

Synneuridae and Pachyneuridae - one new and one poorly known family of Diptera in Norway (Diptera, Nematocera)

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The family Synneuridae is reported for the first time from Norway. One male of *Synneuron annulipes* (Lundström, 1910) was collected in a window trap, operated in Akershus, SE Norway in 1991. This evidently rare species has previously been recorded from Sweden, Finland and Russia. The family Pachyneuridae, represented by *Pachyneura fasciata* Zetterstedt, 1838, has previously been recorded once from Norway. One male of this rare species was collected by window trapping in Akershus, SE Norway in 1991. An additional Norwegian specimen, a female, collected in Hedmark, E Norway in 1967, is kept in the collection of the Zoological Museum, Bergen. Less than 30 specimens have been recorded from Europe (Finland, Sweden, Poland and Russia), and most records are more than 50 years old.

Both species have larvae living in decaying wood, and seem to have an affinity to old virgin forests. Due to their rarity, both species must be considered vulnerable and should be included in a Norwegian Red List.

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Introduction

The present paper presents the first record of the family Synneuridae and two new records of the family Pachyneuridae from Norway. The families were represented with one male each in an extensive material collected in a spruce forest in Østmarka, 15 km east of Oslo in 1991. The forest covers an area of approximately 24 km². 840 traps were operating at 70 sites, each site representing forest with different influence of cultivation. Both window, Malaise and emergence traps were used. Protection of threatened and vulnerable invertebrates is a primary goal of this ongoing research project, which is a part of the research programme "Forest ecology and multiple use". For the time being only a small fraction of the total material has been identified to species. In addition, one female of Pachyneuridae was kept in the collection of the Zoological Museum, Bergen.

The terminology in the descriptions follows McAlpine (1981).

Family Synneuridae

Two genera are included in this family, *Synneuron* Lundström, 1910 and *Exiliscelis* Hutson, 1977, with three and one species, respectively. Of these, *S. decipiens* Hutson, 1977 and *Exiliscelis californiensis* Hutson, 1977 are both Nearctic, while *S. annulipes* (Lundström, 1910) and *S. silvestre* Mamaev & Krivosheina, 1969 are Palaearctic (Hutson 1977, Peterson & Cook 1981). *S. annulipes* is the only species recorded from Scandinavia. A key to the European species of *Synneuron* is given by Hutson (1977).

The family demonstrates several primitive characters, and is considered a relict group of

Diptera (Soós 1986). Little is known about the life history and habits, but larvae have been found in moist, decaying wood permeated by mycelia (Peterson & Cook 1981, Soós 1986). Aspen (*Populus*) and spruce (*Picea abies*) are mentioned as possible hosts (Hutson 1977).

Synneuron annulipes is a small fly with a scatopid-like appearance. The species has three ocelli and short compressed antennae, flagellum with 12 flagellomeres. The compound eyes meet above the antennae, and are narrowly separated below. Labial palpi 4-segmented. Wing length about 3 mm (Fig. 1A). Membrane covered by minute microtrichia and well developed setae. Anterior veins heavily pigmented, posterior veins pale. Sc reduced. R_1 and R_{4+5} fused for a short distance before either reach costa. M_1 and M_2 both distinct, but the basal portion of M_2 missing.

New record:

AK: Rælingen, Blåtjern (EIS:29) 1♂ 24 June 1991, B. Økland. The locality is situated in an old, semi-natural spruce forest, today a natural reserve (see Korsmo, Moe & Svalastog 1991).

The body length, about 3 mm, and the genitalia, fit well with the description given by Hutson (1977). The other Palaearctic species, *S. silvestre*, recorded from the Tula region in Russia, is about twice as large as *S. annulipes*, but in other respects very similar to this species. Hutson, who did not examine any specimens of *S. silvestre*, simply refers to Mamaev and Krivosheina's note that the two species can not be separated on characters in the male genitalia. Notwithstanding, the two species can be separated on larval characters (Hutson 1977).

Anderson (1982) lists *S. annulipes* as new to Sweden from four localities in the northern parts of the country. These specimens were caught in light traps and window traps, some of them in birch forest (*Betula pubescens*). The distribution in Finland, according to Hutson (1977): Sb: Tuovilanlaks (type locality); Li:

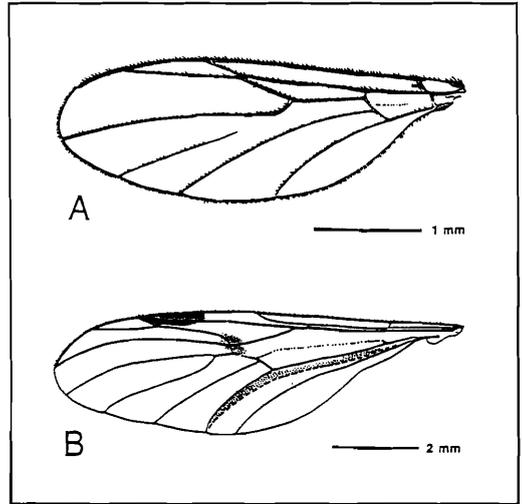


Fig. 1
Wing venation in A) *Synneuron annulipes* (Lundström, 1910) and B) *Pachyneura fasciata* (Zetterstedt, 1838).

Utsjoki and Le: Malla. Outside Fennoscandia, the species is recorded with certainty from the Moscow region and from Kantalaks in the Murmansk region, both Russia (Hutson 1977).

Family Pachyneuridae

Pachyneuridae is another small family of Diptera, represented with a single genus and two species, *Pachyneura fasciata* Zetterstedt, 1838 and *P. oculata* Krivosheina & Mamaev, 1972. Three other genera, all monotypic, usually referred to as Cramptonomyiidae, are frequently included in this family (e.g Wood 1981, Soós & Papp 1988). *Pachyneura fasciata* is the only species recorded from Scandinavia.

P. fasciata is a rather large, somewhat tipulid-like fly with black head and thorax. The Norwegian specimens were both about 12 mm long. Antennae about as long as thorax, flagellum with 15 flagellomeres. Labial palpi well developed, 5 segmented. Wings elongated, with a distinct brown stigma present at apex of R_1

(Fig. 1B). Subcosta long and ending in costa slightly before middle of wing. Four radial and three medial veins. Legs long and slender with well developed spurs. Both empodium and pulvilli present. Abdominal segments yellowish with black posterior margins which become wider towards segment 6, segments 6 to 8 almost entirely black.

The larvae are xylophagous, living in decaying wood of various deciduous trees (Krivosheina & Mamaev 1988).

New records:

HEN: Tynset, Kvikne (EIS 80), 1 ♀ 22 June 1967, A. Løken (ZMB); AK: Rælingen, Blåttjern (EIS 29), 1 ♂ 21 June 1991, B. Økland. The latter locality is situated in an old, semi-natural spruce forest, today a natural reserve (see Korsmo, Moe & Svalastog 1991).

One previous Norwegian record is given by Storm (1898): STI, Malvik, Mostadmarka (EIS 93), 1897 (?). Outside Norway, *P. fasciata* has been recorded from Sweden, Finland, Polen and Russia (Krivosheina & Mamaev 1988). In Sweden, it is only recorded from the type locality in North Sweden ("Lappon., Suecica") (Zetterstedt 1838, Väisänen 1982). In Finland 23 specimens have been recorded from a restricted number of localities in North and Central Finland in the period from 1910 to 1958 (Väisänen 1982).

Discussion

Both Synneuridae and Pachyneuridae have larvae living in decaying wood where they probably feed on mycelium. Based on previous records species in both families seem to have an affinity to undisturbed, virgin forests. According to Väisänen (1982), *P. fasciata* and *S. annulipes* were found together in an old virgin forest in Kuusamo in NE Finland in 1958. As very few records exist of these two species, they must be

characterized as rare. In Sweden and Finland, *P. fasciata* is considered vulnerable (Anderson et al. 1987, Väisänen 1982), and the species is included in the Finnish Red List (Komiteamietintö 1985).

So far, no species of Diptera are present in the Norwegian Red List (Størkersen 1992), mainly due to a restricted knowledge of the distribution and relative abundance of most groups of Diptera in Norway. However, species with such a striking appearance as *P. fasciata* are likely to be noticed by entomologists not familiar with Diptera. Even, *S. annulipes* should be easily sorted out on characters in the wing venation. Hence, the few records available in Europe, probably reflect a very restricted distribution of these two species. According to this, both *S. annulipes* and *P. fasciata* should be included as vulnerable species in forthcoming editions of the Norwegian list. Two other Diptera, both belonging to the genus *Keroplatus* in the family Keroplataidae (Mycetophiloidea), should probably also be included in a red list. These species, *K. testaceus* Dalman, 1818 and *K. dispar* Dufour, 1839, have both larvae living in webs under carpophores of different Polyporaceae. Of these, *K. dispar* was recorded from the same area as *S. annulipes* and *P. fasciata* (Økland & Sjøli 1992).

Acknowledgement

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Sammendrag

Synneuridae og Pachyneuridae - én ny og én lite kjent familie av Diptera i Norge (Diptera, Nematocera)

Familien Synneuridae er ikke tidligere påvist i Norge. En hann av *Synneuron annulipes*

(Lundström, 1910) ble fanget i malaisefelle i Akershus (EIS: 29) i 1991. Familien er kun representert med denne ene arten i Skandinavia, tidligere kjent fra Sverige og Finland. Arten er sjelden i hele sitt utbredelsesområde. Familien Pachyneuridae, representert med arten *Pachyneura fasciata* Zetterstedt, 1838, er påvist én gang tidligere i Norge. En hann av denne meget sjeldne arten ble fanget i en vindusfelle i Akershus (EIS 29) i 1991. I tillegg finnes det i samlingen ved Zoologisk Museum i Bergen et tidligere upublisert funn av arten fra Hedmark (EIS 89) i 1967. I Europa er det tilsammen kjent mindre enn 30 individer av *P. fasciata* (fra Finland, Sverige, Polen og Russland), og de fleste funnene er mere enn 50 år gamle.

Begge artene har larver som lever i døde trær, hvor de sannsynligvis ernærer seg på soppmycel. På grunnlag av sin sjeldenhet og sitt levevis, bør begge arter regnes som sårbare i Norge, og innlemmes i fremtidige versjoner av en norsk "rød-liste".

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