 μm , 38–40 μm /24–25 μm , 100–112 μm /18–20 μm . AR 0.61–0.71. Sensilla chaetica present on all flagellar segments. Clypeals 7–8 in dorsal half of clypeus. Palps 5-segmented, not very long. Lengths of four free segments: 30–32 μm , 44–48 μm , 42 μm , 62–76 μm . Sensilla clavata absent.

Thorax: Antepronotum with 2 setae. Acrostichals 6–7 at centre of scutum. Dorsocentrals 6–8, arising from pale spots. Prealars 2–3, scutellars 4–6.

Wing (Fig. 17A): Membrane granular (visible at $\times 100$), without macrotrichiae. Vein R with 6–10, R_1 with 3 and R_{4+5} with 4 macrotrichiae. Brachiolum with 1 and squama with 8–11 setae. Costa very slightly produced (extension 24–28 μm long), ending approximately midway between tips of M and Cu_1 . R_{2+3} ending midway or slightly proximad midway between tips of R_1 and R_{4+5} . Cu_2 weakly curved. An ending well proximad FCu. Anal lobe not well developed. Wing length 1.8–1.9 mm.

Legs: LR P_1 0.55–0.57, P_2 0.42–0.43, P_3 0.49–0.50. Length of front tibial spur 22–24 μm , mid tibial spurs 16–18 μm , hind tibial spurs 15–16 μm and 45–50 μm . Ta_1 of front leg with 0–1, Ta_1 of mid leg with 8–10, and Ta_1 of hind leg with 6–9 sensilla chaetica. Last tarsal segments somewhat flattened dorsoventrally. Hind tibial comb with 9 setae. Pulvilli absent.

Genitalia (Fig. 17B): Gonocoxites with 7–10 setae. Tergite 9 with 9–11 setae. Cercus 100–105 μm long. Seminal capsule nearly straight or slightly oval, 65–80 μm long and 60–62 μm wide. Spermathecal duct with a loop.

Description of pupa ($n=12$)

Total length 2.7–3.1 mm. Colour: Uniformly pale brown except narrow uncoloured areas between abdominal segments.

Cephalothorax: Thoracic horn as in Fig. 16H, 185–230 μm long. Maximum breadth 17–26 μm . 75–95 μm long frontal setae on distinct cephalic tubercles. 2 median and 1

lateral anteprenotals present. 1 prealar and 2 postorbital setae present. Precorneal setae as in Fig. 16H, one strong and fairly straight (68–88 μm long) seta, two weak and often very curved setae. 4 dorsocentrals, D_2 being very weak but long, other dorsocentrals much stronger. Dorsocentrals arranged almost linearly with D_3 closer to D_1 than D_4 .

Abdomen: Shagreenation of tergites 2–8 as in Figs. 16G and 16F. Tergite 1 without spinules. Other tergites with well developed spinule patches near posterior margin. Additionally very weak spinules (not drawn in Figs. 16F and 16G) present, covering remaining parts of tergites 2–8 and anterior half of anal lobe. Sternites also with such spinules covering sternites 2–6 for the most part, and anterior parts of sternites 7–8. Pedes spurii A on sternites 4–6. Distinct pedes spurii B absent. Number of setae on segments 1–8:

dorsal setae	5	5	5	5	5	5	5	5
lateral "	2	3-4	3-4	3-4	3-4	3-4	3-4	2
ventral "	4	4	4	4	4	4	4	4

Lateral setae very short and weak, some of them often absent. Caudolateral corners of segments 7 and 8 with one chitinized tooth on both sides. Anal lobe as in Fig. 16F, with 3 strong, 80–120 μm long anal macrosetae.

Remarks

The systematical position of this species is not fully clear, but it will tentatively be placed in *Zalutschia* Lipina. The male appears to be a *Zalutschia* with its few short acrostichals at the top of the scutum, moderately heavy punctation of wing membrane, similar wing venation, and straight or slightly concave transverse sternapodeme with broad and rounded oral projections. The hypopygium differs from other known *Zalutschia* (cf. Saether 1976) by having unusual weakly developed gonocoxite lobes, and lacking the anal point.

The pupa cannot be keyed according to Saether (1976), mainly because of the lack of a fringe of filaments on the anal lobe. The tergal shagreenation, the presence of "embedded spines" on the caudolateral corners of segments 7 and 8, and to a certain extent the tho-

racic horn, suggest a close relationship with the species of *Zalutschia*. However, the absence of filamentous lateral setae (all L-setae of *Z. mallae* sp. n. are hair-like), and the absence of an anal lobe fringe make this species a very atypical member of this genus.

A high similar pupal form has been illustrated by Saether (1976, p. 269) as a genus near *Zalutschia* or *Chaetocladius*. This exuvia, however, differs from *Z. mallae* in the thoracic horn. It has several denticles on the surface (Saether 1976, Fig. 82B), whereas the surface of *Z. mallae* is always quite smooth.

Ecology and distribution

The larvae of *Z. mallae* inhabit ultraoligotrophic northern lakes and perhaps also rivers. In the samples taken in the years 1969 and 1971 by B. Lindeberg and P. Virtanen the species was one of the most abundant chironomids in both the Inarijärvi and Kilpisjärvi areas. After those years no specimens have been found, although collecting in Lapland has continued to be fairly intensive.

Localities and dates: Li, Inari, Inarijärvi, 12.–18.7.1971, P. Virtanen leg.; Inari, Vainospää (771:56), 12.–16.7.1971, P. Virtanen leg.; Inari, at river Ailioja (771:56), 14.7.1971, P. Virtanen leg.; Inari, Tsuolisjärvi (770:56), 17.7.1971, P. Virtanen leg.; Inari, Sevettijärvi (771:56), 14.7.1971, P. Virtanen leg.; Le, Enontekiö, Harrijärvi (767:24), 9.–14.7.1969, B. Lindeberg leg.; Enontekiö, Saanajärvi (767:25), 11.7.1969, B. Lindeberg leg.; Enontekiö, small ponds on the fell Pikku Malla (767:24), 12.–16.7.1969, B. Lindeberg leg.; Enontekiö, two tarns north of Lake Saanajärvi (767:25), 15.7.1969, B. Lindeberg leg.

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