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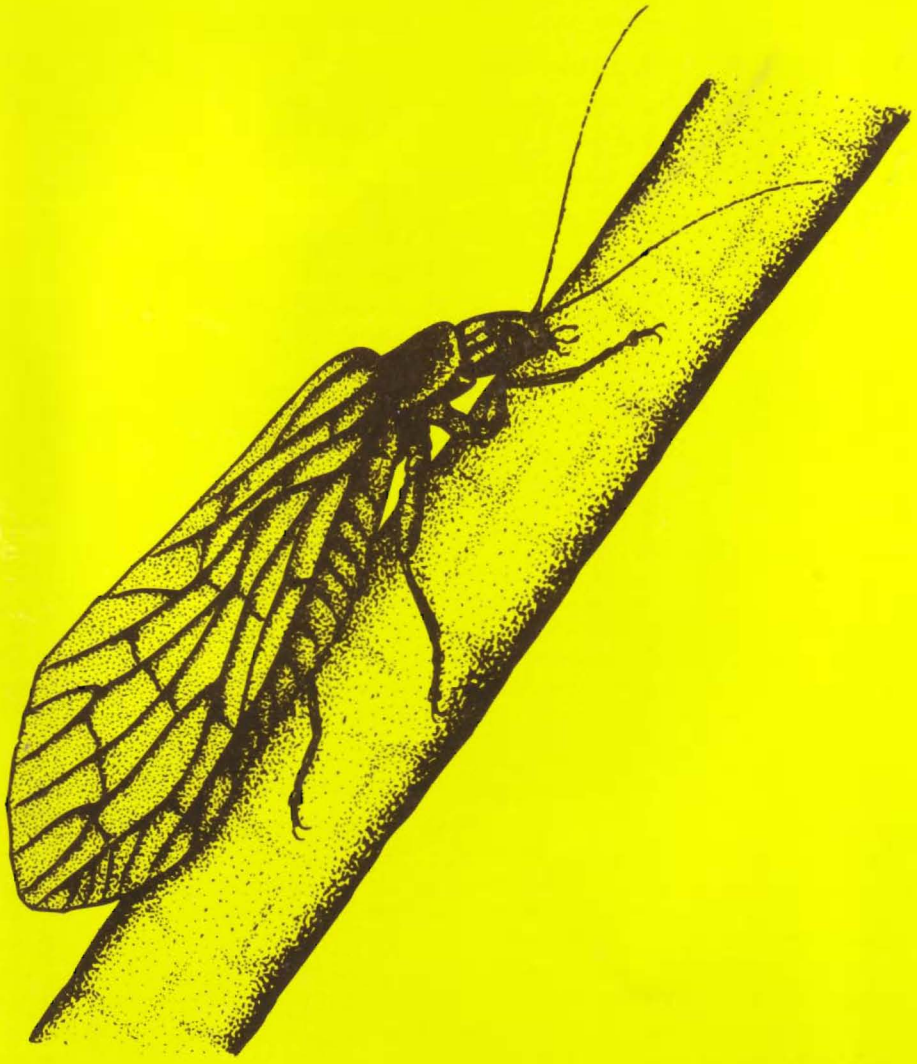

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Synneuridae and Pachyneuridae - one new and one poorly known family of Diptera in Norway (Diptera, Nematocera)

Geir E. E. Søli, Lita Greve and Bjørn Økland.

Søli, G. E. E., Greve, L. & Økland, B. Synneuridae and Pachyneuridae - one new and one poorly known family of Diptera in Norway (Diptera, Nematocera). Fauna Norv. Ser. B. 41: 49-52.

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 km^2. 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 threathened 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 scatopsid-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.

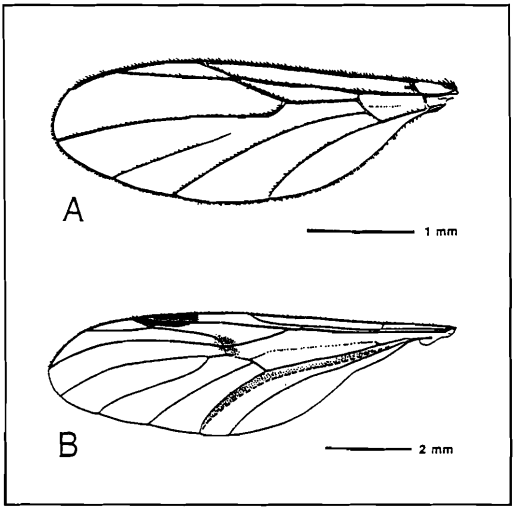

Fig. 1
Wing venation in A) Synneuron annulipes *(Lundström, 1910) and B)* Pachyneura fasciata (Zetterstedt, 1838).

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: 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, Blåtjern (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 (Komiteanmietintö 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 Keroplatidae (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 & Søli 1992).

Acknowledgement

The present study is a part of the research programme "Forest ecology and multiple use". Thanks to all contributors during the planning and field work.

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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The occurrence of males, oviparous females and eggs within anholocyclic populations of the green spruce aphid *Elatobium abietinum* (Walker) (Homoptera: Aphididae)

Clive Carter and Øystein Austarå

Carter, C. & Austarå, Ø. 1994. The occurrence of males, oviparous females and eggs within anholocyclic populations of the green spruce aphid *Elatobium abietinum* (Walker) (Homoptera: Aphididae). Fauna norv. Ser. B. 41: 53-58.

Records are given for the occurrence of sexual forms and eggs of *E. abietinum* from Norway and Britain including locations with a mild (oceanic) winter climate where this aphid was previously thought to be exclusively anholocyclic. Experimental rearing of sexual forms from 'anholocyclic' stocks and examination of samples for different chromosonal karyotypes does not suggest the existence of a different anholocyclic race in NW Europe.

Overwintering eggs were found to be uncommon, but in some years they were frequently encountered; other years none could be located. They mainly occurred as singletons, but on one occasion several hundred were found in close proximity on a small branch with mostly 2-6 eggs per needle and exceptionally up to 13 per needle. The influence of climatic abnormalities and seasonal changes in host-plant nutrient status on the two life-cycle types and their subsequent population increase is also discussed.

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Introduction

The green spruce aphid, *Elatobium abietinum* (Walker) occurs throughout N.W. Europe from the Alps to Iceland but is an especially frequent and troublesome pest in regions where a mild (oceanic) winter climate prevails (Bejer-Petersen 1962, Carter 1972). It is in these locations that anholocyclic populations can continue to breed virtually unchecked throughout the winter months. This has an important economic bearing on growing Sitka spruce in that if prolonged mild periods occur in the winter, such a resultant population can cause severe needle loss by the spring which can depress the increment over subsequent growing seasons.

Although parthenogenetic anholocyclic stocks of *E. abietinum* have been reared under laboratory conditions by various investigators in Britain and New Zealand, sexual forms were never observed in these countries nor were they recorded in the field (Theobald 1914, Cunliffe 1924, Dumbleton 1932, Fox-Wilson 1948, Hussey 1952, Bevan 1966).

In central and eastern Europe and other areas with a continental, cold winter climate, *E. abietinum* can only exist holocyclicly. Here sexual forms have been recorded, being produced in October and the resulting eggs hatching the following spring (von Scheller 1963, Kloft, Kunkel & Ehrhardt 1964). There are other places such as Schleswig-Holstein and the Rhine Valley that are geographically and climatologically intermediate between the British Isles and Eastern Europe where the insect may perhaps overwinter paracyclicly in some years.

The differences in life cycles between locations in Britain and inland Continental Europe for exam-

ple, although being along the same latitude (52°N) (having identical seasonal photoperiods), has made us suspect that there may be an anolocyclic race in existence in those areas with mild winter weather.

The appearance of sexual forms in other aphid species has been correlated with environmental factors; photoperiod and temperature have been mainly attributed to this (Lees 1959, 1966, Hille Ris Lambers 1966) although host-plant phenology, physiological condition and changes in food quality may also have an influence on aphid growth rates and morph determination (Swenson 1971, Bevan & Carter 1975, Fisher 1982).

Testing an anholocyclic colony for sexual form production by exposure to continental autumn temperatures

The geographical distribution of *Elatobium abietinum* in Europe and that of the different life cycles, provided an opportunity to check whether these climatic principles applied in this species. Firstly three climatological stations were chosen (Birmingham, Kassel and Warsaw) representing each locality for a type of life cycle and being on the same latitude of approximately 52.3°N. The average monthly temperatures, July to November, of these stations (given by Thran & Broekhuisan 1965) were compared (see **Table 1**). As these areas share the same latitude and therefore the same photoperiod, it was necessary now only to apply a suitable sequence of monthly temperatures to repeat conditions at any one of the stations.

On 15 September an established colony of *E. abietinum* on a young Norway spruce (*Picea abies*) tree from Alice Holt, Hampshire, was placed in an illuminated environmental chamber with temperature and daylength initially resembling a region on the same latitude in Europe where sexuales are known to occur. For this purpose Warsaw was selected having, by this date, 12.5 hr. daylight and a mean monthly air temperature of 13.5°C. After 15 days the two values were reset to an 11.5 hour photoperiod and 10.6°C air temperature which was held until the end of the experiment. Alate males were first observed on 23 October and a total of 7 males had been produced by 1 November. On 10 November the remaining insects were removed from the plant for examination, they consisted of 53 apterous viviparous females, 67 immature apterae, a further 2 alate males, 8 immature males and 2 oviparous females. No eggs were laid on the plant nor were they present in the bodies of the oviparae.

It is possible that the timing of the temperature and photoperiod treatment is important for the induction of sexuales. Another experiment was conducted on a naturally infested plant starting 10 November and was subjected to an identical sequence of temperatures and photoperiod, but no sexuales were produced.

Table 1. *Comparison of monthly mean temperatures (°C) from meteorological stations representing those districts where different life cycle types of Elatobium abietinum occur. The average photoperiods are the same at all locations (52.3°N).*

Av. monthl. daylight hours	June 16.7	July 16.2	Aug. 14.5	Sept. 12.5	Oct. 11.5
Locality					
Warsaw (*holocyclic*)	17.7	18.9	17.9	13.5	8.0
Kassel (*paracyclic*	15.4	16.9	16.1	13.1	8.6
Birmingham (*anholocyclic*)	13.8	16.5	16.4	14.5	11.0
Experimental test	14.1	17.1	15.9	12.0	10.6

The occurrence of sexual forms and eggs in the British isles

In the late autumn of 1972 and 1973 sexuales and eggs were found occurring naturally over a wide area of Britain. At all localities the sexuales were found in dense colonies on Sitka spruce but occurred as a small percentage of the total number of individuals in each colony (see **Table 2**). These autumns were unusually dry; less than 75 per cent of the average amount of rain fell in many districts. Such conditions terminate shoot extension much earlier compared with those growing seasons that are wetter than average. It has long been observed that dormant spruce trees are more conducive to colony development than actively growing trees. The completion of shoot growth and hardening-off of the host-plant foliage by an early date in the year produces plant material favourable for colony development (Carter & Nichols 1988).

This parallels the conditions under which sexuales were successfully induced in controlled temperature and gradually declining daylength appropriate to 52.3°N from mid-September onwards. In contrast to the 1972 and 1973 weather, the next year was much wetter and milder than average, and in many districts young Sitka spruce (Queen Charlotte Islands origin) continued shoot growth well into November. Some of the sites were revisited but no eggs or sexuales could be found. It was assumed therefore that the trees up to this time were rendered unfavourable for both colony development and the induction of sexuales.

The discovery of sexual forms in Britain at that time lead to a brief enquiry into possible chromosome figure abnormalities that may be present if the anholocyclic populations had become split off from the normal holocyclic populations. Although samples for karyotype examination were collected from widely separated areas in Britain there were no indications in chromosome morphology that would suggest the existence of an anholocyclic race.

The occurrence of sexual forms and eggs in Norway

The first known record of *E. abietinum* is from West Norway, when Theobald (1914) found the aphid in 1891 near the township of Odda. He

Table 2. *Records of Elatobium abietinum males and oviparae in the British Isles*

	Year	Date	Location	Host plant
1 male	1970	21 Jan	Alice Holt, Hampshire	*Picea sitchensis*
oviparae	1971	2 Dec	*Alice Holt, Hampshire	*Picea sitchensis*
4 males	1972	5 Oct	*Alice Holt, Hampshire	*Picea sitchensis*
oviparae	1972	30 Oct	Pembrey, Carmarthen	*Picea sitchensis*
oviparae	1972	11 Nov	Keswick, Cumberland	*Picea sitchensis*
oviparae	1972	22 Nov	Neroche, Somerset	*Picea sitchensis*
1 male	1972	28 Nov	Glenisla, Angus	*Picea abies*
oviparae and eggs	1973	16 Jan	Mount Mellory, Co Tipperary	*Picea sitchensis*
oviparae and eggs	1973	17 Jan	Ballyhoura, Co Cork	*Picea sitchensis*
oviparae and eggs	1973	18 Jan	Bweelane Mountain, Co Cork	*Picea sitchensis*
1 male	1973	10 Oct	Hartland, Devon	*Picea sitchensis*
oviparae	1973	8 Nov	*Alice Holt, Hampshire	*Picea sitchensis*
1 ovipara	1973	23 Nov	*Alice Holt, Hampshire	*Picea sitchensis*
1 male	1990	15 Oct	Alice Holt, Hampshire	*Picea sitchensis*
1 male	1990	24 Oct	Alice Holt, Hampshire	*Picea sitchensis*

* in aphid colonies being reared in natural daylength in an unheated glasshouse.

does not mention the host tree, but most probably it must have been *Picea abies*.

Heavy infestations on Sitka spruce were reported for the first time in 1957 (Tambs-Lyche 1957). Since then, more or less frequent mass-outbreaks have occurred, from the southernmost parts of Norway to the far north (Christiansen 1969, Ehnström et. al. 1974, Löyttyniemi et. al. 1979, Austarå et. al. 1981).

Normally, in Norway *E. abietinum* exists anholocyclicly. However, in 1963 eggs were found at Berkåk in Sør-Trøndelag county (Kloft, Kunkel & Erhardt 1964). Later, after particularly heavy attacks in West and North Norway in 1987, large numbers of eggs and oviparae were found in samples of spruce branches sent to the Norwegian Forest Research Institute (**Table 3**). Viviparae were found in all locations. An unusual event was the large number of eggs in the Førde collection laid in close proximity on the branch, and the marked tendency for 2 to 6 eggs being laid on one needle, while von Scheller (1963) states that the eggs usually occur as singletons. The distribution of egg numbers from the Førde collection is listed in **Table 4**.

All egg samples contained both yellow and black eggs. According to von Scheller (1963), the newly deposited eggs to *E. abietinum* are yellow, and gradually change colour to black. None of the yellow eggs turned black but shrivelled and died. The most likely reason being that these eggs had not been fertilized (Heie 1980, p. 46). At outdoor temperatures the black eggs stayed turgid until the last days of April. At that time a few nymphs hatched from the egg samples of the three localities Førde, Ørland and Vatnfjord. The morphological details of the young nymphs fit in with the description given by von Scheller (1963).

In 1987 the weather in September, October and November was considerably drier compared to the same months in 1986 and 1988 and with less rainfall than the long term normal. As discussed in the former chapter, dry conditions might be one of the factors favouring the induction of sexuales.

Discussion

In most holocyclic aphid species there is a morphologically distinct sexupara stage that gives rise to males and oviparae. This would be expected in September or October but as yet has not been found. Continous trapping of migrant aphids over

Table 3. *Records of Elatobium abietinum eggs and oviparae in Norway in the autumn and winter/spring 1987/88.*

	Year	Date	Location	Lat.	Long.	Host
Eggs & oviparae	1987	5 Nov	Førde	61°26'N	5°37'E	Picea sitchensis
Eggs	1987	15 Dec	Ørland	62°47'N	9°45'E	Picea sitchensis
Eggs & oviparae	1987	17 Dec	Leknes	68°08'N	13°75'E	Picea lutzii
Eggs & oviparae	1988	2 Feb	Vevang	63°00'N	7°10'E	Picea sitchensis
Eggs	1988	20 Mar	Smøla	63°25'N	7°50'E	Picea sitchensis
Eggs	1988	21 Mar	Vatnfjord	68°22'N	14°30'E	Picea lutzii
Eggs	1988	10 May	Leksvik	63°40'N	10°30'E	Picea sitchensis

Table 4. *Number of Elatobium abietinum eggs per needle from Førde in Sogn & Fjordane, Norway, 5 November 1987 (collection No. 82).*

number	0	1	2	3	4	5	6	7	8	9	10	11	12	13
frequency	19	22	43	48	40	43	35	28	14	5	7	5	4	2
%	5.8	6.7	13.2	14.7	12.3	13.2	10.7	8.6	4.3	4.6	2.1	1.5	1.2	0.6

several years revealed only a single flight period of *E. abietinum* virginoparae in the early summer (Carter & Cole 1977). The detailed morph-determination investigation of Fisher (1982) demonstrated that peak number of alate virginoparae occur in spring when photoperiods are increasing and amino-acid concentration of the spruce needles is high; he found only a very low proportion of oviparae which were produced in response to both shortening photoperiods, and a change in host plant quality on the onset of tree dormancy.

Von Scheller (1963) suggested that egg-laying stages in the life cycle of this species is suppressed in Britain and North America where a mild oceanic winter climate favours the existence of pure parthenogenetic reproduction. The critical minimum air temperature causing significant mortality to occur is -8°C (Carter 1972). However, eggs of this aphid are likely to tolerate any winter in such zones and zones with a severe winter climate since they appear to survive temperatures as low as -30°C. Although the eggs would enable this species to survive most winters, and therefore initiate new attacks, they do not hatch until well into the spring (von Scheller 1963) and would therefore not be able to go through as many generations compared with the overwintering virginoparae that can take advantage of mild interludes for breeding in winter and early spring.

Since *E. abietinum* populations usually collapse by early summer probably due to both nutritionally unfavourable host plants and predation, the offspring from the hatching eggs would have little time to increase so as to have a great impact on tree growth. It seems likely that the combination of these circumstances could explain why outbreaks are less frequent in central Europe. A shorter growing season and early dormancy of spruce either inherited from northern genotypes or environmentally controlled by drought stress for example, will give rise to heavy and more serious autumn attacks. It is conceivable therefore that only slight displacements in climatic conditions are needed in order to markedly alter the seasonal population pattern in newly afforested upland areas especially as there will be few predators present to regulate population increase.

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Sammendrag

Forekomst av hanner, eggleggende hunner og egg i anholosykliske populasjoner av sitkagranlusen.

I kontinentalt klima overvintrer sitkagranlusen hovedsakelig på eggstadiet, mens i atlantiske klimaområder skjer overvintringen normalt som vingeløse, vivipare hunner. Under spesielt milde vintre i disse områdene kan en betydelig formering skje, uhindret av parasitter og predatorer. Etter slike vintre forekommer ofte masseangrep av lusen i sitkaplantningene. Imidlertid er det i enkelte år registrert forekomster av hanner, eggleggende hunner og egg fra en rekke lokaliteter i Norge og Storbritannia, også fra områder med mildt vinterklima hvor en tidligere antok at sitkagranlusen bare levde anholosyklisk. Hovedsakelig var eggene lagt enkeltvis eller 1-2 på hver nål, slik det er mest vanlig. I en lokalitet ble det funnet flere hundre egg på en gren med hovedsakelig 2-6 egg pr. nål og unntaksvis opp til 13 egg pr. nål. I et eksperiment lykkes det å frembringe både hanner og eggleggende hunner fra "anholosykliske" populasjoner. Dette, i tillegg til kromosomundersøkelser, antyder at det ikke finnes en egen anholosyklisk rase som skulle være utskilt fra en holosyklisk. Klimatiske avvik fra normalen og årstids-variasjoner i vertsplantens næringsstatus kan ha betydning for hvilken av de to livssyklus-

typene som vil dominere i et område og hvordan populasjonsutviklingen vil forløpe.

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Faunal records of Agromyzidae (Diptera) from Norway

Arild Andersen & Terje Jonassen

Thirty eight species of Agromyzidae are reported from Norway for the first time. This increases the known Norwegian agromyzid fauna by 26%. In addition, finds from new geographical areas within Norway are given for 42 other species. Seven of the species attack barley. The little investigated Norwegian agromyzid fauna is discussed. Fauna Norv. Ser. B. 41: 59-64.

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Introduction

The agromyzid fauna of Norway is poorly known. When K.A. Spencer published "The Agromyzidae (Diptera) of Fennoscandia and Denmark" in 1976, he reported 244 species from Sweden and only 144 species from Norway. Furthermore, 83 of the Norwegian species (=58%) had been found in only one geographical district, and from 9 of the 37 districts no species were reported.

Griffiths (1980) added 3 species to the Norwegian fauna when revising the *Chromatomyia* miners on monocotyledones. However, as a consequense of this revision, the older Norwegian material of the group needs reidentification.

Some agromyzids are pests on cultivated plants. Rygg (1985) and Andersen (1989, 1991) investigated the cereal pest *Chromatomyia fuscula* (Zetterstedt), and Stenseth (1985) reviewed the agromyzid species appearing as pests in Norwegian greenhouses.

Materials and methods

The present report is based on agromyzids collected mainly in southern and middle Norway during 1984-93. They were collected in malaise traps, yellow watertraps and emergence traps. The geographical division of the districts follows Økland (1981). Except for a few specimens donated to M. von Tschirnhaus, the material is in the collection of the first author.

Results

Agromyza albipennis Meigen
ON, Nord-Fron: Vinstra, EIS62, 2♂♂. NTI, Høylandet: Skiftesåa, EIS107, 1♂. NTI, Stjørdal: Værnes, EIS92, 2♂♂, 1♀. Recorded in June-July.

Agromyza felleri Hering
AK, Bærum: Ostøya, EIS28, 12-30 May 1984, 1♂.

Agromyza intermittens (Becker)
AK, Ås: Ås kirke, EIS28, 1♂. ON, Nord-Fron: Vinstra, EIS62, 2♀♀. NTI, Stjørdal: Værnes, EIS92, 1♂, 2♀♀. Recorded in late May to early July. Not previously reported from Norway.

Agromyza luteitarsis (Rondani)
ON, Nord-Fron: Vinstra, EIS62, 31 May-20 June 1988, 4♀♀. Not previously reported from Norway.

Agromyza nigripes Meigen
AK, Frogn: Håøya, EIS28, 3♂♂. RY, Finnøy: Kyrkjøy, EIS14, 1♂. NTI, Høylandet: Tverråa, EIS107, 1♂. Recorded in late June to Aug.

Agromyza potentillae (Kaltenbach)
RY, Finnøy: Kyrkjøy, EIS14, 8-14 June 1988, 1♂.

Agromyza pseudoreptans Nowakowski
AK, Bærum: Ostøya, EIS28, 1♂. RY, Finnøy: Kyrkjøy, EIS14, 1♂. RI, Forsand: Songesand, EIS7, 1♂. Recorded in late July to Sept. Not previously reported from Norway.

Agromyza rondensis Strobl
AK, Ås: Ås kirke, EIS28, 2♂♂ hatched from barley plants. RY, Klepp: Særheim, EIS7, July 1988, 1♂ hatched from barley plants.

Agromyza spiraeoidearum Hering
RY, Finnøy: Kyrkjøy, EIS14, 16-20 July 1987, 1♂; Tysvær: Nedstrandsfjella, EIS14, 23 July 1988, 1♂.

Agromyza vicifoliae Hering
AK, Bærum: Ostøya, EIS28, 10 June-1 July 1984, 1♂.

Amauromyza (Cephalomyza) luteiceps (Hendel)
AK, Ås: Åsmyra, EIS28, 13 Juli-1 Aug. 1989, 1♂. VE, Borre: Bastøy, EIS19, 15 June-3 Aug. 1989, 11♂♂, 3♀♀. Not previously reported from Norway.

Cerodontha (Cerodontha) denticornis (Panzer)
AK, Ås: Ås kirke, EIS28, 41♂♂, 55♀♀. RY, Finnøy: Kyrkjøy, EIS14, 1♂. RI, Forsand: Songesand skule, EIS7, 1♀, 1♂.

Cerodontha (Xenophytomyza) atronitens (Hendel)
AK, Bærum: Ostøya, EIS28, 30 May-10 June 1984, 2♂♂. Not previously reported from Norway.

Cerodontha (Xenophytomyza) biseta (Hendel)
AK, Bærum: Ostøya, EIS28, 10 June-1 July 1984, 1♂. Not previously reported from Norway.

Cerodontha (Xenophytomyza) venturii Nowakowski
AK, Bærum: Ostøya, EIS28, 30 May-10 June 1984, 1♂.

Cerodontha (Poemyza) atra (Meigen)
AK, Bærum: Ostøya, EIS28, 1-24 July 1984, 1♂. Not previously reported from Norway.

Cerodontha (Poemyza) calosoma (Hendel)
AK, Bærum: Ostøya, EIS28, 1-24 July 1984, 1♂. NTI, Høylandet: Skiftesåa, EIS107, 1-9 July 1987, 1♂.

Cerodontha (Poemyza) incisa (Meigen)
ON, Nord-Fron: Vinstra, EIS62, 15-18 May 1986, 1♂, 1♀.

Cerodontha (Poemyza) muscina (Meigen)
AK, Bærum: Ostøya, EIS28, 1♂. ON, Nord-Fron: Vinstra, EIS62, 1♂. RY, Finnøy: Kyrkjøy, EIS14, 1♂. Recorded in June to Sept.

Cerodontha (Phytagromyza) flavocingulata (Strobl)
AK, Frogn: Håøya, EIS28, 16-27 June 1984, 1♂. RY, Finnøy: Kyrkjøy, EIS14, 8-14 June 1988, 1♂. Not previously reported from Norway.

Cerodontha (Dizygomyza) bimaculata (Meigen)
RY, Finnøy: Kyrkjøy, EIS14, 20-27 May 1988, 1♂.

Cerodontha (Dizygomyza) ireos (Robineau-Desvoidy, 1851)
AK, Ås: Syverud, EIS28, 12-27 June 1988, 1♂. NTI, Høylandet: Tverråa, EIS107, 11-18 June 1987, 2♂♂. Not previously reported from Norway.

Cerodontha (Dizygomyza) luctuosa (Meigen)
VE, Borre: Bastøy, EIS19, 3-17 Aug. 1989, 1♂. NTI, Høylandet: Skiftesåa, EIS107, 1-9 July 1986, 1♂.

Chromatomyia fuscula Zetterstedt
OS, Østre Toten: Apelsvoll, EIS45, 2♂♂,2♀♀; Hundorp: Kvarvet, EIS62, 45 ♂♂,40♀♀. VE, Borre: Bastøy, EIS19, 1♂. RY, Klepp: Særheim, EIS7, 2♂♂,1♀; Finnøy: Kyrkjøy, EIS14, 1♂. RI, Forsand: Songesand skule, EIS7, 2♂♂. SFI, Lærdal: Lærdalsøyri, EIS51, 58♂♂,7♀♀. NSY, Bodø: Vågønes, EIS130, 15 specimens. A very numerous species found all over Norway. Appearing as a serious pest in cereal and grass fields. Main flight periods in May-June and late July-Aug.

Chromatomyia horticola (Goureau)
AK, Ås: Ås kirke, EIS28, 32♂♂; Frogn: Knardal, EIS28, 1♂,12♀♀ leg. C. Stenseth. Hatched from *Centaurea cyanus* in a greenhouse. OS, Østre Toten: Apelsvoll, EIS45, 1♂. ON, Nord-Fron: Vinstra, EIS62, 2♂♂. RY, Klepp: Særheim, EIS7, 6♂♂. Recorded in May to Aug.

Chromatomyia isicae (Hering)
ON, Nord-Fron: Vinstra, EIS62, 2♂♂,2♀♀ hatched from a sample of different grass species; 5♂♂. STI, Meldal: Kløvsteinbakken, EIS86, 7♂♂. Recorded in May to Aug. Not previously reported from Norway.

Chromatomyia luzulae (Hering)
AK, Bærum: Ostøya, EIS28, 12-30 May 1984, 1♂.

Chromatomyia nigra (Meigen)
RY, Klepp: Særheim, EIS7, 590♂♂,9♀♀; Finnøy: Kyrkjøy, EIS14, 3♂♂. SFI, Lærdal: Lærdalsøyri, EIS51, 2♂♂. NTI, Stjørdal: Kvithamar, EIS92, 2♂♂. Recorded in April to Aug. Not previously reported from Norway.

Chromatomyia opacella (Hendel)
NTI, Høylandet: Tverråa, EIS107, 25 June-1 July 1987, 1♂.

Liriomyza bryoniae (Kaltenbach)
AK, Ås: Ås kirke, EIS28, 15-17 July 1985, 1♂,1♀.

Liriomyza gudmanni Hering
AK, Bærum: Ostøya, EIS28, 30 May-10 June 1984, 1♂. Not previously reported from Norway.

Liriomyza infuscata Hering
AK, Bærum: Ostøya, EIS28, 12 May-10 June 1984, 2♂♂. Not previously reported from Norway.

Liriomyza orbona (Meigen)
AK, Ås: Ås kirke, EIS28, 2♂♂. OS, Østre Toten: Apelsvoll, EIS45, 1♂. RY, Klepp: Særheim, EIS7, 147♂♂,4♀♀. Not previously reported from Norway.

Liriomyza phryne Hendel
AK, Ås: Norderås, EIS28, 15 May-2 June 1989, 1♂. Not previously reported from Norway.

Liriomyza strigata (Meigen)
VE, Borre: Bastøy, EIS19, 25 May-3 Aug. 1989, 13♂♂,3♀♀. NTI, Stjørdal: Værnes, EIS92, 8 July-19 Aug. 1991, 1♂,2♀♀.

Liriomyza taraxaci Hering
ON, Nord-Fron: Vinstra, EIS62, 18-21 May 1986, 1♂.

Napomyza albipennis (Fallén)
AK, Bærum: Ostøya, EIS28, 30 May-10 June 1984, 5♂♂. OS, Østre Toten: Apelsvoll, EIS45, 9-16 June 1988, 1♂. Not previously reported from Norway.

Napomyza elegans (Meigen)
NTI, Høylandet: Tverråa, EIS107, 6-13 Aug. 1987, 1♂.

Napomyza evanescens (Hendel)
AK, Frogn: Håøya, EIS28, 1♂. NTI, Høylandet: Tverråa, EIS107, 1♂; Høylandet: Skiftesåa, EIS107, 1♂. Recorded in June-July. Not previously reported from Norway.

Napomyza lateralis (Fallén)
AK, Frogn: Håøya, EIS28, 19 May-13 June 1984, 1♂; Ås: Ås kirke, EIS28, June-Aug. 1988-92, 11♂♂,2♀♀. Not previously reported from Norway.

Napomyza scrophulariae Spencer
RY, Finnøy: Kyrkjøy, EIS14, 20-27 May 1988, 1♂.

Paraphytomyza cornigera Griffiths
AK, Bærum: Ostøya, EIS28, 12-30 May 1984, 1♂. Not previously reported from Fennoscandia or Denmark.

Paraphytomyza trivittata (Loew)
AK, Bærum: Ostøya, EIS28, 30 May-10 June 1984, 50♂♂. Not previously reported from Norway.

Phytoliriomyza arctica (Lundbeck)
OS, Sør-Fron: Hundorp, Kvarvet, EIS62, 9-12 May 1986, 1♂. Not previously reported from Norway.

Phytoliriomyza hilarella (Zetterstedt)
RY, Finnøy: Bjergøy, EIS14, 24 June-8 July 1991, 1♂. RI, Forsand: Songesand skule, EIS7, 28 June 1984, 1♂. Not previously reported from Norway.

Phytoliriomyza venustula Spencer
AK, Ås: Ås kirke, EIS28, 4-13 Sept. 1991, 1♂. Not previously reported from Norway.

Phytomyza affinis Fallén
RY, Finnøy: Kyrkjøy, 16 July 1988, 1♂. Not previously reported from Norway.

Phytomyza anderi (Rydén)
AK, Bærum: Ostøya, EIS28, 1 July-1 Sept. 1984, 3♂♂. Not previously reported from Norway.

Phytomyza angelicae Kaltenbach
RY, Finnøy: Kyrkjøy, EIS14, 20-27 May 1988, 1♂.

Phytomyza aquilonia Frey
OS, Sør-Fron: Hundorp, Kvarvet, EIS62, 18-21 May 1986, 1♂.

Phytomyza buhriella Spencer
ON, Nord-Fron: Vinstra, EIS62, 15 July-5 Aug. 1986, 1♂. Not previously reported from Fennoscandia or Denmark.

Phytomyza calthivora Hendel
NTI, Høylandet: Skiftesåa, EIS107, 25 June-30 July 1987, 2♂♂. Not previously reported from Norway.

Phytomyza campanulivora Spencer
AK, Bærum: Ostøya, EIS28, 24 July-1 Sept. 1984, 3♂♂. Not previously reported from Norway.

Phytomyza chaerophylli Kaltenbach
AK, Frogn: Håøya, EIS28, 18 Aug.-16 Sept. 1984, 1♂.

Phytomyza continua Hendel
AK, Bærum: Ostøya, EIS28, 1♂; Ås: Åsmyra, EIS28, 1♂; Ås: Ås kirke, EIS28, 1♂, 1♀. VAY, Flekkefjord: Hidra, Krågedal, EIS4, 2♂♂. RY, Finnøy: Bjergøy, Furre, EIS14, 1♂,1♀. NTI, Stjørdal: Værnes, EIS92, 1♀. Recorded in June to Sept. Not previously reported from Norway.

Phytomyza crassiceta Zetterstedt
AK, Bærum: Ostøya, EIS28, 4♂♂; Ås: Ås kirke,

EIS28, 2♂♂. OS, Østre Toten: Apelsvoll, EIS45, 1♂.

Phytomyza fallaciosa Brischke

STI, Meldal: Kløvsteinbakken, EIS86, 31 Aug.-7 Sept. 1987, 1♂.

Phytomyza flavicornis Fallén

ON, Nord-Fron: Vinstra, EIS62, 12-18 May 1986, 3♂♂,1♀. RY, Finnøy: Kyrkjøy, EIS14, 17-29 May 1986, 3 ex.

Phytomyza glechomae Kaltenbach

ON, Nord-Fron: Vinstra, EIS62, 18-24 May 1986, 13♂♂,2♀♀. Not previously reported from Norway.

Phytomyza hedingi Rydén

OS, Sør-Fron: Hundorp, Kvarvet, EIS62, 20 Aug. 1986, 1♂.

Phytomyza hendeli Hering

AK, Ås: Åsmyra, EIS28, 16 May 1986, 1♂. VE, Borre: Bastøy, EIS19, 28 April-12 May 1989, 1♂,1♀.

Phytomyza ilicis Curtis

RY, Finnøy: Kyrkjøy, EIS14, 3 June 1989, 1♂ on *Ilex aquifolium.*

Phytomyza leucanthemi Hering

AK, Bærum: Ostøya, EIS28, 24 July-12 Aug. 1984, 1♂. RY, Finnøy: Kyrkjøy, EIS14, 21 July 1988, 1♂.

Phytomyza nigripennis Fallén

RY, Finnøy: Kyrkjøy, EIS14, 12 May 1988, 1♂.

Phytomyza pimpinellae Hendel

ON, Nord-Fron: Vinstra, EIS62, 6♂♂ VE, Borre: Bastøy, EIS19, 4♂♂. Recorded in late April-May. Not previously reported from Norway.

Phytomyza ptarmicae Hering

AK, Frogn: Håøya, EIS28, 27 June-18 Aug. 1984, 5♂♂. Not previously reported from Norway.

Phytomyza ramosa Hendel

RY, Finnøy: Kyrkjøy, EIS14, 16-25 May 1992, 2♂♂.

Phytomyza ranunculi (Schrank)

AK, Frogn: Håøya, EIS28, 1♂. OS, Sør-Fron: Hundorp, Kvarvet, EIS62, 11 ex. RY, Rennesøy: Vikevåg, EIS14, 1♂. NTI, Høylandet: Tverråa, EIS107, 1♂; Stjørdal: Værnes, EIS92, 1♀. Recorded in May and August-Sept.

Phytomyza rufipes Meigen

AK, Ås: Ås kirke, EIS28, 15♂♂, 21♀♀. ON, Nord-Fron: Vinstra, EIS62, 5♂♂,3♀♀. RY, Klepp: Særheim, EIS7, 2♀♀; Finnøy: Kyrkjøy, EIS14, 1♂. NTI, Stjørdal: Kvithamar, EIS62, 3♂♂,3♀♀. Recorded in May to Sept.

Phytomyza rydeni Hering

AK, Bærum: Ostøya, EIS28, 10 June-1 July 1984, 1♂. Not previously reported from Norway.

Phytomyza sedicola Hering

AK, Bærum: Ostøya, EIS28, 30 May-10 June 1984, 1♂.

Phytomyza soenderupi Hering

AK, Bærum: Ostøya, EIS28, 1♂; Ås: Ås kirke, EIS28, 2♂♂. ON, Nord-Fron: Vinstra, EIS62, 4♂♂. NTI, Høylandet: Tverråa, EIS107, 2♂♂. Recorded in late May-June. Not previously reported from Norway.

Phytomyza soenderupiella Spencer

VE, Borre: Bastøy, EIS19, 28 April-12 May 1989, 1♂,2♀♀. Its only recorded hostplant, *Anemone pratensis* L., is numerous on the island. Not previously reported from Norway.

Phytomyza spoliata Strobl

RY, Finnøy: Kyrkjøy, EIS14, 20-27 May 1988, 1♂. Not previously reported from Norway.

Phytomyza spondyli Robineau-Desvoidy

RY, Finnøy: Kyrkjøy, EIS14, 1 June 1987, 1♂.

Phytomyza virgaureae Hering

NTI, Overhalla: Ranemsletta, EIS106, 22-30 July 1985, 1♂; Høylandet: Skiftesåa, EIS107, 4-11 June 1987, 1♂.

Phytomyza wahlgreni Rydén

OS, Sør-Fron: Hundorp, Kvarvet, EIS62, 1♂. ON, Nord-Fron: Vinstra, EIS62, 1♂. RY, Klepp: Særheim, EIS14, 1♂. SFI, Lærdal: Lærdalsøyri, EIS51, 1♂. Recorded in June to early Aug.

Pseudonapomyza atra (Meigen)

AK, Ås: Ås kirke, EIS28, 2♀♀, 7♂ Recorded in late May to Aug. Not previously reported from Norway.

Pseudonapomyza europaea Spencer

VE, Borre: Bastøy, EIS19, 26 June-3 July 1989, 2♂♂. Not previously reported from Fennoscandia and Denmark.

Discussion

The material includes 38 agromyzid species not previously reported from Norway, of which three are new also to Fennoscandia and Denmark, compared to Spencer (1976). This increases the known Norwegian agromyzid fauna by 26%. Due to taxonomic revisions by Griffiths (1980), old material will have to be checked before the exacte number of agromyzid species recorded in Norway can be given. It is slightly less than 150. Finds from new geographical districts within Norway are given for 42 other species.

Among the reported species the following are all expected to attack barley in Norway. Their host plants belong to the Gramineae (Spencer 1973), and they were either caught frequently in barley fields, in emergence traps in barley fields or they emerged directly from pupae in barley leaves: *Agromyza albipennis, A. intermittens, A. rondensis, Cerodontha denticornis, Chromatomyia nigra, Liriomyza orbona* and *Pseudonapomyza atra.*

The agromyzid fauna of Norway has been investigated to some extent in only a few districts. These are primarily Akershus county (AK) and Oppland county, Northern part (ON). The present results come from trapping in only a limited number of habitats and districts, and clearly shows the need for further investigations of the agromyzid fauna of Norway.

Acknowledgement

We are deeply indebted to Dr. Michael von Tschirnhaus for verifying and identifying specimens. Sincere thanks go to Dr. K.A. Spencer for kindly giving us specimens, and to Øystein Kjos and Stein Winæs for technical assistance. Finally, sincere thanks goes to the collectors F. Midtgaard and J.O. Solem, and to T. Hofsvang who criticized the manuscript.

Sammendrag

Faunisiske funn av norske minerfluer

Følgende 38 arter av minerfluer rapporteres som nye for Norge: *Agromyza intermittens, A. luteitarsis, A. pseudoreptans, Amauromyza luteiceps, Cerodontha atronitens, C. biseta, C. atra, C. flavocingulata, C. ireos, Chromatomyia isicae, C. nigra, Liriomyza gudmanni, L. infuscata, L. orbona, L. phryne, Napomyza albipennis, N. evanescens, N. lateralis, Paraphytomyza cornigera, P. trivittata, Phytoliriomyza arctica, P. hilarella, P. venustula, Phytomyza affinis, P. anderi, P. buhriella, P. calthivora, P. campanulivora, P. continua, P. glechomae, P. pimpinellae, P. ptarmicae, P. rydeni, P. soenderupi, P. soenderupiella, P. spoliata, Pseudonapomyza atra* og *P. europaea*. Tre av disse er også nye for Fennoskandia og Danmark. Dette øker den kjente norske minerfluefaunaen med ca.26%. Syv arter angrep byggplanter.

Mesteparten av materialet ble fanget i malaisefeller eller gule vannfeller, ofte i forbindelse med andre prosjekter. Materialet er innsamlet av mange personer, men det oppbevares nå hos den førstnevnte forfatteren.

Den dårlig undersøkte norske minerfluefaunaen blir kommentert og diskutert.

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Studies on Norwegian Aphids (Hom., Aphidoidea) III

Helene Tambs-Lyche and Ole E. Heie

Tambs-Lyche, Helene & Heie, Ole E. 199.. Studies on Norwegian Aphids (Hom., Aphidoidea) III. Fauna norv. Ser. B. 41: 65-84.

The present paper is the third part of a list of Norwegian aphids, and comprises 169 species of the remaining fauna, belonging to the families Mindaridae, Hormaphididae, Anoeciidae, Thelaxidae, Pemphigidae, Drepanosiphidae (including the subfamily Chaitophorinae), part of Aphididae (the genera not treated in the previous two papers, parts I (1968) and II (1970)) and Lachnidae. Additions to parts I and II are given in an addendum. The total number of species found in Norway is 329.

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Introduction

The present paper is a continuation of a survey of aphid species found in Norway, based upon Helene Tambs-Lyche's own finds on plants, on trap catches from yellow trays (Moericke-traps), on a smaller collection of aphids from the Zoological Museum, Bergen, on a few finds by other collectors, and on literature.

Part I (Tambs-Lyche 1968) dealt with the subfamily Dactynotinae (now regarded as part of the subtribe Macrosiphina within the subfamily Aphidinae in the family Aphididae), and part II (Tambs-Lyche 1970) dealt with the subfamily Myzinae (now also regarded as a part of the subtribe Macrosiphina). The present paper, part III, concerns the remaining aphid species of Norway, viz. the families Mindaridae, Hormaphididae, Thelaxidae, Anoeciidae, Pemphigidae, Drepanosiphidae (including subfamily Chaitophorinae), part of Aphididae (subfamilies Pterocommatinae and Aphidinae except Macrosiphina), and Lachnidae. 30 species of Macrosiphina not listed in parts I and II are mentioned in an addendum. The total number of species listed in parts I-III is 329.

Helene Tambs-Lyche left the manuscript unpublished, so this paper has been prepared for publication by Ole E. Heie after her decease in 1993. It was not totally finished for publication. Several slides with aphids in Helene Tambs-Lyche's collection were not yet labelled, but after having identified some of them Heie found that it ought to be published in the present form because a survey of species occurring in Norway is highly needed, even if it is not complete, and no list can really be complete, anyway. Only rather few changes in the original manuscript of the first author have been made by the second author, primarily with regard to nomenclature and geographical distribution, and a few species and localities have been added, some of them from the literature, some from previously not labelled samples in Helene Tambs-Lyche's collection. Some records derive from C. Stenseth (in litt.). Most identifications made by Helene Tambs-Lyche herself or by colleagues, whom she consulted, have not been checked. The persons, who collected and/or determined the aphids, have been mentioned in brackets, except if collected and identified by the first author.

The abbreviations of localities are explained in part I, Fig. 1, and also in all volumes of the series "Fauna entomologica scandinavica". Under each species the total distribution of the species is listed as in parts I and II, and specific information is added about the occurrence in the nearest countries, viz. Sweden, Finland, Denmark, the Faroes, Iceland, the United Kingdom and Germany. This information was added by Heie and quoted from various publications given among the references in Heie (1980, 1982, 1986 and 1992). Abbreviations of locality names refer to the map (Fig. 1) in part I (Tambs-Lyche 1968). Other abbreviations are: W = west, NW = northwest, N = North, NE = northeast, E = east, SE = southeast, S = south, SW = southwest, C = central.

Helene Tambs-Lyche's collection will be deposited at the Zoological Museum, University of Bergen.

Family Mindaridae

Mindarus abietinus Koch, 1857
Trapped: **AK**: Ås: Vollebekk.
Geographical distribution: Europe, N & SW Asia, introduced into N America. - Sweden, Finland, Denmark, United Kingdom, Germany.

Mindarus obliquus (Cholodkovsky, 1896)
According to Stenseth (in litt.) found in Norway.
Geographical distribution: Europe, SW Asia. - Sweden, Finland, Denmark, United Kingdom, Germany.

Family Hormaphididae

Hamamelistes betulinus (Horvath, 1896)
Betula odorata: **Nnø**: Tysfjord (J. Fjelddalen coll., Heie det.).
Geographical distribution: Europe, N Asia. - Sweden, Finland, Denmark, United Kingdom.

Family Thelaxidae

Thelaxes dryophila (Schrank, 1801)
AK, AAy, Ry, HOy, HOi.
Quercus sp.: AAy: Risør (Søndeled): Båssvik, HOy: Hordaland.
Trapped in yellow trays: AK: Ås: Vollebekk, Ry: Hetland: Forus and HOi: Kvinnherad: Solbakken, Sunde.
Geographical distribution: Europe, N & SW Asia, introduced into N America. - Sweden, Finland, Denmark, United Kingdom, Germany.

Glyphina betulae (Linné, 1758)
Betula verrucosa: **Os**: Lillehammer (Heie leg. et det.).
Geographical distribution: Europe, NW Asia, introduced into N America. - Sweden, Finland, Denmark, United Kingdom, Germany.

Glyphina schrankiana Börner, 1950
Alnus incana: **HOi**: Kvinnherad: Mel.
Geographical distribution: Europe, Caucasus, also recorded from Canada. - Sweden, Finland, United Kingdom, Germany.

Family Anoeciidae

Anoecia corni (Fabricius, 1775)
AK, HOy.
Cornus alba: AK: Oslo: Blindern.
Trapped in yellow trays: AK: Ås: Vollebekk, HOy: Bergen (Fana): Stend, Biological Station. *Pyrus* (not a host): AK: Asker: Sem.
Geographical distribution: Europe, Asia, N Africa, introduced into S Africa and N America. -Sweden, Finland, Denmark, United Kingdom, Germany.

Family Pemphigidae

Subfamily Eriosomatinae

Eriosoma lanigerum (Hausmann, 1802).
Fjelddalen (1964) recorded it on *Malus domestica* from **Ry**: Sandnes and **MRy**: Hareid.
Geographical distribution: Cosmopolitan. - Sweden, Denmark, United Kingdom, Germany.

Eriosoma (Schizoneura) patchiae (Börner & Blunck, 1916)
Trapped: **AK**: Ås: Vollebekk.
Geographical distribution: N, C & E Europe. - Sweden, Denmark, United Kingdom, Germany.

Eriosoma (Schizoneura) ulmi (Linné, 1758)
Ø, AK, HEs, Os, Bø, TEy, VAy, Ry, HOy, SFi, STi, MRy, NTi, Nsy.
Ulmus glabra: STi: Trondheim (Heie obs. et det.). *Ulmus* sp.: AK: Oslo (Heie leg. et det.), NTi: Levanger (Skogn): Staup (here also on *Solanum tuberosum*, not a host).
Pelargonium (not a host): Ø: Fredrikstad (Fjelddalen leg.). Trapped in yellow trays: AK: Ås: Vollebekk, HOy: Bergen (Fana): Biological Station and Stend.
First recorded by Siebke (1874) on *Ulmus campestris* from AK: Oslo. In the annual report by the government entomologists mentioned as a pest to red currant in Ø, AK, HEs, Os, Ry, MRy and NTi (Fjelddalen 1964). Fjelddalen (1964) gives the following records: *Ulmus glabra*: AK: Oslo and Ås, HEs: Ringsaker, Os: Fåberg, Bø: Hole and Modum, TEy: Skien (Gjerpen), VAy: Kristiansand, MRy: Molde and Skodje, Nsy: Bodø; *Ribes rubrum*: HEs: Ringsaker, VAy: Søgne, SFi: Innvik; *R. nigrum*: HEs: Ringsaker.
Geographical distribution: Europe, N, C, E & SW Asia. - Sweden, Finland, Denmark, the Faroes, Iceland, United Kingdom, Germany.

Tetraneura ulmi (Linné, 1758)
AK, Bø, TEy, Ry, HOy, HOi, STi, TRi.
On roots of grasses: HOi: Ullensvang: Århus, HOy: Sund: Tussøy and Lindås: Kvalvågnes.
Solanum tuberosum (not a host): TRi: Bardu: Øygard. Trapped in yellow trays: AK: Ås: Vollebekk, Ry: Hetland: Forus, and HOy: Bergen (Fana): Biological Station, Stend and N Eggholmen.
The first record is on *Ulmus campestris* from AK: Oslo (Siebke 1874). Fjelddalen (1964) gives the following records: *Ulmus glabra*: AK: Bærum, Oslo and Asker, Bø: Røyken and Kviteseid, TEy: Skien: Gjerpen; he also mentions STi: Trondheim (Leatherdale 1959).
Geographical distribution: Europe, N, C & SW Asia, introduced into the Azores and N America. - Sweden, Finland, Denmark, United Kingdom, Germany.

Subfamily Pemphiginae

Pachypappa populi (Linné, 1758)
According to Stenseth (in litt.) found in Norway.
Geographical distribution: N & C Europe. - Sweden, Finland.

Pachypappa tremulae (Linné, 1761)
AK, HE, O, Bø, HOy.
According to Fjelddalen (1964) found on *Populus tremula* in AK: Oslo and Bø: Modum, and mentioned in the annual report on forest entomology from AK, O and HE.
Trapped: HOy: Bergen (Fana): Biological Station.
Geographical distribution: Europe, NW Asia, introduced into N America. - Sweden, Finland, Denmark, United Kingdom, Germany.

Gootiella tremulae (Tullgren, 1925)
According to Stenseth (in litt.) found in Norway.
Geographical distribution: Outside Scandinavia only recorded from Poland. - Sweden, Finland, Denmark.

Prociphilus fraxini (Fabricius, 1777)
According to Stenseth (in litt.) found in Norway.
Geographical distribution: Europe, Caucasus, Turkey. - Sweden, Denmark, United Kingdom, Germany.

Prociphilus (Stagona) pini (Burmeister, 1835)
Malus domesticus: **AK**: Ås: Vollebekk (J. Fjelddalen leg., Hille Ris Lambers and H. Tambs-Lyche det.).
Geographical distribution: N & C Europe. - Sweden, Finland, Denmark, United Kingdom, Germany.

Prociphilus (Stagona) xylostei (DeGeer, 1773)
Lonicera sp.: **NTi**: Levanger (Skogn): Staup.
Geographical distribution: Europe, introduced into N America. - Sweden, Finland, Denmark, United Kingdom, Germany.

Thecabius affinis (Kaltenbach, 1843)
Ø, AK, HEs, Os, Bø, Bv, VE, VAy, Ry, HOy, MRy, NTy.
Populus beroliensis: Ø: Fredrikstad, AK: Oslo, HEs: Nord-Odal, Os: Østre Toten, Bø: Drammen, Bv: Flå, VE: Lardal (Fjelddalen 1964). *P. italica*: VE: Sem, MRy: Molde (Fjelddalen 1964), Os: Ringebu (Heie leg. et det.). *Ranunculus repens*: AK: Oslo (Siebke 1874), VAy: Lindesnes: Våge. *R. acer*: NTy: Nærøy: Val. Trapped in yellow trays: AK: Ås: Vollebekk, Ry: Klepp: Øksnevad, HOy: Bergen (Fana): Biological Station and Stend.
Geographical distribution: Europe, Asia, N Africa, introduced into N America. - Sweden, Finland, Denmark, United Kingdom, Germany.

Pemphigus bursarius (Linné,, 1758)
Ø, AK, Bø.
Populus beroliensis: Ø: Råde and Fredrikstad (Fjelddalen 1964).

It was first recorded by Siebke (1874) on *Populus ialica* from AK: Oslo. According to Fjelddalen (1964) mentioned on *Lactuca sativa* (lettuce) from Bø: Drammen in the annual report by the government entomologist in 1911.
Geographical distribution: Cosmopolitan. - Sweden, Finland, Denmark, United Kingdom, Germany.

Pemphigus fuscicornis (Koch, 1857)
On roots of *Matricaria (Tripleurospermum) inodora* and *Bidens tripartita*: **HEs**: Nes: Gåserud.
Geographical distribution: Europe. - Sweden, Denmark, Germany.

[*Pemphigus norvegicus* Hille Ris Lambers in litt., not valid]
Hille Ris Lambers wrote in 1961 to the first author: "The *Pemphigus* alata which probaby is a sexupara has given me more trouble than the other other species that you sent, and I have not found a satisfactory answer.... It might be a sexupara of *Pemphigus populi* Courchet, but to my knowledge that morph has never been described... Your specimen is unique in the structure of the ventral spines on the apex of tibia... I will not describe this aphid, which is your job, but I suggest you to wait with a description till more is known about its life or until more specimens are available... ".]

Pemphigus phenax Börner & Blunck, 1916
Daucus carota: **TEy**: Eidanger (J. Fjelddalen leg.).
Geographical distribution: Europe, W Siberia. - Sweden, Denmark, United Kingdom, Germany.

Pemphigus populinigrae (Schrank, 1801)
Gnaphalium uliginosum: **VAy**: Mandal: Lande.
Geographical distribution: Europe, N, NW & SW Asia. - Sweden, Finland, Denmark, United Kingdom, Germany.

Pemphigus spyrothecae Passerini, 1856
Ø, AK, Bø, TEi.
Populus beroliensis: Ø: Råde, TEy: Lunde (Fjelddalen 1964). *P. italica*: AK: Oslo and Nesodden, Bø: Hønefoss (Fjelddalen 1964). *P. trichocarpa*: TEi: Bø (Fjelddalen 1964).
Geographical distribution: Europe, W Siberia, N Africa, introduced into N America. - Sweden, Denmark, United Kingdom, Germany.

Subfamily Fordinae

Forda formicaria von Heyden, 1837
On roots of grasses: **AAi**: Bykle: Hovden, **HOy**: Bergen (Fana): Biological Station, Flesland, Espeland, Ospøya and Vestre Løholmen.
Geographical distribution: Europe, N, C, NE & SW Asia, N Africa, N America. - Sweden, Denmark, United Kingdom, Germany.

Forda marginata Koch, 1857
According to Stenseth (in litt.) found in Norway.
Geographical distribution: Europe, N & SW Asia, N Africa, N America. - Sweden, Finland, Denmark, United Kingdom, Germany.

Family Drepanosiphidae

Subfamily Drepanosiphinae

Drepanosiphum platanoidis (Schrank, 1801)
AK, Os, Bø, HOy, HOi, STi.
Acer pseudoplatanus: AK: Ås, AK: Oslo (Heie leg. et det.), Os: Lillehammer (Heie obs. et det.), HOi: Jondal. *Acer* sp.: HOi: Granvin: Eide, HOy: Bergen (Fana): Stend and Minde, STi: Trondheim (Heie obs. et det.).
On non-hosts: AK: Ås (*Viburnum*), Os: Østre Toten: Valle, Lena (*Ulmus*), Bø: Drammen (Ossiannilsson 1962). Trapped in yellow trays: AK: Ås: Vollebekk, HOy: Bergen (Fana): Biological Station and Stend.
Geographical distribution: Nearly cosmopolitan. - Sweden, Finland, Denmark, the Faroes, United Kingdom, Germany.

Subfamily Phyllaphidinae

Symydobius oblongus (von Heyden, 1837)
AK, Bø, Bv, On, TEi, AAi, VAy,, Ry, HOy, HOi.
Betula verrucosa: Bø: Drammen (Ossiannilsson 1962). *Betula pubescens*: AAi: Bykle: Nesland, Løyning, at Vatndalsvatnet, AAi: Valle: Bjørnevatn. *Betula nana*: TEi: Vinje: Godthol. *Betula* sp.: On: Østre Slidre: Beito, Bv: Hol: Bærdøla, Geilo, VAy: Lindesnes: Våge, HOy: Bergen (Fana): Milde, HOy: Bergen: Løvstakken, HOi: Kvinnherad: Mel, HOi: Voss: Mjølfjell.
On non-hosts: HOy: Bergen (Fana): Stend (*Populus tremula*), HOy: Bergen (Fana): Ådlandsvannet (*Rubus ideaus*). Trapped in yellow trays: AK: Ås: Vollebekk, Ry: Hetland: Forus, HOy: Bergen (Fana): Biological Station.
Geographical distribution: N, W, C & E Europe, N & NE Asia. - Sweden, Finland, Denmark, the Faroes, United Kingdom, Germany.

Clethrobius comes (Walker, 1848)
AK, HEs, Bv, HOy, MRy.
Betula verrucosa: MRy: Averøy (Bremsnes): Upper Vadsteinsvik. *B. nana*: MRy: Smøla (Edøy): Skjølberg; HEs: Ringsaker: Helghøya, Nes: Kjelsrud, Bv: Hol: Birgitstølen. *Epilobium* sp. (not a host): HOy: Bergen (Fana): Festevik. Trapped: AK: Ås: Vollebekk.
Geographical distribution: Europe, N & NE Asia. - Sweden, Finland, Denmark, United Kingdom, Germany.

Euceraphis betulae (Koch, 1855)
Os, On, SFi, MRi.
Betula verrucosa: Os: Lillehammer (Heie obs. et det.), Os: Ringebu (Heie obs. et det.), On: Sel: Otta (Heie obs. et det.), SFi: Aurland: Vassbygda (Heikinheimo 1966), MRi: Sunndal: Klingøyra. See notes to the following species.
Geographical distribution: Europe, introduced into N America. - Sweden, Finland, Denmark, United Kingdom, Germany.

Euceraphis punctipennis (Zetterstedt, 1828)
Very common in Norway: **AK, HEs, HEn, Os, On, Bø, VAy, HOy, HOi, STi, NTi, Fn** (Porsanger: Kistrand (Hugo Anderson)), **Fi** (Karasjok), **Fø** (Sør-Varanger). Most have been trapped or collected while flying or sitting on non-hosts. Those collected on *Betula* have not been determined, except those from Fn, Fi and Fø, and some of them may be *E. betulae* (Koch). The host of *E. punctipennis* is *B. pubescens*, and the host of *E. betulae* is *B. verrucosa*. Heie (unpubl.) observed *Euceraphis* on *B. pubescens* in HEs: Stange: near Hamar at Mjøsa and HEn: Tynset: Ulsberg south of Berkåk.
Geographical distribution: Europe, N Asia, Greenland, introduced into N America. - Sweden, Finland, Denmark, the Faroes, Iceland, United Kingdom, Germany.

Phyllaphis fagi (Linné, 1767)
AK, VAy, HOy, SFy, SFi.
Fagus silvatica: AK: Oslo and Ski (Fjelddalen 1964), VAy: Flekkefjord, SFy: Jølster, SFi: Balestrand (Fjelddalen 1964), HOy: Bergen (Fana): Espeland, HOy: Bergen, HOy: Os: Lysekloster. Swept from grass: HOy: Bergen (Fana): Biological Station. Trapped in yellow trays: AK: Ås: Vollebekk, HOy: Bergen (Fana): Stend.
Geographical distribution: Nearly cosmopolitan. - Sweden, Finland, Denmark, United Kingdom, Germany.

Callipterinella calliptera (Hartig, 1841)
Betula verrucosa: **SFi**: Aurland: Vassbygda (Heikinheimo 1966).
Geographical distribution: Europe, Caucasus, N & NE Asia, introduced into N America. -Sweden, Finland, Denmark, United Kingdom, Germany.

Callipterinella tuberculata (von Heyden, 1837)
AK, Os, On, HEs, Bø, AAy, SFi.
Betula verrucosa: Bø: Drammen (Ossiannilsson 1962 and Tambs-Lyche), Os: Lillehammer (Heie obs. et det.), SFi: Lærdal (Heie leg. et det.). *Betula* sp.: AK: Oslo, On: Vågå: Vågåmo, HEs: Stange: Mjøsvang, AAy: Tromøy: Sandum.
Trapped: AK: Ås: Vollebekk.
Geographical distribution: Europe, N Asia. - Sweden, Finland, Denmark, United Kingdom, Germany.

Calaphis betulicola (Kaltenbach, 1843)
Trapped: **AK**: Ås: Vollebekk.
Geographical distribution: Europe, N Asia, introduced into N America. - Sweden, Finland, Denmark, United Kingdom, Germany.

Calaphis flava Mordvilko, 1928
AK, HEs, On, Bv, VAy, Ry, HOy, HOi, STi.
Betula pubescens: AK: Oslo (Heie obs. et det.), HEs: Stange: near Hamar at Mjøsa (Heie obs. et det.), STi: Trondheim: Hommelvik (Heie obs. et det.). *Betula* sp.: AK: Ås: Monsrud, On: Vang: Vennisfjell, Bv: Hol: at Urunda, VAy: Mandal: Furulunden, HOy: Bergen (Fana): Ådland, HOi: Kvinnherad: Guddal.
Trapped in yellow trays: AK: Ås: Vollebekk, Ry: Hetland: Forus, HOy: Bergen (Fana): Biological Station and Stend.
Geographical distribution: Europe, N & C Asia, introduced into Australia, New Zealand and N America. - Sweden, Finland, Denmark, United Kingdom, Germany.

Betulaphis brevipilosa Börner, 1940
HEn, Os, Bø, SFi.
Betula verrucosa: HEn (Heie obs. et det.), Os: Ringebu (Heie obs. et det.), Bø: Drammen (Ossiannilsson 1962), SFi: Aurland: Vassbygda (Heikinheimo 1966).
Geographical distribution: N & C Europe, introduced into N America. - Sweden, Finland, Denmark, Germany.

Betulaphis pelei Hille Ris Lambers, 1952
On, Bv, HOi, MRy.
Betula nana: On: Vang: Bygdin, On: Vestre Slidre:

Grønnli, On: Vågå: at Flybakken, Valdresflya, and Gjendisheim, Bv: Hol: Olsennvatn, HOi: Ullensvang: Skulevikstølen, MRy: Averøy (Bremsnes): Henda.
Geographical distribution: N Europe, Greenland. - Sweden, Finland.

Betulaphis quadrituberculata (Kaltenbach, 1843)
On, Bv, AAi, HOi, SFi.
Betula pubescens: AAi: Bykle: Nesland and Vatndalsvatnet, AAi: Valle: Bjørnevatn. *B. verrucosa*: SFi: Aurland: Vassbygda (Heikinheimo 1966). *B.* sp.: Bv: Hemsedal: Gladhus, HOi: Voss: Mjølfjell.
Plantago sp. (not a host): On: Vågå: Vågåmo.
Geographical distribution: N, W, C & E Europe, Caucasus, W Siberia, Mongolia, introduced into N America. - Sweden, Finland, Denmark, Iceland, United Kingdom, Germany.

Myzocallis carpini (Koch, 1855)
Trapped: **AK**: Ås: Vollebekk.
Geographical distribution: Europe, Caucasus, introduced into N America. - Sweden, Denmark, United Kingdom, Germany.

Myzocallis coryli (Goeze, 1778)
AK, Bø, Ry, HOy, HOi, SFi.
Corylus avellana: AK: Ås: Monsrud, Bø: Drammen (Ossiannilsson 1962), HOy: Bergen (Fana): Biological Station, at Fana church, Lønningehamn and Birkeland, HOy: Bømlo: Langevågen, HOi: Kvinnherad: Bjellandshavn, HOi: Ullensvang: Lofthus, SFi: Aurland: Flåm (Heikinheimo 1966).
Trapped in yellow trays: AK: Ås: Vollebekk, HOy: Bergen (Fana): Biological Station and Stend, Ry: Hetland: Forus.
Geographical distribution: Europe, SW Asia, N Africa, introduced into N & S America. -Sweden, Finland, Denmark, United Kingdom, Germany.

Myzocallis myricae (Kaltenbach, 1843)
AK, TEy, AAy, HOy, MRy.
Myrica gale: TEy: Kragerø (Sannidal): Lindheim, AAy: Mykland, HOy: Bergen (Fana): Birkeland, MRy: Averøy (Bremsnes): Henda.
Trapped in yellow trays: AK: Ås: Vollebekk, HOy: Bergen (Fana): Biological Station and Stend.
Geographical distribution: Europe. - Sweden, Finland, Denmark, United Kingdom, Germany.

Tuberculatus querceus (Kaltenbach, 1843)
AK, HOy, HOi.
Quercus sp.: HOy: Bergen (Fana): at Ådlandsvannet, HOi: Ullensvang: Aga.
Trapped in yellow trays: AK: Ås: Vollebekk, HOy: Bergen (Fana): Stend.
Geographical distribution: Europe, SW Asia. - Sweden, Denmark, United Kingdom, Germany.

Tuberculatus (Tuberculoides) annulatus (Hartig, 1841)
AK, Bø, VE, TEy, AAy, VAy, Ry, HOy.
Quercus robur: HOy: Tysnes: Store Vernøy.
Quercus sp.: Bø: Drammen: Drammen and Syvertsvollen (Ossiannilsson 1962), Bø: Modum: Buskerud, VE: Tjøme: Hulebakk, TEy: Bamble: Trosby, AAy: Risør (Søndeled): Båssvik, VAy: Mandal: Høksås, VAy: Lindesnes: Våge, Ry: Klepp: Øksnevad, HOy: Bergen (Fana): Biological Station, Stend and Ådland, HOy: Sund: Tyssøy.
Rosa sp. (not a host): Bø: Drammen. Trapped in yellow trays: AK: Ås: Vollebekk, HOy: Bergen (Fana): Biological Station and Stend.
Geographical distribution: Nearly cosmopolitan. - Sweden, Finland, Denmark, United Kingdom, Germany.

Tuberculatus (Tuberculoides) neglectus (Krzywiec, 1966) According to Stenseth (in Heie 1982) found in Norway.
Geographical distribution: N, W, C & E Europe. - Denmark, United Kingdom.

Pterocallis albidus Börner, 1940
Alnus incana: **STi**: Hommelvik (Heie leg. et det.).
Geographical distribution: Europe. - Sweden, Finland, Denmark, Germany.

Pterocallis alni (DeGeer, 1773)
AK, HEs, On, Bv, HOy, HOi, SFi, TRi, NT.
Alnus glutinosa: HOy: Bergen (Fana): Milde, HOi: Kvinnherad: Uppsangerneset. *A. incana*: HEs: Ringsaker: Næroset, On: Vågå: Randsverk, Bv: Hemsedal: Gladhus, HOy: Bergen (Haus): Arna, SFi: Aurland: Vassbygda (Heikinheimo 1966).
Alnus sp.: HOi: Kvinnherad: Rødsvågen, TRi: Målselv: Olsborg.
Solanum tuberosum (not a host): NT: Steinkjer (Sparbu): Mæda. Trapped in yellow trays: AK: Ås: Vollebekk, HOy: Bergen (Fana): Biological Station and Stend.
Geographical distribution: Nearly cosmopolitan. - Sweden, Finland, Denmark, United Kingdom, Germany.

Tinocallis platani (Kaltenbach, 1843)
AK, Os.
Ulmus sp.: AK: Oslo: Botanical Garden (Ossiannilsson 1962), Os: Brandbu: Bleiken.

Trapped: AK: Ås: Vollebekk.
Geographical distribution: Europe, N, C & NE Asia, introduced into N America. - Sweden, Finland, Denmark, United Kingdom, Germany.

Eucallipterus tiliae (Linné, 1758)
Ø, AK, Os, Bø, Ry, Ri, SFi, NTi.
Tilia cordata: AK: Ås, Oslo and Asker (Fjelddalen 1964, earliest record Siebke 1874), Bø: Modum: Buskerud Agric. School, SFi: Aurland: Flåm (Heikinheimo 1966). *Tilia* sp.: Ø: Halden (Schøyen according to Fjelddalen 1964), AK: Oslo (Heie obs. et det.), Os: Lillehammer (Heie obs. et det.), Bø: Drammen (Ossiannilsson 1962), Ri: Suldal: Bråtveit, NTi: Levanger (Schøyen according to Fjelddalen 1964), STi: Trondheim (Heie obs. et det.).
Trapped in yellow trays: AK: Ås: Vollebekk, Ry: Hetland: Forus.
Geographical distribution: Europe, W & C Asia, N Africa, introduced into N America. -Sweden, Finland, Denmark, United Kingdom, Germany.

Therioaphis luteola (Börner, 1949)
Trapped: **AK**: Ås: Vollebekk.
Geographical distribution: Europe. - Sweden, Finland, Denmark, United Kingdom, Germany.

Therioaphis trifolii (Monell, 1882)
Trapped: **AK**: Ås: Vollebekk.
Geographical distribution: Cosmopolitan. - Sweden, Finland, Denmark, United Kingdom, Germany.

Therioaphis (Rhizoberlesia) brachytricha Hille Ris Lambers & van der Bosch, 1964
AK, Os, HOy, HOi.
Lotus corniculatus: Os: Nord-Aurdal: Granheim, HOy: Ølen (Vikebygd): Førdespollen, HOi: Ullensvang: Aga. Swept from vegetation: HOi: Kvam (Strandebarm): Oma. Trapped: AK: Ås: Vollebekk.
Geographical distribution: C Europe, Turkey. - Sweden, Finland, Germany.

Thripsaphis (Trichocallis) caricis (Mordvilko, 1921)
On, VE, HOy, HOi, SFi.
Carex acuta and *C. panicea*: VE: Sande: Syvertsvollen (Ossiannilsson 1962). *C. goodenowii*: HOy: Stord: Frugård. *C. salina*: HOi: Kvam (Strandebarm): Oma. *Carex* sp.: On: Vågå: Sandbu, Vågåmo, HOy: Bergen (Fana): Bay at Mariholmen and Nordre Eggholmen, HOi: Eidfjord, SFi: Luster: Skjolden.
Geographical distribution: N, W, C & E Europe; a subspecies occur in Asia, N America, Australia and New Zealand. - Sweden, Finland, Iceland, United Kingdom, Germany.

Thripsaphis (Trichocallis) cyperi (Walker, 1848)
On, HOy, MRy.
Carex nigra: On: Nord Fron: Golåsjøen. *C. goodenowii*: On: Vågå: Storhaugseter, HOy: Bergen (Fana): Bay at Mariholmen. Swept from grass: MRy: Frei.
Geographical distribution: N, W, C & E Europe, N America. - Sweden, Finland, Denmark, United Kingdom, Germany.

Thripsaphis (Trichocallis) verrucosa Gillette, 1917
On, TEi, AAi, HOy, MRy.
Carex spp.: On: Østre Slidre: at Yddin (*C. juncella*), TEi: Vinje: Haukelidgrend, AAi: Bykle: Nesland (*C. echinata* or *nigra*) and Breive (*C. nigra*). Sweeping in meadows: HOy: Bergen (Fana): Nordre Eggholmen, MRy: Frei: Enga.
Geographical distribution: Europe, W Siberia, N America. - Sweden, Finland, Denmark, the Faroes, United Kingdom, Germany.

Subsaltusaphis flava (Hille Ris Lambers, 1939)
Carex goodenowii: **On**: Vågå: Storhaugseter and Storhaug, **HOy**: Bergen (Fana): Bay at Mariholmen.
Geographical distribution: N, W, C & E Europe. - Sweden, Finland, Denmark, United Kingdom, Germany.

Subsaltusaphis rossneri (Börner, 1940)
Carex rostrata: **AAi**: Bykle: Trydal. *Carex* cf. *rostrata*: **HEs**: Nes: Grotlia.
Geographical distribution: NW, N & C Europe. - Sweden, Finland, Denmark, United Kingdom, Germany.

Iziphya leegei (Börner, 1940)
On, HOy, HOi.
Juncus gerardi: HOi: Kvinnherad: Gjermundshavn. *Carex nigra* (not a host): On: Vågå: Hindseter. Sweeping on meadow: HOy: Bergen (Fana): Nordre Eggholmen and Lønningehamn.
Geographical distribution: Europe. - Sweden, Denmark, United Kingdom, Germany.

Subfamily Chaitophorinae

Periphyllus acericola (Walker, 1848)
According to Stenseth (in litt.) found in Norway.
Geographical distribution: Europe. - Sweden, Denmark, United Kingdom, Germany.

Periphyllus testudinaceus (Fernie, 1852)
AK, Ry, HOy.
Acer sp.: AK: Asker, HOy: Bergen (Fana): Stend and Fjøsanger, HOy: Bergen.
Trapped in yellow trays: AK: Ås: Vollebekk, Ry: Hetland: Forus.
Geographical distribution: Europe, E Asia, N America. - Sweden, Finland, Denmark, United Kingdom, Germany.

Chaitophorus capreae (Mosley, 1841)
AK, On, Nsy.
Salix sp.: On: Vågå: Klones, Nsy: Mosjøen: Nyrud.
Trapped: AK: Ås: Vollebekk.
Geographical distribution: Europe, Asia. - Sweden, Denmark, United Kingdom, Germany.

Chaitophorus lapponum Ossiannilsson, 1959
Salix glauca: **AAi**: Bykle: Trydal. *Salix* sp.: **Bv**: Hol: Birgitstølen.
Geographical distribution: Previously only in Sweden and Finland.

Chaitophorus leucomelas (Koch, 1854)
Populus sp.: **Bø**: Drammen (Ossiannilsson 1962).
Geographical distribution: Europe, N & C Asia, N America. - Sweden, Denmark, United Kingdom, Germany.

Chaitophorus pentandrinus Ossiannilsson, 1959
Salix myrsinites: **On**: Østre Slidre: Beitostølen.
Geographical distribution: Previously only Sweden.

Chaitophorus populeti (Panzer, 1801)
Ø, AK, On, Bø, TEy, AAy, HOy, MRy.
Populus tremula: Ø: Hvaler: Brenne, Reff and Botne, Ø: Borge: Hunn, On: Vang: Skutshorn, Bø: Drammen (Ossiannilsson 1962), TEy: Bamble: Ødegårdsverk and Finmarkstranda, AAy: Iveland: Hovland, MRy: Smøla (Edøy): Skjølberg.
Trapped in yellow trays: AK: Ås: Vollebekk, HOy: Bergen (Fana): Stend.
Geographical distribution: Europe, Asia, N Africa. - Sweden, Finland, Finland, Denmark, United Kingdom, Germany.

Chaitophorus populialbae (Boyer de Fonscolombe, 1841)
Trapped: **AK**: Ås: Vollebekk.
Geographical distribution: Europe, Asia, N Africa, N America. - Sweden, Denmark, Finland, United Kingdom, Germany.

Chaitophorus salicti (Schrank, 1801)
Salix cf. *phylicifolia x caprea*: **HEs**: Ringsaker (Nes): Kvernvollen, Hera. *Salix aurita*: **MRy**: Smøla (Edøy): Skjølberg.
Geographical distribution: Europe, Asia. - Sweden, Finland, Denmark, United Kingdom, Germany.

Chaitophorus salijaponicus ssp. *niger* Mordvilko, 1929
Salix caprea: **HOy**: Lindås. *S. ?cinerea*: **Bø**: Lier (O. Heikinheimo leg., Zool. Mus., Bergen).
Geographical distribution: Europe, C Asia. - Sweden, United Kingdom, Germany.

Chaitophorus tremulae (Koch, 1854)
AK, HEs, TEi, Ry, HOy, Nsy, TRi.
Populus tremula: HEs: Ringsaker: Kjelsrud and Helghøya, TEi: Kviteseid: Vråliosen, HOy: Sund: Tyssøy, HOy: Bømlo: Espevær, Nsy: Bodin: Nordland agric. school, TRi: Målselv: Olsborg.
Trapped in yellow trays: AK: Ås: Vollebekk, Ry: Hetland: Forus. Swept from grass: HOy: Bergen (Fana): Ådlandsvannet.
Geographical distribution: Europe, N, SW & C Asia. - Sweden, Finland, Denmark, United Kingdom, Germany.

Chaitophorus truncatus (Hausmann, 1802)
Salix sp.: **On**: Nord-Aurdal: Vaset Seter at Fagernes (O.E.Heie leg. et det.).
Geographical distribution: N, NW, C & E Europe, C Asia. - Denmark, United Kingdom, Germany.

Caricosipha paniculatae Börner, 1939
Carex leporinae: **AK**: Oslo (Ossiannilsson 1962).
Geographical distribution: Europe. - Sweden, Denmark, United Kingdom, Germany.

Atheroides brevicornis Laing, 1920
Trapped: **HOy**: Bergen (Fana): Stend.
Geographical distribution: United Kingdom, Norway, Sweden, the Netherlands, Germany, Hungary, Crimea.

Atheroides serrulatus Haliday, 1839
AK, Ry, HOy, HOi.
Swept from grasses: Ry: Hetland: Forus, Ry: Klepp: Øksnevad, HOy: Bergen (Fana): Biological Station, Stend, Nordre Eggholmen, Kuholmen, Outer Løholmen and Lønningehamn, HOi: Kvinnherad: Gjermundshavn, HOi: Eidfjord. *Luzula* sp. (not a host): HOy: Bergen (Fana): Bjelkarøy-Buarøy.
Trapped in yellow trays: AK: Ås: Vollebekk, Ry: Hetland: Forus, Ry: Klepp, Øksnevad, HOy: Bergen

(Fana): Biological Station and Stend.
Geographical distribution: Europe, N Asia, introduced into Canada. - Sweden, Finland, Denmark, United Kingdom, Germany.

Sipha glyceriae (Kaltenbach, 1843)
HEs, Ry, HOy, HOi, SFi.
On grasses: HEs: Nes: Gåserud (grass), Ry: Klepp: Øksnevad (grass), Ry: Hetland: Forus (*Agropyrum* a.o.), HOy: Bergen (Fana): Nordre Eggholmen (*Agrostis* sp. and *A. stolonifera*), Mariholmen, Lønningehamn, Stend and Kuholmen (grass), Bjelkarøy (grass) and Revhaug (*Festuca pratensis*), HOy: Tysnes: Ånuglo (grass), HOy: Stord: Frugård (grass), HOy: Vikebygd: Førde (grass), HOi: Kvam (Strandebarm): Oma (grass), HOi: Eidfjord (*Agrostis* sp.), HOi: Voss: Bavallen (*Agrostis* sp.), SFi: Luster: Skjolden (grass).
On non-hosts: Ry: Hetland: Forus, HOy: Bergen (Fana): at Fana church (*Berberis thunbergi*), SFi: Aurland: Fretheim (unknown plant, K.H.Forslund leg., in Zool. Mus., Bergen). Trapped in yellow trays: Ry: Klepp: Øksnevad, HOy: Bergen (Fana): Biological Station and Stend.
Geographical distribution: Europe, N & C Asia, N America. - Sweden, Finland, Denmark, United Kingdom, Germany.

Sipha (Rungsia) arenarii Mordvilko, 1921
Elymus arenarius: **VE**: Sande: Berger (Ossiannilsson 1962).
Geographical distribution: N & E Europe, N & C Asia. - Sweden, Finland, Denmark.

Sipha (Rungsia) elegans del Guercio, 1905
Puccinellia maritima: **Ø**: Onsøy: Tangen.
Geographical distribution: Europe, N & C Asia, N America. - Sweden, Finland, Denmark, United Kingdom, Germany.

Sipha (Rungsia) maydis Passerini, 1860
According to Stenseth (in litt.) found in Norway.
Geographical distribution: Europe, N, SW & C Asia, N & S Africa. - Sweden, Finland, Denmark, United Kingdom, Germany.

Chaetosiphella berlesei (del Guercio, 1905)
Deschampsia flexuosa: **VE**: Sande (Ossiannilsson 1962).
Geographical distribution: Europe, NW Asia. - Sweden, Finland, Denmark, Germany.

Family Aphididae

Subfamily Pterocommatinae

Pterocomma jacksoni Theobald, 1921
Salix sp.: **MRy**: Smøla (Edøy): Skjølberg.
Geographical distribution: Europe. - Sweden, Finland, Denmark, United Kingdom, Germany.

Pterocomma pilosum ssp. *konoi* Hori, 1939
Salix phylicifolia: **Bv**: Hol: at Urunda. *Salix* sp.: **HOy**: Bergen (Fana): Milde and Espeland.
Geographical distribution: NW, N, C & E Europe, N, C & E Asia. - Sweden, Finland, Denmark, United Kingdom.

Pterocomma populeum (Kaltenbach, 1843)
Trapped: **HOy**: Bergen (Fana): Stend.
Geographical distribution: Europe, N, SW & C Asia, perhaps also N & S America. - Sweden, Denmark, United Kingdom, Germany.

Pterocomma rufipes (Hartig, 1841)
TEi, HOi, STi, Nnø.
Salix sp.: TEi: Vinje: Haukeligrend, HOi: Ullensvang, Skulevikstølen, Nnø: Evenes: Liland.
On unknown plant: STi: Opdal: Kongsvoll (T. Nilsen leg.).
Geographical distribution: NW, N, C & E Europe, N & C Asia, Canada. - Sweden, Finland, Denmark, Iceland, United Kingdom, Germany.

Plocamaphis amerinae ssp. *borealis* Ossiannilsson, 1959
Salix: **HOi**: Stigstuv.
On unknown plant: HOi: Ulvik: Finse (collected by a student).
Geographical distribution: N & E Europe. - Sweden, Germany.

Subfamily Aphidinae

Tribe Aphidini

Aphis acetosae Linné, 1761
Rumex acetosa: **MRi**: Sunndal: Klingøyra. *R. acetosella*: **Bø**: Drammen (Ossiannilsson 1962).
Geographical distribution: Europe south to Hungary, N Asia, perhaps introduced into N America. - Sweden, Finland, Denmark, United Kingdom, Germany.

Aphis comari Prior & Stroyan, 1977
Previously regarded as the same species as *A. tor-*

mentillae Passerini, and identified with this species by Tambs-Lyche. *A. tormentillae* lives, however, only on *Potentilla erecta*, and the aphid on *Comarum palustre* is another species.
Comarum palustre: **AAy**: Risør (Søndeled): Båssvik.
Geographical distribution: Great Britain, Norway, Denmark, Finland and Poland.

Aphis confusa Walker, 1849
Knautia arvensis: **On**: Vang: Vennisfjell, **TEy**: Bamble: Finmarkstranda, **NTi**: Levanger (Skogn): Staup.
Geographical distribution: Europe, N Asia. - Sweden, Finland, Denmark, United Kingdom, Germany.

Aphis coronillae Ferrari, 1872
Caught in trap: **AK**: Ås.
Geographical distribution: Europe. - Sweden, Denmark, United Kingdom, Germany.

Aphis craccae Linné, 1758
On, Bø, VE, AAi, HOi, SFi, MRy.
Vicia cracca: On: Vågå: Vågåmo, On: Nord-Aurdal: Fagernes (O.E.Heie leg. et det.), Bø: Øvre Eiker: Rustaden and Sem, Bø: Sandsvær: Hedenstad, VE: Sande: Syvertsvollen (Ossiannilsson 1962), SFi: Aurland: Aurlandsdalen (Heikinheimo 1966), MRy: Smøla (Edøy): Rokstad, MRy: Averøy (Bremsnes): Haukås. *V. sepium*: AAi: Evje (J. Fjelddalen leg.). *Vicia* sp.: HOi: Granvin.
Geographical distribution: Europe, Asia, introduced into N America. - Sweden, Finland, Denmark, United Kingdom, Germany.

Aphis craccivora Koch, 1854
Lotus corniculatus: **Bø**: Drammen (Ossiannilsson 1962).
Trapped: **AK**: Ås: Vollebekk.
Geographical distribution: Cosmopolitan. - Sweden, Finland, Denmark, United Kingdom, Germany.

Aphis epilobii Kaltenbach, 1843
Epilobium montanum: **HOy**: Bergen (Fana): Flesland. *E. collinum*: **HOi**: Ullensvang: Aga. *E.* sp.: HOy: Bergen (Fana): Biological Station.
Geographical distribution: Europe, introduced into N America. - Sweden, Finland, Denmark, United Kingdom, Germany.

Aphis fabae Scopoli, 1763
Ø, AK, HEs, Os, Bø, Bv, VE, TEy, AAy, Ry, HOy, SFi, MRy, STi, NTy, NTi, Nsy.
Euonymus europaeus: VE: Stokke, Gjennestad, TEy: Notodden: Holla, AAy: Grimstad: Fjære (Fjelddalen 1964).
Cirsium arvense: Ø: Hvaler: Reff, Botne, Huser, HEs: Nes: Kjelsrud, HEs: Stange: near Hamar at Mjøsa (Heie obs. et det.). *C. palustre*: Ø: Hvaler: Reff, Os: Toten (Kolbu): Nedstrand, HOy: Bergen (Fana): Mariholmen. *Cirsium* sp.: HEs: Hamar: Disen, STi: Leinstrand: Skjetlein. *Chenopodium album*: SFi: Aurland: Flåm (Heikinheimo 1966). *Chenopodium* sp.: Ø: Hvaler: Huser, Botne, Ry: Klepp: Øksnevad. *Berteroa incana*: Ø: Hvaler: Skjærhallen. *Chamaenerium angustifolium*: AK: Eidsvoll, Bø: Øvre Eiker: Nedre Rustaden, Bv: Hemsedal: Gladhus. *Tropaeolum majus*: AK: Oslo. *Malva moschata*: Os: Toten (Kolbu): Hallingstad. *Lappa* sp.: TEy: Porsgrunn (Brevik). *Valeriana officinalis*: AK: Tromøy: Sandum, HOy: Bergen (Fana): Biological Station, MRy: Smøla (Edøy): Rosvolløy. *Carum carvi*: SFi: Luster: Skjolden. *Myrrhis odorata*: MRy: Molde (Bolsøy): Lønset. *Solanum tuberosum*: HOy: Bergen (Fana): Stend, STi: Strinda: Presthus, NTi: Stjørdal: Kvithamar, NTy: Nærøy: Val. *Capsella bursa-pastoris*: HOy: Lindås: Lygra. *Spiraea japonica*: NTi: Levanger (Skogn): Staup. *Rumex* sp.: Ø: Nsy: Sømna: Vik. *Gentiana lutea*: HOy: Bergen. *Sonchus* sp.: NTi: Stjørdal. *Matricaria inodora*: AK: Ås. *Centaurea scabiosa*: Ø: Hvaler: Reff. Fjelddalen (1964) gives the following records: *Vicia faba*: AAy: Grimstad: Fjære; *Beta vulgaris*: AK: Ås, Ry: Sola, VE: Våle, HEs: Ringsaker; *Dahlia*: AK: Oslo and Ås, HEs: Ringsaker; *Spinacia oleracea*: AAy: Grimstad: Fjære; *Chenopodium album*: VE: Sem. *Philadelphus* and *Capsella bursa-pastoris*: Os: Lillehammer (Heie obs. et det.).
Trapped in yellow trays: AK: Ås: Vollebekk, Ry: Hetland: Forus, HOy: Bergen (Fana) Biological Station and Stend. Sweeping: Ry: Klepp, Øksnevad.
Geographical distribution: Europe, Asia, Africa, N & S America, Hawaii. - Sweden, Finland, Denmark, United Kingdom, Germany.

Aphis farinosa Gmelin, 1790
AK, Os, On, Bø, VE, AAi, Ry, HOy, HOi, STi, MRy, Nsy, Nnø.
Salix caprea: Os: Lillehammer (Heie obs. et det.), Os: Ringebu (Heie obs. et det.), HOi: Ullensvang: Lofthus, HOy: Lindås, HOy: Bergen (Fana): Rådal. *Salix* sp.: AK: Ski (Kråkstad): Kolstad, On: Vågå, Skjervå-Jønndalen, Bø: Drammen (Ossiannilsson 1962), VE: Brunlanes: Klever, AAi: Valle: Rygnestad, HOy: Bergen (Fana): Rådal, Festevik, HOi: Voss: Mjølfjell, Kvinnherad: Skeie, Rosendal, Mel and Granvin, Eidfjord: Fossli, MRy: Averøy (Bremsnes): Henda, MRy: Smøla (Brattvær):

Skomsøyvågen, STi: Trondheim (Heie obs. et det.), Nsy: Bodin: Vågøynes, Nnø: Evenes: Liland.
Trapped in yellow trays: AK: Ås: Vollebekk, Ry: Hetland: Forus, Ry: Klepp: Øksnevad, HOy: Bergen (Fana): Biological Station.
Geographical distribution: Europe, N, W, C, E & SE Asia, N America, perhaps also S America. - Sweden, Finland, Denmark, United Kingdom, Germany.

Aphis frangulae Kaltenbach, 1845
Ø, AK, Bø, TEi, Ry, HOy, HOi.
Chamaenerium angustifolium: Bø: Drammen (Ossiannilsson 1962 as *A. praeterita* Walker), TEi: Vinje: Haukeligrend. *Plantago major*: Bø: Drammen (Ossiannilsson 1962 as *A. gossypii* Glover, a subspecies). *Rhamnus frangula*: HOy: Bergen (Fana): Store Milde and Espeland, HOi: Kvinnherad: Ljosnes. *Rhamnus* sp.: Ø: Rakkestad: Knatterød. *Solanum tuberosum*: HOy: Bergen (Fana): Biological Station.
Trapped in yellow trays: AK: Ås: Vollebekk, Ry: Klepp: Øksnevad, Ry: Hetland: Forus, HOy: Bergen (Fana): Biological Station and Stend.
Geographical distribution: Europe, Asia, N America. - Sweden, Finland, Denmark, United Kingdom, Germany.

Aphis galiiscabri Schrank, 1801
Galium mollugo: **HOi**: Granvin: at Granvinvatnet. *G. aparine*: **HOy**: Ølen (Vikebygd): Fordespollen.
Geographical distribution: Europe, N Asia. - Sweden, Finland, Denmark, United Kingdom, Germany.

Aphis grossulariae Kaltenbach, 1843
Ribes uva-crispa: **AK**: Oslo, **Bø**: Drammen. *Ribes nigrum*: **SFy**: Gloppen (both records by Fjelddalen 1964).
Geographical distribution: Europe south to Switzerland and Hungary, NW & C Asia, introduced into N America. - Sweden, Finland, Denmark, United Kingdom, Germany.

Aphis hederae Kaltenbach, 1843
Hedera helix: **Ry**: Hetland: Forus, **HOy**: Bergen (Fana): Biological Station.
Geographical distribution: Europe, W & SW Asia, S Africa, N & S America. - Sweden, Denmark, United Kingdom, Germany.

Aphis hieracii Schrank, 1801
Hieracium umbellatum: **Bø**: Drammen (Ossiannilsson 1962). *Hieracium* sp.: **AAy**: Risør: Søndeled.
Geographical distribution: N, C & E Europe, N Asia, introduced into N America. - Sweden, Finland, Denmark, Germany.

Aphis idaei van der Goot, 1912
AK, HEs, HEn, Bø, AAi, HOy, HOi.
Rubus idaeus: AK: Ski (Kråkstad): Kolstad, AAi: Bykle: Vatndalsvatnet at Hovden, HEs: Stange: near Hamar at Mjøsa (Heie obs. et det.), HEn: Lillehammer (Heie obs. et det.), HOy: Bergen (Fana): Biological Station, HOy: Lindås: Kvalvågnes, HOy: Sund: Tussøy, HOi: Kvinnherad: Seimsfoss, Omviksdalen, and at Issorvatnet, HOi: Jondal.
Comarum palustre (not a host): Bø: Hurum: Storesand. *Potentilla anserina* (not a host): HOi: Eidfjord. Trapped in yellow trays: AK: Ås: Vollebekk, HOy: Bergen (Fana): Biological Station and Stend.
Geographical distribution: W, N, C & E Europe, N & C Asia, introduced into New Zealand, perhaps also N America. - Sweden, Finland, Denmark, United Kingdom, Germany.

Aphis ilicis Kaltenbach, 1843
According to Stenseth (in litt.) found in Norway.
Geographical distribution: Europe, SW Asia, N America. - Sweden, Denmark, United Kingdom, Germany.

Aphis jacobaeae Schrank, 1801
Senecio jacobaea: **HOi**: Kvinnherad: Våge and Bjelland.
Geographical distribution: W, N & C Europe, N Asia. - Sweden, United Kingdom, Germany.

Aphis loti Kaltenbach, 1862
Astragalus alpinus: **On**: Vågå: Sandbu (H. L. G. Stroyan det.).
Geographical distribution: Europe. - Denmark, United Kingdom, Germany.

Aphis mirifica (Börner, 1950)
Chamaenerium angustifolium: **HEs**: Stange: Mjøsvang, **Bv**: Hemsedal: Gladhus.
Geographical distribution: NW, N, C & E Europe. - Denmark, United Kingdom, Germany.

Aphis nasturtii Kaltenbach, 1843
Widespread on potato (*Solanum tuberosum*) (Tambs-Lyche 1950, 1957): **Ø, AK, HEs, Os, On, Bø, Bv, VE, TEy, TEi, AAy, AAi, VAy, Ry, HOy, HOi, SFy, SFi** and **STi**. *Cochlearia officinalis*: **MRy**: Kristiansund: Grip. *Rumex domesticus*: Bø: Drammen (Ossiannilsson 1962). *Helianthemum*

nummularium: AK: Oslo (Ossiannilsson 1962). Geographical distribution: Europe, Asia, introduced into N America. - Sweden, Finland, Denmark, United Kingdom, Germany.

Aphis pilosellae (Börner, 1952)
According to Stenseth (in litt.) found in Norway. Geographical distribution: Europe. - Sweden, Denmark, United Kingdom, Germany.

Aphis plantaginis Goeze, 1778
Plantago major: **Bø**: Drammen (Ossiannilsson 1962).
Geographical distribution: Europe, N & SW Asia, introduced into N America. - Sweden, Finland, Denmark, United Kingdom, Germany.

Aphis pomi DeGeer, 1773
Ø, AK, Bø, AAy, VAy, Ri, HOy, HOi, SFy.
Malus domestica: Ø: Hvaler: Urdal, AK: Ås, Os: Lillehammer (Heie obs. et det.), Bø: Lier, AAy: Grimstad: Fjære, Ri: Hjelmeland: Årdal (Fjelddalen 1964), HOi: Kvinnherad: Guddal, HOi: Ullensvang: Aga, SFy: Gloppen: Sandane. *M. silvestris* (wild apple): HOi: Kvinnherad: Sunde. *Amelanchier* sp.: AAy: Grimstad: Fjære (Fjelddalen 1964). *Crataegus curvisepala*: HOy: Bømlo: Grotvik at Bømlahamn. *Cotoneaster bullatus*: VAy: Lyngdal (Fjelddalen 1964).
Geographical distribution: Europe, Asia, N Africa, N America, New Zealand. - Sweden, Finland, Denmark, United Kingdom, Germany.

Aphis pseudolysimachiae Heikinheimo, 1978
Veronica sp.: **TEi**: Kviteseid: Vråliosen.
Geographical distribution: Sweden, Finland, Denmark, Germany.

Aphis pulsatillae Ossiannilsson, 1959
Anemone pulsatilla: **VE**: Tjøme: Hvasser.
Geographical distribution: N & C Europe, C Asia. - Sweden, Germany.

Aphis ruborum (Börner, 1932)
Rubus fruticosus: **Ø**: Hvaler: Reff, **VE**: Brunlanes: Ulfsbakk, **AAy**: Tromøy: Sandum, **HOi**: Kvinnherad: Våge, Sunde.
Geographical distribution: Europe, W & C Asia, N Africa. - Sweden, Denmark, United Kingdom, Germany.

Aphis rumicis Linné, 1758
AK, Os, Bø, HOy, HOi, MRy.
Rumex crispus: AK: Ås (Heikinheimo leg., in Zool. Mus. Bergen). *R. domesticus*: Bø: Drammen (Ossiannilsson 1962). *R. obtusifolius*: MRy: Kristiansund. *Rumex* sp.: Os: Lillehammer (Heie obs. et det.), HOi: Kvinnherad: Sunde, HOi: Kvam: Fyksesund. *Rheum* sp.: AK: Oslo: Botanical Garden (Ossiannilsson 1962). Trapped in yellow trays: AK: Ås: Vollebekk, HOy: Bergen (Fana): Stend.
Geographical distribution: Europe, Asia, Africa, N America. - Sweden, Finland, Denmark, United Kingdom, Germany.

Aphis salicariae Koch, 1855
AK, Os, HEs, Bø, HOy.
Chamaenerium angustifolium: Os: Ringebu (Heie obs. et det.), Bø: Drammen (Ossiannilsson 1962), HEs: Nes: Kvernvollen.
Trapped in yellow trays: AK: Ås: Vollebekk, HOy: Bergen (Fana): Biological Station.
Geographical distribution: NW, N, C & E Europe, W Asia, N America. - Sweden, Finland, United Kingdom, Germany.

Aphis sambuci Linné, 1758
AK, HEs, Os, VE, TEi, Ry, HOy, HOi.
Sambucus racemosa: Os: Lillehammer (Heie obs. et det.), VE: Horten (Fjelddalen 1964), TEi: Fyresdal (Fjelddalen 1964), Ry: Hetland: Forus. *Sambucus* sp.: HEs: Stange: Sollia, Ry: Klepp: Øksnevad, HOy: Bergen (Fana): Paradis, HOi: Kvinnherad: Sunde, Veavik and Guddal.
On unknown plant: Ry: Klepp: Revtangen (Holgersen leg.).
Trapped in yellow trays: AK: Ås: Vollebekk, Ry: Hetland: Forus, Ry: Klepp: Øksnevad, HOy: Bergen (Fana): Biological Station and Stend.
Geographical distribution: Europe, W, N, C & E Asia, N & S America. -Sweden, Finland, Denmark, United Kingdom, Germany.

Aphis schneideri (Börner, 1940)
Ribes rubrum: **Ø**: Hvaler: Reff, **Bø**: Hurum (Fjelddalen 1964). *R. nigrum*: Bø: Modum (Fjelddalen 1964). *R. ?alpinum*: **TRy**: Kvæfjord: Torheim.
Geographical distribution: W, N, C & E Europe, W, N & C Asia. - Sweden, Finland, Denmark, United Kingdom, Germany.

Aphis sedi Kaltenbach, 1843
Ø, HEs, Os, Bø.
Sedum maximum: Ø: Skjeberg: Skjebergdal church, HEs: Stange: Mjøsvang, Os: Lillehammer (Heie obs. et det.). *Sedum* sp.: Ø: Onsøy: Lervik, Bø: at Drammen (Ossiannilsson 1962).
Geographical distribution: Europe, W Asia, N America, Australia. - Sweden, Finland, Denmark, United Kingdom, Germany.

Aphis subnitida (Börner, 1940)
According to Stenseth (Heie 1986) found in Norway.
Geographical distribution: N, C & E Europe, NW Asia. - Sweden, Finland, Denmark, Germany.

Aphis tormentillae Passerini, 1879
Ry, HOy, HOi, MRy.
Potentilla erecta: Ry: Klepp: Øksnevad, HOy: Bergen (Fana): Biological Station, HOi: Kvinnherad: Våge, Sunde and Uppsangerneset, MRy: Frei: Enga.
Geographical distribution: Europe, W Asia. - Sweden, Denmark, United Kingdom, Germany.

Aphis triglochinis Theobald, 1926
Ribes rubrum: **AK**: Bærum. *Drosera anglica*: **MRy**: Averøy (Bremsnes): Hoset.
Geographical distribution: W, N & C Europe. - Sweden, Finland, Denmark, United Kingdom, Germany.

Aphis tripolii Laing, 1920
Aster tripolium: **HOy**: Bergen (Fana): Biological Station, HOy: Austevoll: Store Karlsøy, **HOi**: Kvinnherad: Bjellandshavn.
Geographical distribution: United Kingdom, Norway, Sweden, Germany, France and Italy.

Aphis ulmariae Schrank, 1801
Filipendula ulmaria: **Ø**: Hvaler: Botne, **VE**: Tjøme: Hulebakk and Mostrand, **TEy**: Bamble: Brevikstranda, **AAy**: Tromøy: Sandum.
Geographical distribution: W, N, C & E Europe, N Asia, N America. - Sweden, Finland, Denmark, United Kingdom, Germany.

Aphis urticata Gmelin, 1790
Ø, HEs, Os, On, Bø, HOy.
Urtica dioica: Ø: Hvaler: Reff, HEs: Ringsaker: Kjelsrud and Helghøya, Os: Ringebu (Heie leg. et det.), Bø: Drammen (Ossiannilsson 1962), HOy: Bergen: Nykronborg. *U. urens*: On: Vågå: Hindseter.
Geographical distribution: Europe, SW, N & C Asia, introduced into N America. - Sweden, Finland, Denmark, United Kingdom, Germany.

Aphis uvaeursi Ossiannilsson, 1959
Arctostaphylos uva-ursi: **On**: Vågå: Skjervå-Jønndalen and Besstrondi, On: Vågå: Randsverk.
Geographical distribution: Scotland, Norway, Sweden, Finland, Germany, Poland.

Aphis vaccinii (Börner, 1940)
Ø, On, Bv, HOy, HOi, MRy.
Vaccinium uliginosum: Bv: Hemsedal: Gladhus, HOy: Bergen (Fana): Lønningehamn, HOi: Kvinnherad: Våge, Sunde, MRy: Smøla (Edøy): Skjølberg. *V. myrtillus*: Ø: Skjeberg: at Ise sjø, HOy: Bergen (Fana): Bay at Mariholmen. *Arctostaphylos uva-ursi*: On: Vågå: Skjervå, Jønndalen.
Geographical distribution: Europe south to the Alps, NW Asia. - Sweden, Finland, Denmark, United Kingdom, Germany.

Aphis viburni Scopoli, 1763
According to Stenseth (in litt.) found in Norway.
Geographical distribution: Europe, N & C Asia, introduced into N America. - Sweden, Denmark, United Kingdom, Germany.

Toxopterina vandergooti (Börner, 1939)
AK, HEs, VAy, Ry.
Achillea millefolium: HEs: Stange: Mjøsvang, VAy: Mandal, Ry: Hetland: Forus.
Trapped: AK: Ås: Vollebekk.
Geographical distribution: Europe. - Sweden, Finland, Denmark, United Kingdom, Germany.

Tribe Rhopalosiphini

Subtribe Rhopalosiphina

Hyalopterus pruni (Geoffroy, 1762)
Ø, AK, Os, Bø, VE, AAy, VAy, Ry, HOy. The species has - according to Stenseth (1970) -been found in all districts, north to Nord-Trøndelag (NTi and NTy).
Phragmites communis: Ø: Hvaler: Botne, Ø: Skjeberg: at Ise sjø, AAy: Tromøy: Sandum. *Prunus domestica*: Fjelddalen (1964) gives records from AAy: Froland, VAy: Lyngdal, Ry: Strand and HOy: Bergen (Fana); Tambs-Lyche's records: Bø: Modum: Buskerud Agricultural School, VE: Larvik; Heie's record: Os: Lillehammer. *Prunus spinosa*: VE: Tjøme: Hulebakk, AAy: Tromøy: Hove.
Caught in the air: VAy: Lindesnes: Våge. Trapped: AK: Ås: Vollebekk.
Geographical distribution: Cosmopolitan. - Sweden, Finland, Denmark, United Kingdom, Germany.

Rhopalosiphum insertum (Walker, 1849)
AK, Ry, HOy, HOi, SFi.
Malus sp.: HOy: Bergen (Fana): Biological Station, HOy: Os: Moldegård. *Malus domestica*: HOi:

Ullensvang, SFi: Stryn (Fjelddalen 1964). *Pyrus communis*: AK: Asker: Sem, Ry: Stavanger (Fjelddalen 1964), HOy: Bergen (Fana): Biological Station. *Sorbus aucuparia, S. subsimilis* and *S.* sp.: HOy: Bergen (Fana): Biological Station. *Cotoneaster salicifolia*: HOy: Bergen (Fana): at Fana church. *Phalaris arundinaceae*: HOi: Ulvik: Hjeltnes.
Spergula arvensis (not a host): HOi: Eidfjord. Trapped: AK: Ås: Vollebekk.
Geographical distribution: Europe, N, SW & C Asia, introduced into N America and the Azores.

Rhopalosiphum maidis (Fitch, 1856)
Found by C. Stenseth (in litt.) in **AK**: Ås: Akershus (Heie 1986).
Geographical distribution: In warm climates all over the world. - Sweden, Finland, Denmark, United Kingdom, Germany.

Rhopalosiphum nymphaeae (Linné, 1761)
On, AAy, VAy, HOy.
Juncus effusus: AAy: Arendal (Flosta): Rørvik. *Eriophorum angustifolium*: On: Østre Slidre: Valdresflya (1350 m above sea level). Swept from vegetation of *Juncus, Triglochin* a.o.: AAy: Arendal (Holt): Tangen. *Plantago maritima*: VAy: Mandal: Lande, HOy: Bergen (Fana): Festevik (doubtful identification by V.F.Eastop).
Geographical distribution: Nearly cosmopolitan. - Sweden, Finland, Denmark, United Kingdom, Germany.

Rhopalosiphum padi (Linné, 1758)
Ø, AK, HEs, HEn, Os, On, Bv, VE, TEy, TEi, AAy, AAi, VAy, Ry, HOy, HOi, SFy, SFi, MRy, STi, NTy, NTi, Nsy, TRy, TRi, Nnv, Fø.
Prunus padus: AK: Ås, Oslo and Asker (earliest records: Siebke 1874, Fjelddalen 1964), HEs: Stange and Trysil, Os: Østre Toten (Fjelddalen 1964), AAy: Tromøy: Sandum, AAy: Lillesand: Herefoss (Fjelddalen 1964), HOy: Bergen (Fana): Biological Station, Stend, Skjold, Nesttun, Fjøsanger, Festevik, Paradis-Natland, HOy: Bergen: Bellevue, HOi: Kvinnherad: Guddal and Rosendal, HOi: Ulvik: Hjeltnes, VAy: Kristiansand (Fjelddalen 1964), STi: Oppdal (Fjelddalen 1964) and Trondheim, STi: Strinda: Voll, Nsy: Bodin: Vagønes, Nnv: Hadsel (Fjelddalen 1964), Fø: Sør-Varanger (Fjelddalen 1964); Leatherdale (1959) gives records from AK: Oslo, SFy: Valle: Hylestad and STi: Trondheim. *P. virginiana* (Fjelddalen 1964): AK: Ås, HEs: Ringsaker.
On grasses: *Triticum aestivum*: Ø: Skjeberg, VE: Brunlanes, TEy: Solum (Fjelddalen 1964). *Triticum* and *Hordeum*: TEy: Solum (Fjelddalen 1964). *Hordeum:* Ø: Rakkestad, AK: Ullensaker, TEy: Solum (Fjelddalen 1964). *Avena sativa*: Ø: Rakkestad: Degernes, Råde, AK: Ås, HEn: Stor-Elvdal: Opphus, Os: Søndre Land: Fluberg, Østre Toten, Bv: Flå, VE: Sande: Skoger (Fjelddalen leg.), Ry: Klepp: Øksnevad. *Phleum pratense*: Ø: Eidsberg. On: Vågå: Hindseter, HOy: Bergen (Fana): Stend. *Arrhenatherum alpinum* and *Phleum commutatum*: HOi: Ullensvang: Stigstuv. *Elymus areanarius*: VE: Svelvik: Berger (Ossiannilsson 1962), MRy: Averøy (Bremsnes). *Agropyrum repens*: Ry: Hetland: Forus. *Dactylus glomerata*: HOy: Bergen (Fana): Biological Station. Various grasses: Os: Vestre Toten: Eina church, TEy: Bamble, AAy: Risør: Søndeled, VAy: Lindesnes: Våge, Ry: Klepp: Øksnevad, HOi: Ullensvang: Aga.
On other plants (most or all non-hosts): Os: Ringebu: Venabu (sweeping and *Empetrum nigrum*), On: Vågå: Klones (*Matricaria matricarioides*) and Randsverk (*Vaccinium*), and Østre Slidre: Beitostølen and Valdresflya (*Salix glauca, Carex saxatilis, C. lachenalii* and *Eriophorum angustifolium*), TEy: Bamble: Brevik Stranda (*Lychnis flos-cuculi*) and Bamble: Finmarkstranda (*Achillea ptarmica*), TEy: Kragerø: Sannidal (*Scirpus palustris*), TEi: Vinje: Tessvatn (*Salix* sp.), AAy: Tvedestrand (Dypvåg): Løvdal (*Juncus gerardi*), AAy: Risør: Søndeled (*Iris pseudocarus*), AAy: Risør (Søndeled): Båssvik (*Comarum palustre*), AAi: Bygland: Moi (*Vaccinium*) and Bykle: Trydal (*Equisetum silvaticum*), VAy: Mandal: Halse and Harkmark: Lande (*Spergula arvensis*), HOy: Bergen (Fana): Rådal (on *Salix* sp.), HOi: Eidfjord (*Hypericum*) and Voss: Bordalen (- unknown plant), SFy: Sandane (unknown plant, L. Greve leg.), SFi: Aurland: Vatnahalsen (*Eriophorum* sp., Heikinheimo 1966). On potato (*Solanum tuberosum*): STi: Strinda, Voll, Val and Mære, NTy: Nærøy, NTi: Steinkjer: Sparbu, Levanger (Skogn), Inderø and Stjørdal, Nsy: Tjøtta, Bodin and Vågønes, Nnv: Sortland, TRy: Lenvik and Hardestad: Trondenes, TRi: Sørreisa and Balsfjord. Trapped in yellow trays: AK: Ås: Vollebekk, Ry: Klepp: Øksnevad, Ry: Hetland: Forus, HOy: Bergen (Fana): Biological Station and Stend, HOi: Ullensvang: Stigstuv (Tambs-Lyche 1975).
Geographical distribution: Cosmopolitan. - Sweden, Finland, Denmark, Iceland, the Faroes, United Kingdom, Germany.

Melanaphis luzulella (Hille Ris Lambers, 1939)
Luzula sp.: **HOy**: Bergen (Fana): Bjelkarøy-Buarøy.
Geographical distribution: NW, N, C & E Europe. - Sweden, Denmark, United Kingdom, Germany.

Schizaphis borealis Tambs-Lyche, 1959
Phleum pratense: **Ø**: Rakkestad: Spydeberg and Degernes, **AK**: Enebakk. Trapped: AK: Ås: Vollebekk.
Geographical distribution: Only Sweden and Norway.

Family Lachnidae

Lachnus roboris (Linné, 1758)
Ø, Bø, VE, HOy.
Quercus robur: Ø: Hvaler: Brenne, VE: Sande: Syvertsvollen (Ossiannilsson 1962), HOy: Tysnes: Store Vernøy. Also known from Bø.
Geographical distribution: Europe, N Africa, introduced into N America. - Sweden, Finland, United Kingdom, Germany.

Stomaphis quercus (Linné, 1758)
Betula sp.: **VE**: Tjøme (Fjeldberg leg.). The normal host is *Quercus*.
Geographical distribution: Europe south to Hungary, east to Russia. - Sweden, Denmark, United Kingdom, Germany.

Tuberolachnus salignus (Gmelin, 1790)
Salix caprea: **Ry**: Sola: Sandnes (sample sent from Statens Plantevern).
Geographical distribution: Nearly cosmopolitan. - Sweden, Denmark, United Kingdom, Germany.

Maculolachnus submacula (Walker, 1848)
Rosa sp.: **HOy**: Bergen (Fana): Lønningehamn.
Swept from various plants: **Bv**: Hol: Bardøla, Geilo.
Geographical distribution: Europe, SW, N & NE Asia. - Sweden, Finland, Denmark, United Kingdom, Germany.

Eulachnus agilis (Kaltenbach, 1843)
AK, Bø, Ry.
Trapped in yellow trays: AK: Ås: Vollebekk, Ry: Klepp: Øksnevad.
Also known from *Pinus* from AK, Bø and Ry (Stenseth & Bakke 1968).
Geographical distribution: Europe, SW, N & E Asia, N America. - Sweden, Finland, Denmark, United Kingdom, Germany.

Eulachnus brevipilosus (Börner,)
Stenseth & Bakke (1968) recorded it from **AAy** (on needles of *Pinus silvestris*).
Geographical distribution: Europe. - Sweden, Denmark, Germany.

Eulachnus rileyi (Williams, 1911)
Trapped: **Ry**: Hetland: Forus.
Geographical distribution: Europe, SW Asia and India, N America. - Sweden, Denmark, United Kingdom, Germany.

Schizolachnus pineti (Fabricius, 1781)
Ø, AK, HEs, Bø, TEi, AAy, VAy, HOi, MRy, Nsy, TRy.
Siebke (1874), Schøyen (1916, 1920, 1921, 1923, 1943) and Stenseth & Bakke (1968) recorded it from Ø, AK, HEs, Bø, TEi, AAy, VAy, HOi, Nsy and TRy.
Pinus silvestris: AK: Ski (Kråkstad): Kolstad, HEs: Stange: Mjøsvang, AAy: Moland: Rørvik. *Pinus* sp.: Bø: Drammen (Haftorn leg.), MRy: Frei: Endresetlia.
Geographical distribution: Europe, N & C Asia, N America. - Sweden, Finland, Denmark, United Kingdom, Germany.

Cinara confinis (Koch, 1856)
Recorded from **Ry, MRy, Nsy** by Stenseth & Bakke (1968, as *C. abieticola* (Cholodkovsky), a synonym) from *Abies*.
Geographical distribution: Europe, Asia, introduced into N & S America. - Sweden, Finland, Denmark, United Kingdom, Germany.

Cinara costata (Zetterstedt, 1828)
On, AAy, HOy.
Picea abies: On: Nord Fron: Golåsjøen, HOy: Bergen (Fana): Biological Station.
Recorded from AAy by Stenseth & Bakke (1968).
Geographical distribution: Europe, NE & E Asia, N America, Australia. -Sweden, Finland, Denmark, United Kingdom, Germany.

Cinara juniperi (DeGeer, 1773)
Ø, AK, HEs, On, Bø, HOy, HOi, MRy.
Juniperus communis: Ø: Hvaler: Reff, HEs: Stange: Mjøsvang, On: Vågå: Gjendisheim and Storhaugseter, HOy: Bergen (Fana): Revhaug, HOy: Austevoll: Store Karlsøy, HOi: Kvinnherad: Sundevågen, Bjellandshavn and Uppsangerneset, MRy: Smøla (Edøy): Klokkavågen. Trapped: HOy: Bergen (Fana): Biological Station.
Stenseth & Bakke (1968) recorded it from Ø, AK and Bø.

Geographical distribution: Europe, SW, N, C & E Asia, N Africa, the Azores, Greenland, N & S America, New Zealand. - Sweden, Finland, Denmark, United Kingdom, Germany.

Cinara nuda Mordvilko, 1895
Sweeping: **AAi**: Evje: Bjorvatn.
Geographical distribution: Europe, N Asia. - Sweden, Finland, Germany.

Cinara pectinatae (Nördlinger, 1880)
Trapped: **AK**: Ås: Vollebekk.
Geographical distribution: Europe, SW & N Asia. - Sweden, Denmark, United Kingdom, Germany.

Cinara piceae (Panzer, 1801)
AK, HEs, Os, Bø, Bv, VE, TEy, AAy, Ry, HOy, HOi, STi.
Picea abies: TEy: Bamble: Ødegården, HOy: Bergen (Fana): Biological Station, HOi: Voss: Hjelle, TEy: Bamble: Ødegården.
Recorded from AK, HEs, Os, Bø, Bv, VE, TEy, AAy, Ry and STi by Schøyen (1916, 1920, 1921, 1923, 1943) and Stenseth & Bakke (1968).
Geographical distribution: Europe, NW, C & E Asia, N & S America. -Sweden, Finland, Denmark, United Kingdom, Germany.

Cinara piceicola (Cholodkovsky, 1898)
Recorded from **AK, HEs, Bø** and **Bv** (on *Picea abies*) by Stenseth & Bakke (1968).
Geographical distribution: Europe, N Asia, introduced into N America and Japan. - Sweden, Finland, Denmark, United Kingdom, Germany.

Cinara pilicornis (Hartig, 1841)
Ø, AK, Bø, Bv, TEy, VAy, AAy, Ry, HOy, HOi.
Picea abies: Ø: Rakkestad: Knatterød, HOy: Bergen (Fana): Fanaseter (here also on *P. sitchensis*), HOi: Granvin: Granvinvatnet, HOi: Voss: Bavallen. *P. sitchensis* and *P. engelmanni*: TEy: Bamble: Ødegården, HOy: Bergen (Fana): Ramstad.
Caught in traps: Ry: Hetland: Forus.
Recorded from AK, Bø, Bv, TEy, VAy, AAy, Ry and HOy (on *Picea*) by Stenseth & Bakke (1968) (as *C. pinicola* (Kaltenbach)).
Geographical distribution: Europe, Asia, Australia, perhaps also N & S America, but American records may apply to other species. - Sweden, Finland, Denmark, United Kingdom, Germany.

Cinara pinea (Mordvilko, 1895)
Ø, AK, Os, Bø, Bv, TEy, AAy, AAi, HOy.
Pinus silvestris: Ø: Hvaler: Reff, AAi: Hylestad: Rysstad. *Pinus* sp.: Bø: Drammen (Haftorn leg.), AAi: Bykle: Hovden and Løyning, HOy: Bergen (Fana): Ospøya.
Caught in trap: AK: Ås: Vollebekk. Unknown plants: Os: Vik: Skeisbotten, Haga, Bv: Hol: Geilo.
Recorded from Ø, AK, Bø, TEy and AAy by Stenseth & Bakke (1968).
Geographical distribution: Europe, W, N & C Asia, introduced into N America. - Sweden, Finland, Denmark, United Kingdom, Germany.

Cinara pini (Linné, 1758)
Ø, AK, Bø, AAi, HOy, HOi, MRy.
Pinus silvestris: Ø: Hvaler: Reff, Bø: Drammen (leg. Haftorn), AAi: Hylestad: Rysstad, and Bykle, MRy: Frei: Endresetlia. *Pinus* sp.: HOy: Bergen (Fana): Ospøya and Nordre Eggholmen, HOi: Kvinnherad: Bjellandshavn.
Trapped in yellow trays: AK: Ås: Vollebekk, HOy: Bergen (Fana): Biological Station and Stend. Swept from grasses: HOy: Bergen (Fana): Festevik.
Recorded from Ø, AK and Bø by Stenseth & Bakke (1968).
Geographical distribution: Europe, N Asia, perhaps introduced into N America, but a number of American records apply to *C. pinea* according to Eastop (1972). - Sweden, Finland, Denmark, United Kingdom, Germany.

Cinara pruinosa (Hartig, 1841)
Recorded from **AK** and **HEs** (on *Picea abies*) by Stenseth & Bakke (1968) (as *C. bogdanowi* (Mordvilko), a synonym).
Geographical distribution: Europe, SW, N & C Asia, introduced into N America. - Sweden, Finland, Denmark, United Kingdom, Germany.

Protrama ranunculi (del Guercio, 1909)
Trapped in yellow trays: **AK**: Ås: Vollebekk, **Ry**: Hetland: Forus, **HOy**: Bergen (Fana): Biological Station and Stend.
Geographical distribution: Europe, NW & C Asia. - Sweden, Finland, Denmark, United Kingdom, Germany.

Trama troglodytes von Heyden, 1837
Achillea millefolium: **HEs**: Stange: Mjøsvang, **Bø**: Drammen (Ossiannilsson 1962), here also on *Cirsium arvense, C. palustre, Centaurea jacea, Achillea millefolium* and *Tussilago farfara.*
Geographical distribution: Europe south to the Alps, NW, C & E Asia. -Sweden, Finland, Denmark, United Kingdom, Germany.

Additions to parts I and II

Aphids new to Norway

Family Aphididae, Subfamily Aphidinae, Tribe Rhopalosiphini, Subtribe Macrosiphina

Brachycaudus (Acaudus) populi (del Guercio, 1911)
Os, On, AAi, HOi.
The records of *B. (A.) lychnidis* (Linné) from *Silene* spp. belong to *B. populi* according to Burger (1975); they are from On and HOi. Also the record of *B. (A.) klugkisti* (Börner) from *Silene cucubalus* from AAi belongs to *B. populi*. Heie (unpubl.) found it on *Silene cucubalus* in Os: Ringebu. In the collection is also a sample from *Trifolium pratense* (not a host) from On: Vågå: Vågåmo. Records of *B. lychnidis* are from AK and SFi, and records of *B. klugkisti* are from AK, Ry and HOy.

Brachycaudus (Acaudus) populi: Geographical distribution: Europe. - Sweden, Finland, Denmark, Germany.

B. (A.) lychnidis: Geographical distribution: Europe, SW & NW Asia. - Sweden, Finland, Denmark, United Kingdom, Germany.

B. (A.) klugkisti: Geographical distribution: Europe. - Sweden, Finland, Denmark, United Kingdom, Germany.

Brachycaudus (Thuleaphis) sedi (Jacob, 1964)
Sedum rosea: **On**: Vang: Helinvatnet. New to Scandinavia.
Geographical distribution: Iceland, Wales, Scotland, Norway.

Diuraphis muehlei (Börner, 1950)
Material in British Museum (Heie 1992): **AK**: Ås: Vollebekk.
Geographical distribution: Sweden, Finland, Denmark. - United Kingdom, Germany, the Netherlands, Russia, Italy.

Diuraphis (Holcaphis) calamagrostis (Ossiannilsson, 1959)
Calamagrostis neglecta: **Bv**: Hemsedal: Gladhus.
Geographical distribution: Sweden, Norway, Finland, Poland.

Lipaphis turritella (Wahlgren, 1938)
According to Stenseth (in litt.) found in Norway.
Sweden, Finland, Denmark. - N, C & E Europe, W Siberia.

Cavariella (Cavaraiella) aquatica (Gillette & Bragg, 1916)
Salix lapponum and *Comarum palustre* (not a host): **Os**: Sør Fron: Skjærvangen.
Geographical distribution: W, N & C Europe, SW, NW & C Asia, perhaps also Pakistan, N America. - Sweden, Finland, United Kingdom.

Myzus (Nectarosiphon) certus (Walker, 1849)
Cerastium alpina: **On**: Vang: at Helinvatnet.
Geographical distribution: Europe, SW Asia, N America. - Sweden, Denmark, United Kingdom, Germany.

Myzus (Nectarosiphon) ligustri (Mosley, 1841)
According to Stenseth (in litt.) found in Norway.
Geographical distribution: Sweden, Denmark. - Europe, N America.

Myzosiphon tulipaellum (Theobald, 1916)
(*Rhopalosiphoninus tulipaellus* (Theobald, 1916))
Trapped: **HOy**: Bergen (Fana): Biological Station.
Geographical distribution: Europe, N America. - Sweden, Denmark, United Kingdom, Germany.

Nasonovia pilosellae (Börner, 1933)
According to Stenseth (in litt.) found in Norway.
Geographical distribution: Sweden, Finland, Denmark. - Europe.

Nasonovia (Kakimia) saxifragae (Doncaster & Stroyan, 1952)
Found by the first author in Finmark (**F**).
Geographical distribution: Greenland, Jan Mayen, Iceland, United Kingdom.

Hyperomyzus lampsanae (Börner, 1932)
Material in British Museum (Heie 1994) collected in Norway.
Geographical distribution: Sweden, Denmark. - Europe.

Hyperomyzus (Neonasonovia) thorsteinni Stroyan, 1960
(identification confirmed by the occurrence of sexuales on *Euphrasia*; determined as *H. (N.) zirnitsi* Hille Ris Lambers, 1952, by Tambs-Lyche in the manuscript, and *Hyperomyzus boerneri thorsteinni* Stroyan, 1960, by H. Tambs-Lyche 1975).
Euphrasia sp.: **On**: Vågå: Besstrondi, with oviparous females and males. Trapped: **HOi**: Ullensvang: Stigstuv (Tambs-Lyche 1975).
Geographical distribution: Described from Iceland, recorded from United Kingdom.

Cryptomyzus (Ampullosiphon) stachydis (Heikinheimo, 1955)
Found in Norway (Stenseth 1971).
Geographical distribution: Norway, Finland, Poland.

Capitophorus pakansus Hottes & Frison, 1931
According to Stenseth (in litt. 1979) found in Norway.
Geographical distribution: Sweden, Finland, Denmark. - Europe, N America.

Capitophorus similis van der Goot, 1915
AK, HEs, Bø.
Tussilago farfara: HEs: Ringsaker (Nes): Kvernvollen, Bø: Drammen (Ossiannilsson 1962).
Trapped: AK: Ås: Vollebekk.
Geographical distribution: Europe, Turkey, N Asia and E Himalayas. - Sweden, Finland, Denmark, United Kingdom, Germany.

Pleotrichophorus duponti Hille Ris Lambers, 1935
Achillea millefolium: **On**: Vågå: Hindseter, **STi**: Hommelvik (Heie leg. et det.), STi: Oppdal: Kongsvoll and Drivdalen.
Geographical distribution: W, N, C & E Europe. - Sweden, Denmark, United Kingdom, Germany.

Acyrthosiphon brachysiphon Hille Ris Lambers, 1952
On, Bv, SFi.
Vaccinium uliginosum: On: Vågå: Besstrondi and Gjendisheim, On: Vang: Helinvatnet (here also on *V. myrtillus*), Bv: Hol: Haugestøl, Løa (here also on *V. myrtillus*).
Salix lapponum (not a host): SFi: Aurland: Hornsvann (Heikinheimo 1966, described as *A. aurlandicum* Heikinheimo).
Geographical distribution: Greenland, N Canada, Iceland, Norway, Sweden, Finland, NW Russia, Switzerland.

Acyrthosiphon calvulum Ossiannilsson, 1958
Unknown plants: **Svalbard**: Sassendalen (Ossiannilsson 1958) and Isfjorden (Heikinheimo 1968).
Geographical distribution: Only Svalbard (Spitzbergen).

Acyrthosiphon knechteli (Börner, 1950)
Vaccinium uliginosum: **Ø**: Skjeberg: at Ise sjø.
Geographical distribution: N, C & E Europe, NW Asia. - Sweden, Finland, Germany.

Acyrthosiphon svalbardicum Heikinheimo, 1968
Unknown plant: **Svalbard**: Vestpynten, Isfjorden (Heikinheimo 1968).
Geographical distribution: Only Svalbard (Spitzbergen).

Aulacorthum flavum F.P. Müller, 1958
According to Stenseth (in litt.) found in Norway.
Geographical distribution: Finland, Denmark. - Germany, Poland, Czechoslovakia.

Aulacorthum vaccinii Hille Ris Lambers, 1952
Vaccinium uliginosum: **Ø**: Skjeberg: Ise sjø. *V. myrtillus*: **Os**: Ringebu: Dørdalseter.
Geographical distribution: N & E Europe, Japan. - Sweden, Finland.

Sitobion dryopteridis (Holman, 1959)
Athyrium felix-femina: **MRy**: Averøy (Bremsnes): Henda.
Geographical distribution: Norway, Sweden, Germany, Czechoslovakia, NW Russia.

Sitobion paludum F. P. Müller, 1982
Os, On, Bv, TEy, HOy.
Vaccinium uliginosum: Bv: Hemsedal: Gladhus, TEy: Drangedal: Grova-Steane, HOy: Bergen (Fana): Biological Station and Milde. *V. myrtillus*: On: Vågå: Randsverk, Os: Ringebu: Dørdalseter.
Geographical distribution: Norway, Germany, Poland.

[*Macrosiphum lisae* Heie, 1965
According to Stenseth (in litt.) found in Norway, which was published by Heie (1994). Since that the second author has seen part of the material collected on *Chamaenerium angustifolium* in Fi: Alta: Kåfjordbotn, 23.VIII.1968. It is not *M. lisae*, but *M. euphorbiae*.]

Macrosiphum rubiarctici Heikinheimo, 1946
Rubus saxatilis: **Bv**: Hemsedal: Gladhus. *R. chamaemorus*: **MRy**: Averøy (Bremsnes): Hoset.
Geographical distribution: Norway, Sweden, Finland.

Illinoia (Masonaphis) lambersi (MacGillivray,)
According to Stenseth (in litt.) found in Norway.
Geographical distribution: N America, introduced into Europe, e.g. United Kingdom, the Netherlands and Denmark.

Uroleucon cirsii (Linné, 1758)
According to Stenseth (in litt.) found in Norway.
Geographical distribution: Sweden, Finland, Denmark. - Europe.

Uroleucon hypochoeridis (Hille Ris Lambers, 1939)
Hypochoeris: **On**, perhaps also **AAi** and **HOy**.
Geographical distribution: Sweden, Finland, Denmark. - Europe.

Amphorophora idaei (Börner, 1939)
The records of *A. rubi* (Kaltenbach, 1843) from *Rubus idaeus* belong to *A. idaei*; they are from **AK, Bø, AAy, AAi, HOy** and **TRi**. Heie (unpubl.) found it in **HEs**: Stange: near Hamar at Mjøsa and **Os**: Lillehammer.
Geographical distribution of *A. idaei*: Europe south to the Alps, east to Russia. - Sweden, Finland, Denmark, United Kingdom, Germany.
Records of *A. rubi* from *Rubus fruticosus, R. chamaemorus* and *R. saxatilis* are from AK, HEs, On, Bv, TEi, AAi, HOi and Fi.
Geographical distribution of *A. rubi*: Europe, SW, W & C Asia, introduced into N America. -Sweden, Denmark, United Kingdom, Germany.

Corrections

Part I:

Acyrthosiphon aurlandicum Heikinheimo, 1966 should be deleted from the list. It is a synonym of *Acyrthosiphon brachysiphon* Hille Ris Lambers, 1952 (see above).
Acyrthosiphon euphorbiae Börner, 1940, subsp. *neerlandicus* Hille Ris Lambers, 1947: read *Acyrthosiphon neerlandicum* Hille Ris Lambers, 1947.
Acyrthosiphon malvae (Mosley): read *Acyrthosiphon pelargonii* (Kaltenbach, 1843).
Dactynotus Rafinesque, 1818: read *Uroleucon* Mordvilko, 1914 (as mentioned in the footnote in Tambs-Lyche 1968, p.11).
Macrosiphoniella chamomillae Hille Ris Lambers, 1947 should be deleted from the list. It is a synonym of *M. tapuskae* (Hottes & Frison, 1931). The geographical distribution in Norway of the latter consequently is: AK, Bø, Ry.

Part II:

Brachycaudus lateralis (Walker, 1848) should be deleted from the list; the material belongs to *B. (Acaudus) cardui* (Linné).
Brachycaudus semisubterraneus Börner, 1951: read *Brachycaudus (Acaudus) persicae* (Passerini, 1860).
Appelia Börner, 1930 and *Thuleaphis* Hille Ris Lambers, 1960: they are now regarded as subgenera of *Brachycaudus* van der Goot, 1913.
Acaudinum scabiosae Hille Ris Lambers, 1959: read *Acaudinum centaureae* (Koch, 1854).
Holcaphis Hille Ris Lambers, 1939: it is now regarded as a subgenus of *Diuraphis* Aizenberg, 1935.
Nasonovia nigra Hille Ris Lambers, 1931: read *Nasonovia compositellae* subsp. *nigra* (Hille Ris Lambers, 1931).
Rhopalosiphoninus calthae (Koch): read *Pseudorhopalosiphoninus calthae* (Koch, 1854).
Rhopalosiphoninus heikinheimoi (Börner): read *Submegoura heikinheimoi* (Börner, 1952).
Rhopalosiphoninus staphyleae (Koch): read *Myzosiphon staphyleae* (Koch, 1854).

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The second author wishes to thank Dr. Hans Tambs-Lyche for help and information on locality names, loan of slides and for asking me to make the manuscript pages, which were handwritten by Helene Tambs-Lyche, ready for publication. Also thanks to Dr. C. Stenseth for giving some unpublished records and to Dr. Lita Greve Jensen for information on locality names.

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Short communications

Distinguishing *Eudonia truncicolella* (STAINTON, 1849) AND *Eudonia sudetica* (Zeller, 1839) (Lepidoptera, Pyralidae) by male Genitalia

Sverre Kobro

Sverre Kobro, Statens plantevern, Avd. Skadedyr, Fellesbygget, N-1432 Ås, Norway.

The species *Eudonia truncicolella* and *E. sudetica* are easily distinguished when fresh, but worn specimens can be troublesome to identify. From my experience, the drawings of male genitalia by Hannemann (1964) and Rinnhofer (1980) are of little use for these two species.

There are, however, clear differences on the rear site of the male genitalia apparatus (**Fig. 1**). The dorsal side of the tegumen terminates as a edge from each side. The edges are seen as dark lines converging towards the base of the uncus. In *E. truncicolella* the lines are thin and meet (arrow), but in *E. sudetica* the lines are coarser and do not meet. In *E. sudetica* the lines are con-

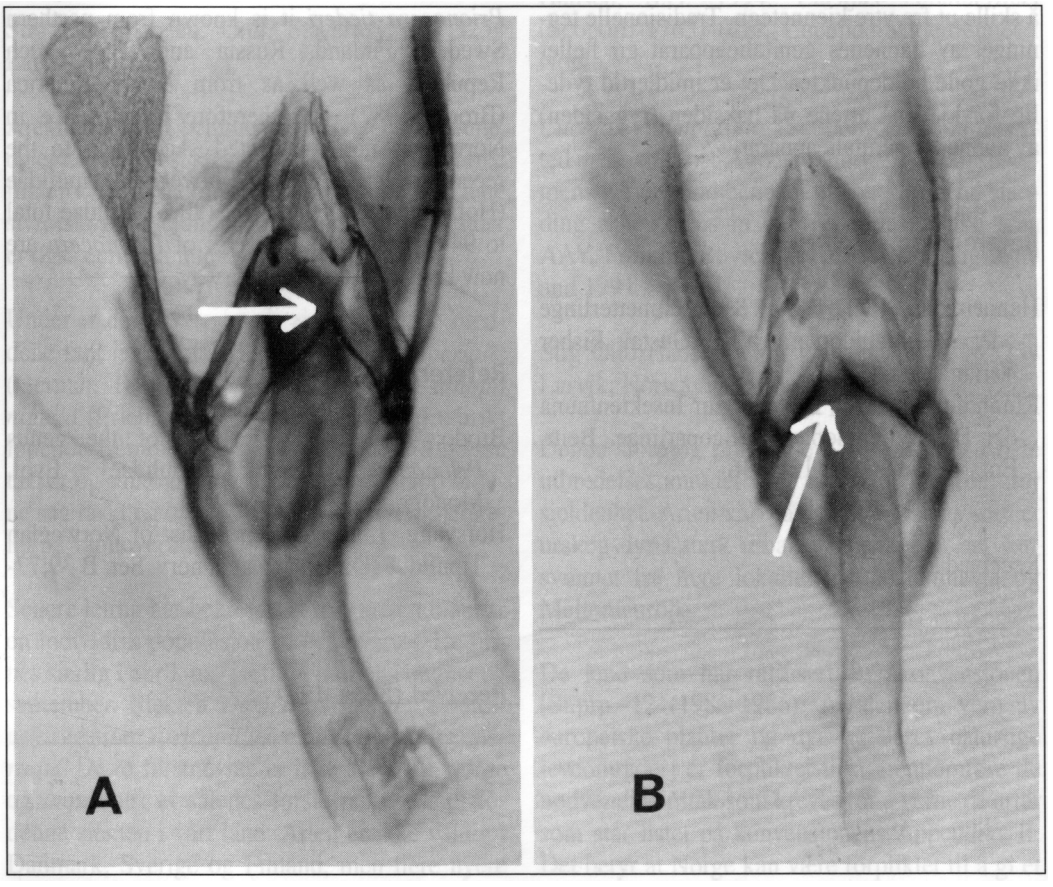

Figure 1
Dorsal side of male genitalia of Eudonia truncicolella (A) and E. sudetica (B).

nected by a dark bow-formed structure (arrow). This structure may be seen in *E. truncicolella* as well, but it is not dark.

These characters seem to be stable for about 500 and 60 inspected specimens of *E. truncicolella* and *E. sudetica*, respectively.

Sammendrag

Artsforskjeller mellom *Eudonia truncicolella* og *E. sudetica*.

Avfløyne eksemplarer av pyralidene *Eudonia truncicolella* og *E, sudetica* kan være vanskelige å skille ut fra ytre kjennetegn. Tradisjonelle tegninger av hannenes genitalieapparat gir heller ikke gode holdepunkter. Det er imidlertid tydelig forskjell på artene på baksiden (ryggsiden) av hannenes genitalieapparat.

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A species of Tipulidae (Diptera) new to Norway

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A male of *Prionocera chosenicola* Alexander 1945 (= *Prionocera tjederi* Mannheims, 1948) collected at Grenseneset, FØ: Sør-Varanger, 19/7/1969, leg. Tore Nielsen, was found in the alcoholic collection in Bergen. This represents the first record for this species in Norway. As *Prionocera tjederi* it is known from northern Sweden, Finland, Russia and The Czech Republic, as well as from North America (Brodo, 1987), and therefore its presence in Norway is not unexpected. According to the recent check list of Norwegian Tipulidae (Hofsvang 1992) this brings the Tipulidae total to 94 species, and 5 species of *Prionocera* are now known to occur in Norway.

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To nye billearter (*Coleoptera*) for Norge

Stig Otto Hansen

Demetrias imperialis (Germar, 1824) (Carabidae) and *Atheta alianta nigella* (Erichson, 1839) (Staphylinidae) are reported new to Norway from Arekilen, Hvaler, Østfold province (Ø) EIS 12.

This hygrophilous species was found numerous at the muddy shores of the small lake on 1 May 1990. Arekilen has a rich vegetation, particularly of *Phragmites* and T*hypa*.

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Arekilen har sin beliggenhet i Hvaler kommune, og er kanskje best kjent av ornitologer for sitt rike fugleliv. Dette næringsrike tjernet med sine tette sivrørskoger, sjeldne planter og sumpete bredder er også et meget interessant insektshabitat.

Under undersøkelse av de sivrørbevokste breddene fant jeg 1. mai 1990 *Demetrias imperialis* (Germar, 1824) (Carabidae) og *Atheta alianta nigella* (Erichson, 1839) (Staphylinidae) tallrikt løpende frémme på vegetasjonen. Ved å presse takrør og ulike planter under vannet slapp billene seg raskt og ble liggende å flyte lett tilgjengelig på vannoverflaten.

Senere leting har bekreftet at lokaliteten innehar en individrik populasjon av begge arter. De finnes særlig i april, mai, tidlig i juni og i august og september. Slekten *Demetrias* har tre Skandinaviske arter; *atricapillus*, *monostigma* og *imperialis*. De to førstnevnte er ikke kjent fra Norge og *imperialis* er således første representant for denne slekten i vårt land. Arten er ikke vanlig i Danmark, Sverige og Finland, men flere nyere funn tyder på at arten ekspanderer.

Jeg takker Frode Ødegård for kontrollbestemmelse av *Atheta alianta nigella*.

Received 15 Febr. 1993.

Cucujus cinnaberinus (Scopoli, 1763) ("Sinoberbille") (Col. Cucujidae) gjenfunnet i Norge

Stig Otto Hansen

Hansen, S.O. 1994. *Cucujus cinnaberinus* (Scopoli, 1763) (Col. Cucujidae) gjenfunnet i Norge.

Cucujus cinnaberinus (Scopoli, 1763) is reported new to Aust-Agder county. Several specimens were found beneath the bark of dead standing aspen trees in two localities in the area AAY, Froland: Bøylefoss (EIS 11), during 1989 and 1991.

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Denne store og praktfulle Cucujidae har i hele utbredelsesområdet blitt betraktet som en stor sjeldenhet. Arten kan påviselig betraktes som et urskogsdyr i sterk tilbakegang, da den har forsvunnet fra flere lokaliteter i Skandinavia og Mellomeuropa.

De land som har ratifisert Bernkonvensjonen [St.prp. 12 (1985-1986): Avtalen om vern av europeiske planter og dyr og deres naturlige leveområder] er forpliktet til å gjennomføre de nødvendige tiltak som kreves for å verne de arter som står listet på konvensjonens Appendiks II. Det betyr at Norge kan være forpliktet til å gi et artsvern for følgende billearter: *Osmoderma eremita*, *Dytiscus lattissimus* og *Cucujus cinnaberinus*.

C. cinnaberinus er en meget krevende og spesialisert art, og en artsfredning uten biotopvern vil ikke garantere dens fremtidige eksistens.

Arten ble i Norge første gang funnet tidlig i vårt århundre. Munster fant da tre eksemplarer i Sandnes, Drangedal (TEY) EIS 11. Disse er bevart i samlingene til Zoologisk Museum på Tøyen, Oslo. Artens status var usikker i Norge inntil Vidar Selås fant et eksemplar under bark på en døende osp i slutten av august 1989.

I 1991 fant jeg flere larver av *C. cinnaberinus* under barken på såvel liggende som stående stammer av osp i Froland kommune, Aust-Agder. Lokaliteten kan beskrives som skyggefull skråning/skar. Osp var det klart dominerende treslaget, og trærne var nesten uten unntak angrepet av kjuker. Området rundt lokaliteten var flere steder preget av hogst, og selve lokaliteten var ikke stor. Jeg tok med 5 larver fra lokaliteten, og 3 eksemplarer klekket i juni 1992.

Jeg foretok også undersøkelser 2-3 km lengre unna i nordvestlig retning. Skogen her bestod hovedsakelig av lind, alm, eik og osp. Inne i kjernen av området kunne jeg ikke se spor av hogst, og gammelskogpreget vistes med en god del tørrtrær og vindfall. Enkelte osper hadde antatt enorme dimensjoner. Det ble konstatert et stort antall larver under bark på flere liggende og stående, til dels grove, ospestammer. Jeg har uten unntak funnet larver av *Cucujus* i relativt grove ospestammer under meget fuktig bark. Trolig kan larver finnes høyt over bakken på døde, stående trær så lenge barken er tilstrekkelig fuktig. Barken har alltid sittet tett rundt stammen og vært relativt fast, men lett å løsne med kniv eller øks. Basten på barken er kullsvart, våt og ofte lett "fet". Larene sitter på veden, med buksiden mot denne, aldri omvendt mot basten/barken.

Cucujus-larvene har stor likhet med larvene til kardinalbille (*Pyrochroa coccinea*), men adskilles lett ved den mørkere rødbrunlige farge og mindre størrelse. Larvene er barberbladtynne og suverent tilpasset tilværelsen mellom barken og veden. De er rovdyr, og jeg har matet hjemtatte larver med gravveps, humler, trebukklarver etc.

Jeg tok fra denne lokaliteten i oktober 1991, juni og 17 juli 1992, 20 larver, hvor det lykkes åklekke 16 eksemplarer. Etter ca. 2-4 uker som puppe går klekkingen meget raskt. Den varme sommeren 1992 førte til at larvene forberedte puppestadiet i perioden 8-25 juli ved å lage en krans av fint trematerialе rundt seg selv. Den første puppen ble observert 17 juli, og voksne klektes hovedsakelig i perioden 1 august til 1 september. Voksne overvintrer under bark eller i sprekker i veden.

Artens hovedutbredelse i Sverige er i Uppland i området rundt nedre Dalelven. De to nye funnene fra Aust-Agder ytre og det gamle fra Telemark ytre bekrefter at arten også i Norge har en sydlig utbredelse. Det er hyggelig å konstatere at en utrydningstruet art som denne har en god populasjon i området.

Takk

Jeg retter en spesiell takk til Vidar Selås for assistanse og hjelp.

Received 15 Febr. 1993

Stenomicra (Podocera) delicata (Collin, 1944) (Dipt., Stenomicridae) found to Norway

Terje Jonassen

Stenomicra (Podocera) delicata (Collin, 1944) (Dipt., Stenomicridae) is reported as new to Norway. A male was sweep-netted in Songesand, Forsand (RI) on 28 June 1984 (EIS 7), while a female was caught in a similar manner at Kjøs bru, Hornindal (SFI) on 10 July 1989 (EIS 68). This is the first time the family Stenomicridae is reported from Scandinavia.

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The Stenomicridae is one of the smaller dipteran families with only one European species, *Stenomicra delicata* (Collin, 1944), belonging to the subgenus *Podocera* Czerny, 1929. It has alternately been included in the families Aulacigastridae and Anthomyzidae, and it is only recently that the species of the genus Stenomicra have been raised to family level.

S. delicata is apparently an uncommon fly, with previous records from England and Czechoslovakia only (Papp 1984). But as its name suggests, it is a rather small and slender species (about 1.5 mm), so it may well have been overlooked. On the 28 June 1984 I sweep-netted a male of this species at RI, Forsand: Songesand (EIS 7). It was caught among the grass bordering a small brook shaded by deciduous forest, a habitat nearly identical to the situation in which the second specimen was caught. This was a female sweep-netted near Kjøs ("Kjøs bru") in SFI, Hornindal (EIS 68) on 10 July 1989.

S. delicata is a very characteristic fly with a rather unique shape and bristling of its head. The occiput is distinctively concave and sharp-rimmed. Furthermore, the ocellar triangle is bare and centrally positioned on the frons, while the face and genae carry a peculiar row of downward-pointing bristles laterally to a pair of well-defined pseudovibrissae. There is also a long and distinct reclinate orbital on each side of the frons, beneath which there is another, so-called preorbital bristle. The specimen from Songesand is somewhat aberrant in this respect, since it carries an additional pre-orbital bristle on the left side of the frons. Besides these singular characters, however, *S. delicata* resembles a specimen of Anthomyzidae, and it may well be mixed up with members of this family in the field.

Acknowledgements

I am very grateful to Lita Greve Jensen, Bergen, for help with literature on this family.

Sammendrag

***Stenomicra (Podocera) delicata* (Collin, 1944) (Dipt., Stenomicridae) ny for Norge**

Flua *Stenomicra (Podocera) delicata* (Collin, 1944) (Dipt., Stenomicridae) blir rapportert som ny for Norge. Ett eksemplar ble fanget med slaghåv blant gress på skyggefull skogbunn, like ved kanten av en bekk, den 28 juni 1984 i RI, Forsand: Songesand (EIS 7). Ennå et eksemplar ble fanget på samme måte og i samme type habitat den 10 juli 1989 i SFI, Hornindal; Kjøs bru (EIS 68). Dette er første gang en representant for denne familien er funnet i Norge. Bemerkninger om utbredelse og habitus blir gitt.

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Received 25 July 1993.

Holocentropus stagnalis (Albarda, 1874) (Trichoptera: POLYCENTROPODIDAE) recorded in Norway

Kjell Arne Johanson

The polycentropodid *Holocentropus stagnalis* (Albarda, 1874) has been recorded for the first time in Norway. One male and one female were taken in Malaise trap 1-6 July 1993, at VAY, EIS 2, Mandal: Håven, about 5 km west of Mandal City (UTM 32VMK035337).

Kjell Arne Johanson, Museum of Zoology, University of Bergen, Muséplass 3, N-5007 Bergen, Norway.

Holocentropus stagnalis is distributed throughout Europe (Fischer 1962), but in Scandinavia it has been taken only from the southernmost parts (**Fig. 1**).

In Britain, the larvae of *H. stagnalis* inhabit temporary pools (Edington 1964, Edington & Hildrew 1981). Little is known about the biology of the Scandinavian larvae populations, except that the larvae have similar habitat preferences as in Britain (Wiberg-Larsen et al. 1980).

Together with *H. stagnalis*, the following Trichoptera species were caught: *Polycentropus flavomaculatus* (Pictet, 1834), *Polycentropus irroratus* (Curtis, 1835), *Cyrnus trimaculatus* (Curtis, 1834), *Plectrocnemia conspersa* (Curtis, 1834), *Ecnomus tenellus* (Rambur, 1842), *Oecetis ochracea* (Curtis, 1825), *Adicella reducta* (McLachlan, 1965), and *Mictopterna lateralis* (Stephens, 1937).

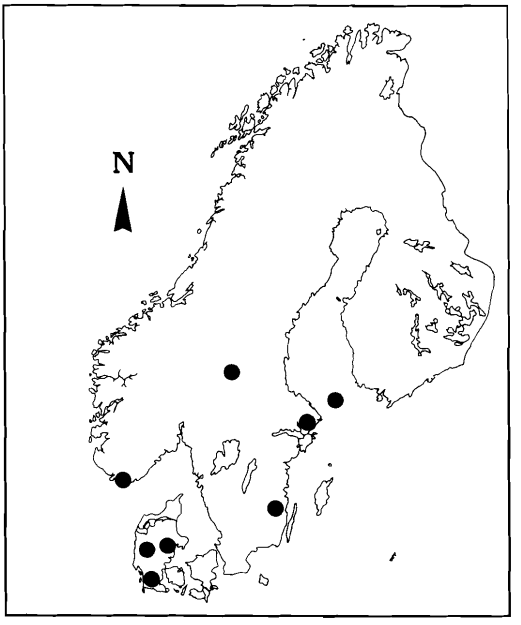

Fig. 1
The Scandinavian and Denish records of Holocentropus stagnalis (Albarda, 1874) have been indicated on the map above. The information has been taken from Wiberg-Larsen et al. (1980), Forsslund (1954) and Nybom (1960).

Sammendrag

Holocentropus stagnalis (Albarda, 1874) (Trichoptera) funnet i Norge

En hann og en hunn av *Holocentropus stagnalis* (Albarda, 1874) (Trichoptera: Polycentropodidae) ble fanget i Malaisefelle i tidsrommet 1. til 6. juli 1993 i VAY, EIS 2, Mandal: Håven, ca. 5 km vest for Mandal sentrum (UTM 322VMK035337).

Acknowledgement

I am indebted to Mr. Trond Andersen (Museum of Zoology, University of Bergen, Norway) for commenting on the manuscript.

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Porrhomma microphtalmum (O.P.-Cambridge, 1891) (Araneae, Linyphiidae) recorded new to Norway

Elin Folvik

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When examining specimens of the linyphiid genus *Porrhomma* deposited at the Museum of Zoology, University of Bergen, Norway, it became clear that the collection of *Porrhomma lativela* Tretzel, 1956 consisted of both this species and the closely related *P. microphtalmum* (O.P.-Cambridge, 1891).

P. microphtalmum was hitherto not known to occur in Norway. However, a total of 11 males and 3 females of the species were identified in the material from southwestern Norway, AK: Ski, Kroer, and Ås. *P. microphtalmum* is also known from Denmark (Toft 1976, 1989) and the southern parts of Finland (Palmgren 1976). It is widespread, but rare in England (Locket & Millidge 1953), whereas common and widely distributed in Central Europe (Miller & Kratochvil 1940). The species seem to prefer undergrowth and forest litter (Palmgren 1976, Toft 1976), but is also found in outhouses, barley fields, and caves (Mühlmann 1942, Toft 1989, Heimer & Nentwig 1991).

P. lativela occurs mainly in lowland forests (Heimer & Nentwig 1991), although it has also been recorded from caves (Thaler & Plachter 1983, van Helsdingen 1986). This species is found in the southern parts of Norway, VE: Tjøme, AK: Kroer, RY: Klepp, HOY: Øygarden (see also Hauge 1989).

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Received 23 July 1993.

Epitheca bimaculata (Charpentier, 1825) (Odonata: Corduliidae) new to Norway

Hans Olsvik

Epitheca bimaculata (Charpentier, 1825) is reported new to Norway from Hof in Vestfold, southeastern Norway. One male was collected, and at least one more observed 9 June 1993, at a small boggy lake. pH was 6.1. The species was found together with typical bog species like *Coenagrion johnssoni* (Wallengren, 1884) and *Aeshna subarctica* Walker, 1908 (Odonata). *E. bimaculata* is considered as endangered (IUCN:E) in Norway.

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Epitheca bimaculata (Charpentier, 1825) is an eastern species in Europe, but it has also been found in a few localities in western Europe (Fig. 1). The species is reported to be local with declining densities (Askew 1988). The Fennoscandian distribution area includes southern parts of Finland, southern Sweden from Skåne north to Dalsland, Värmland and Uppland, and Sjælland in Denmark (Ander 1944). The Swedish records near the Norwegian border have indicated that the species might also occur in Norway.

One male of *E. bimaculata* was collected, and at least one more observed 9 June 1993 at Åsentjern in Hof, southeastern Norway (VE: EIS 28, altitude 63 m). The species was not seen later, despite several visits (D. Dolmen and O. Tallaksrud pers. comm.).

The small, dystrophic lake (ca. 150x200 m) is situated on a *Sphagnum* bog below the postglacial marine level and surrounded by coniferous forest, pH was 6.1. The shore consisted of one meter broad zone of floating, green *Sphagnum* mosses. The water depth at the sore was more than 3 m. Further description of the locality and its Odonata fauna can be found in Dolmen et al. 1993.

Most authors, e.g. Askew (1988) describe the typical habitat to be fairly eutrophic lakes with developed vegetation zones, but running water and boggy pools can also be used.

E. bimaculata is a threatened species in Europe (Tol & Verdonk 1988), and hundreds of localities have been investigated in southeastern Norway during the past few decades (Olsvik et al. 1990, Olsvik & Dolmen 1992), before the discovery of this species. It seems thus reasonable to regard *E. bimaculata* as endangered (IUCN:E) in Norway.

The specimen is kept in the author's collection.

Acknowledgement

The investigations in Hof were partly financed by the provincial environmental authorities in Vestfold/Hof.

Sammendrag

***Epitheca bimaculata* (Charpentier, 1825) (Odonata: Corduliidae) ny for Norge**
Øyenstikkeren *Epitheca bimaculata* er rapportert ny for Norge, from Hof i Vestfold. En hann

ble fanget, og mist ytterligere en hann ble sett 9 juni 1993 ved et dystroft myrtjern (pH 6.1) beliggende på en skogomsluttet myr. Tilstedeværelsen av flere individer indikerer en liten, men fast populasjon. Arten må betraktes som truet (IUCN:E) i Norge.

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Received 7 Aug. 1993.

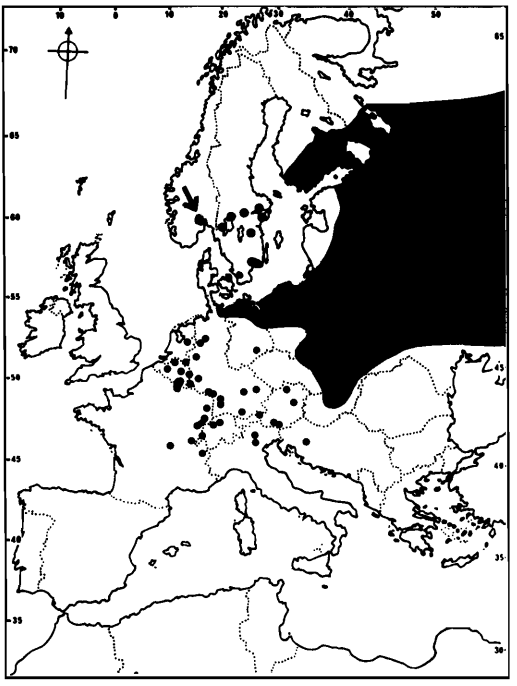

Fig. 1
The European distribution of Epitheca bimaculata, *after Askew (1988), with additions for Sweden from Ander (1944) and Sahlén (1985). The Norwegian record indicated by an arrow.*

Callisto insperatella (Nickerl, 1864) (Lep. Gracillariidae) new to Norway

Kai Myhr & Sigurd A. Bakke

The gracillariid moth *Callisto insperatella* is reported new to Norway. Two males were sweep-netted on *Prunus padus*, at Kjaglidalen, Bærum, Akershus (AK), EIS 28, 6 June 1987. Remarks on distribution and biology are given.

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Sigurd A. Bakke. Ekornveien 6, N-1430 Ås, Norway.

Two males of the gracillariid moth *Callisto insperatella* were sweep-netted on *Prunus padus*, at Kjaglidalen, Bærum, Akershus (AK), EIS 28, 6 June 1987, The area has a rich flora with several demanding species, i.e. *Impatiens noli-tangere*, *Daphne mezereum*, *Allium ursinum*. The record was done along a westward roadside slope in an open deciduous forest.

According to Svensson et al. (1987) *C. insperatella* is not previously reported from Sweden and Denmark, but is found in Finland (Krogerus 1959) and is also known from the western parts of the former USSR and the eastern parts of Central Europe (Kyrki et al. 1984). It is not very likely that the Norwegian find represents an isolated occurrence without any connection to the Finnish populations. Probably the species is established in both southern Norway and southern Sweden.

The food plant of *C. insperatella* in Finland is *P. padus*, further south possibly other *Prunus* species. At first the larva mines a leaf. After finishing the mine it moves to another leaf where it folds down the edge and continues feeding. It then moves to yet another leaf, makes a larger fold and finishes eating. It pupates in a plat cocoon at the base of a branch. Flight period is medio May to medio June. Warm, sun-exposed habitats seem to be preferred. The species is on its wings in the evening sun, but is only occasionally attracted to light (Kyrki et al. 1984).

Acknowledgements

Thanks are due to Bengt Å. Bengtsson, Löttorp, Sweden, and Ole Karsholt, Zoological Museum, Copenhagen, Denmark, for information about distribution, to Lars Ove Hansen, Oslo, for comments on the manuscript, and to Leif Aarvik, Ås, for verifying the determination.

Sammendrag

Callisto insperatella (Nickerl, 1864) (Lep. Gracillariidae) new to Norway

To hanner av *Callisto insperatella* (Nickerl, 1864) ble funnet ny for Norge i AK, Bærum, Kjaglidalen, EIS 28 den 6 juni 1987. Begge eksemplarene ble slaghovet på hegg (*Prunus padus*). Arten er kjent fra Finland, vestlige deler av tidligere Sovjetunionen og østlige deler av Europa (Kyrki et al. 1984). Larven er til å begynne med bladminerer, men lever etter hvert under en sammenbrettet bladkant. Den forpupper seg i en flat kokong ved kvistbasis. Flygetiden er fra medio mai til medio juni på varme, soleksponerte steder (Kyrki et al. 1984).

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Received 30 Sept. 1993.

Agrochola nitida (Denis & Schiffermüller, 1885) (Lep., Noctuidae) new to Norway

Claus Christiansen

Agrochola nitida (Denis & Schiffermüller, 1775) is reported new to the Norwegian fauna. The locality and distribution is briefly described.

Claus Christiansen, Søråsveien 24, N-1430 Ås, Norway.

Two females were caught at Kroken, Vestby, in Akershus county (EIS 28), 2 Sept. 1993, C. Christiansen leg.

The locality, Kroken, is situated close to the sea (Oslofjord), and characterized by mixed deciduous forest. There is a mild climate during the winter, with an early spring and a rather dry summer season.

Agrochola nitida is fairly common in south-east Sweden north to Uppland, but rather rare in the western part of the country. In Denmark, *A. nitida* has been found scattered in the east, but has become more rare in recent years. In Finland it is found only at Åland, where it is local and rare. The general distribution of *A. nitida* covers the area from Asia Minor, through the south-west part of Russia to West-Europe and from south Scandinavia to the Mediterranean.

The larva lives a.o. on oak (*Quercus*), beech (*Fagus*) and willow (*Salix*). The habitat is scrub and deciduous forest (Skou 1991).

Sammendrag

***Agrochola nitida* (Denis & Schiffermüller, 1885) (Lep., Noctuidae) new to Norway**

Agrochola nitida er funnet ny for Norge i Kroken i Vestby kommune, Akershus. To hunner ble tatt på ly, 2 sept. 1993. Lokaliteten ligger nær sjøen og domineres av blandingsskog.

Reference

Skou, P. 1991. Nordens Ugler. Apollo Books.

Received 15. Nov. 1993

Mesogona oxalina (Hübner, 1803) (Lep. Noctuidae) new to Norway

Magne Pettersen & Sidsel Iversby

Mesogona oxalina (Hübner, 1803) is recorded for the first time in Norway. One male was captured in a light trap on Akerøya, one of the outermost Hvaler islands, Østfold (Ø, EIS 12), 31 Aug. 1993.

Magne Pettersen and Sidsel Iversby, Daniel Leegaardsgt. 4, N-1607 Fredrikstad, Norway

On Akerøya, Hvaler, Østfold (Ø, EIS 12), a male of *Mesogona oxalina* was captured in a light trap 31 Aug. 1993 (Leg. M. Pettersen). This species has not been recorded in Norway before.

Akerøya is an island in the Hvaler region. The major part of the island consists of a rocky terrain interspersed with low bushy plants, grassy patches, small copses and boggy areas.

The host plant for the larva in Denmark is possibly *Salix repens* (Skou 1991). On Akerøya several *Salix* species are recorded, also *S. repens*, which is common.

The distribution of *M. oxalina* is from Ural through Russia into western Europe, and from

the south of Fennoscandia to middle Spain, Italy and further to the Bulgarian mountains. In Denmark the species is regular in western and northern Jutland and reported occasionally from Zealand and Bornholm. In Sweden *M. oxalina* is recorded from Gotland and Øland, and widespread along the west coast from Skåne to Bohuslän (Skou 1991).

It was a recently hatched specimen that was captured. Since *M. oxalina* is not known as a migrator, it may indicate that the species is resident in the area.

Sammendrag

Mesogona oxalina (Hübner, 1803) (Lep. Noctuidae) ny for Norge

Mesogona oxalina (Hübner, 1803) er rapportert ny for Norge. En hann av arten ble fanget i lysfelle på Akerøya, en av de ytterste Hvalerøyene, Østfold (Ø, EIS 12) den 31. aug. 1991.

Krypvier (*Salix repens*), som i Danmark muligens er larvens vertsplante, forekommer vanlig på Akerøya.

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Received 10 Nov. 1993

The managing editor of Fauna norvegica - Edvard K. Barth - retires

True idealists are becoming a "rare species" and therefore they deserve our special attention. During the last 15 years, i.e. since 1979 and *Fauna norvegica* vol. 1, Edvard K. Barth has had his idealism put to the test in his job as managing editor of *Fauna norvegica*. He has been the ever-present person, and the "load-carrying unit" in the editorial staff, as well as the security regarding continuity and supervision for the numerous links that necessarily have to be present within the "machinery" of a scientific journal. Not least he has had to resist in the frontline in the struggle for funds to keep the journal alive.

Moreover, Barth's efforts have gone far beyond the duties normally taken care of by a managing editor. Not only has he followed the manuscripts from their first arrival from the editors-in-chief to their final form in the journal. Together with his wife, Sonja, he has also been responsible for keeping the subscriber lists for the three series (*Fauna norvegica*, Series A, B and C) up-to-date, i.e. changes of address, dispatching invoices, etc, up to the point where the final product was labelled with a correct name and address and sent to biologists all around the world. There is reason to stress that his editorship of *Fauna norvegica*, with an yearly 700-800 hours of work, has been supported with only a symbolic financial compensation.

Many scientific authors in Norway have taken their first unsteady steps towards scientific authorship and made their first appearance under the guidance of Edvard K. Barth. I am sure that nobody has lost his or her self-confidence because of him, and probably we are a massive troop that will miss his pleasant letters and friendly telephone conversations.

Few Norwegian zoologists have contributed more to the spread of ideas on conservation and knowledge within a broad range of zoological topics, particularly within ornithology, than Edvard K. Barth. His research on the history of our ancestors' struggle to survive without using guns and harpoons, i.e. how they constructed and used huge catching systems for reindeer, is another area where he has made significant contributions.

Although Barth's endowment to the publication of *Fauna norvegica* can never be appreciated and rewarded through a gift, the present editorial board has decided to give him the original drawing of the dipper decorating the front cover of *Fauna norvegica* Ser. C, Cinclus. This drawing is by Viggo Ree, a Norwegian artist also known for his drawings of several Norwegian stamps carrying bird motives. Hopefully this symbolic token will act as a reminder of the widespread appreciation for his excellent job as managing editor of *Fauna norvegica.*

Last year Edvard K. Barth was able to celebrate his 80th birthday (*Fauna norvegica*, Ser. C., Cinclus 16: 43). Those of us who have the privelege to know him personally know that he will not remain unproductive due to age or his retirement from the editorship, and we wish him all the best in the years to come.

Kjetil Bevanger

Guide to authors

FAUNA NORVEGICA publishes papers in English, occasionally in Norwegian with an extended English summary. When the paper is written in English, an extended summary in Norwegian is also required, to be printed after Acknowledgements. Authors should consult recent copies of Fauna norvegica and follow their style as closely as possible. Manuscripts that do not conform to this guide will be returned for revision.

Manuscripts, double-spaced, on one side of the paper and with wide margins, should be submitted to the editor in chief in duplicate, including figures and tables. Separate sheets should be used for (i) title page, with authors name, (ii) abstract, followed by the name(s) and full postal address(es) of the author(s), (iii) tables with their headings, (iv) legends to figures. After acceptance, the author will be asked to send the text on a floppy disk (preferably 3.5") suitable for an IBM compatible word processor in either WordPerfect or Word. The operating system and word processor used should be clearly specified.

Dates should be given as 10-20 Aug. 1970.

All Latin names of genera and species in the text and tables should be in italics. The approximate position of tables and figures in the text should be indicated in the margin. All acknowledgements should be gathered under a single heading at the end of the text.

Figures and Tables. Each illustration must be clearly numbered, and an abbreviated title and the name(s) of the author(s) must be written lightly on the reverse side. If the article is in Norwegian, the figures and tables must have both Norwegian and English text. Write **Table** and **Figure** both in the running text and above/beneath tables and figures.

Figures should be no larger than 20x28 cm. Lettering should be large enough to withstand reduction. Choose contrasting patterns.

Nomenclature. The first time a binomen of an invertebrate or a less known vertebrate is used in the text the name of the author should be included. Names of authors should be written in full, except L. for Linnaeus. Dates of description can be included when considered necessary, i.e. *Rhyacophila nubila* (Zetterstedt, 1840).

References. In the text: Black (1979), Black & White (1973, p. 100), or as noted by Green (1978) and Black (1979). Multiple references should be given in chronological order, i.e. (Black & White 1973, Green 1976, 1979, Black 1978).

Examples:

Journal:

Løken, A. 1962. Social Wasps in Norway (Hymenoptera, Vespidae). Norsk Ent. Tidsskr. 12: 191-218.

Book:

Haftorn, S. 1971. Norges fugler. Universitetsforlaget, Oslo.

Chapter:

Corbet, G.B. 1974. The distribution of mammals in historic time. Pp. 179-202 in: Hawksworth, D.L. (ed.). The changing flora and fauna of Britain. Academic Press, London.

Proofs. One copy of the first proof will be sent to the author. It should be returned to the editor without delay. Alterations should be limited to correcting typesetting errors. Extensive alterations will be charged to the author.

Reprints. There are no free reprints, but reprints may be purchased at prices listed on the form that authors receive with their first proof.

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