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IMPORTANT MESSAGE TO ALL SUBSCRIBERS

This journal will cease to exist in its present form from 1 January 1999

The Norwegian Institute for Nature Research took over the editorial responsibility for *Fauna norvegica* on 1 January 1994. This will change from 1 January 1999 onwards. **The journal will then be divided into three separate journals, with different publishers.** Up to now, *Fauna norvegica* has been divided into three series. Series A has focused on other animal groups than insects and birds, while Series B and C have been concerned with insects and birds, respectively.

The following will take effect from 1 January 1999:

Series A will retain the name "*Fauna norvegica*", but will no longer be referred to as Series A. The subject matter will be of a more general zoological nature, and at least two numbers will be issued each year. The Norwegian Institute for Nature Research will have the publishing responsibility. Dr. Thrine Moen Heggberget will continue as scientific editor. The journal's editorial address will be (as now): Norwegian Institute for Nature Research, Tungasletta 2, N-7485 Trondheim, Norway. The sub-

scription price will be NOK 200 per year for private subscribers and NOK 300 per year for institutions and libraries. Norwegian and foreign subscribers will pay the same price. Vol. 19 of Series A will be published in 1998, and *Fauna norvegica* will continue as Vol. 20 in 1999.

Series B will be renamed the "*Journal of Norwegian Entomology*". The scientific content will be entomology. A decision on how many numbers will be issued each year will be taken later. The journal will be published by the Norwegian Entomological Society (NEF). The editor will be Dr. Lauritz Sømme, and the editorial address will be PB. 386, N-4001 Stavanger, Norway. The subscription price will be decided by the NEF annual meeting.

Series C will be renamed the "*Ornis Norvegica*", and will concentrate on ornithological matters. Two numbers will continue to be issued each year. The publisher will be the Norwegian Ornithological Society (NOF), and Dr. Svein Haftorn will continue as the scientific editor. The editorial address will be the Norwegian Ornithological Society, Seminarplassen 5, N-7060 Klæbu, Norway. The subscription price will be decided by the NOF annual meeting.

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The Pauropoda of Norway

Ulf Scheller

Scheller, U. 1998. The Pauropoda of Norway. - Fauna norv. Ser. B 45: 1-10.

This paper surveys the distributional knowledge of the Pauropoda of Norway. A systematic section accounts for 13 species from 5 genera in the family Pauropodidae. Nine species are new to Norway. All species are listed with statements of their occurrence. The distributional patterns indicate that the Norwegian Pauropoda consist of at least three main widespread elements. One contains three subcosmopolitan species, the second consists of at least six species common to the Nearctic and the West Palearctic zoogeographical subregions and the third of two species not found outside the West Palearctic. They form a depauperate version of a Pleistocene fauna which was eradicated in North Europe during the last glacial but then recolonized Scandinavia from the south.

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INTRODUCTION

The Pauropoda are progoneate myriapods with 3-branched antennae and 9-11 pairs of legs in the adult stage. They make up one of the components of the highly specialised cryptozoic fauna living in the edaphic environment. Compared with many other groups belonging there e.g. nematodes, segmented worms and many arthropods, they have received little attention apart sporadic collecting and descriptions of new taxa. There is no country world-wide where they are satisfactorily explored. The main reason seems to be that they long have been considered as rare and difficult to find. They are, however, not uncommon and are easily gathered by various funnel and flotation techniques. Manual collecting is easy too when once learned their habitus and quick and intermittent mouse-like moving. However, they have received little attention for many years and in fact no modern survey at all has been published. With this background the picture of the Norwegian Pauropoda given here may contribute to a better understanding of the northern Pauropoda faunas.

Because the literature is very scattered and partly difficult to find the list of references below is extensive and has been written to promote and facilitate further investigations.

THE PAUROPODA IN NORWAY

There has been no comprehensive study of the Norwegian species and the survey presented here is only a first crude attempt to elucidate the subject.

The Norwegian species are white and 0.5-1.5 mm long. They have 9-10 pairs of legs in the adult stage, 8 pairs as subadults, and 3, 5 and 6 pairs as juveniles.

A few authors only have touched upon the Norwegian Pauropoda. As far as accessible literature shows Norway was first paid attention to in this context by Kenyon who mentioned (1895:121) that *Pauropus huxleyi* Lubbock was there when he said that Schmidt (1895) «In his later, or final paper, ... gives ... Norway ... where he has found this species. « However, the statement seems to be erroneous, neither in Schmidt's paper from 1895 nor in the note concerning the northernmost localities of *P. huxleyi* in his paper on its anatomy (1894: 12) any Norwegian locality was stated. Kenyon may have interpreted «Narwa» (in Esthonia) as «Norwegen».

Meidell (1971) suggested the group and Sømme (1988) estimated the number of species to about 10. In the meantime the first certain identifications were

made. In material sent to the present author by Drs. Arne Fjellberg and Hans Petter Leinaas the following species were recognised (Leinaas 1974): *Allopauropus gracilis* (Hansen), *A. vulgaris* (Hansen), *A. verticillatus* Scheller and *Pauropus lanceolatus* Remy. The first two were collected by Fjellberg in West Norway and the latter two by Leinaas in Akershus.

MATERIAL

The main part of the material upon which this study is based was collected by the present author in the early 1950's and in the 1970's. In order to get an idea of the Fennoscandian Pauropoda, both the species composition and the distribution, collecting was performed in Norway, Sweden and Finland. In Norway from Östfold, Akershus, Hedmark, Opland, Buskerud, Vestfold, Telemark, Aust-Agder, Vest-Agder, Rogaland, Hordaland, Sogn og Fjordane, Sør-Trøndelag and to a limited extent Nordland. The pauropods were often met with and here in a previously glaciated area, at that time a new feature in the distribution pattern of the group. They were previously known to occur in both Sweden (Porat 1889) and Finland (Remy 1937) but

were expected to be more or less rare. So the rich Norwegian material, together with a corresponding Swedish one also collected in the same years, indicated a well established northern fauna. Because almost nothing have been published it is, however, far from well known and the situation is similar for other northern areas (Scheller 1984, 1986, 1990). Under these circumstances the Norwegian material is of great value as a contribution to the understanding of a northern Holarctic fauna.

Specimens supplementing my own material (in the systematic list marked S) have been sent to me by Professor Per Brinck (B) & Dr. Pehr Henrik Enckell (E), both Lund, Dr. Arne Fjellberg (F), Tjøme, & Dr. Hans Petter Leinaas (L), Oslo.

SYSTEMATICS

Because the Norwegian fauna still is insufficiently investigated it is too early to construct keys for the species. The key presented below for subfamilies and genera have to be used with great cautiousness.

Family Pauropodidae

Key to subfamilies

1. Tergites thin *Pauropodinae*
 - Tergites sclerotized *Scleropaupodinae*

Subfamily Pauropodinae

Key to Norwegian genera

1. All legs 5-segmented; sternal antennal branch with 2 setae (*q*, *q*') *Amphipauropus* Scheller
 - Legs 1 and 9 5-segmented, intervening pairs 6-segmented; sternal antennal branch with one seta (*q*) 2
 2. Anterior and posterior margins of sternal antennal branch of equal length *Pauropus* Lubbock
 - Anterior and posterior margins of sternal antennal branch unequal in length 3
 3. Anterior margin of sternal antennal branch shorter than posterior margin;
 antennal globulus short-stalked *Allopauropus* Silvestri
 - Posterior margin of sternal antennal branch shorter than anterior margin;
 antennal globulus long-stalked *Stylopauropus* Cook

Genus *Allopauropus* Silvestri, 1902

Key to Norwegian subgenera of *Allopauropus*

1. Setae *b*₃ of pygidial sternum present *Allopauropus* s. str.
 - Setae *b*₃ of pygidial sternum absent *Decapauropus* Remy

Subgenus *Allopaupopus* s. str.

1 *llopaupopus* (*Allopaupopus*) *danicus* (Hansen, 1902)

Vidensk. Meddr dansk naturh. Foren. 1901: 376-378, pl. III, Figure 4 a-f.

Syn.: *Paupopus danicus* Hansen, 1902

Distribution in Norway. HO. Austevoll, Møkster (F).

General distribution. Europe: Many countries. Asia: Sri Lanka, Pondichéry. Africa: North and tropical parts, Madagascar and the Mascarenes. North America: US. South America: Chile.

The species is very widely distributed and may be (sub)cosmopolitan. It seems to be very rare in North Europe. It has been collected in Denmark, Sweden and Finland too but only from a single locality in each. The Norwegian specimen was collected from the upper humus layer among *Allium ursinum* under thicket of *Corylus avellana* in a locality very close to the north limit of the species.

Subgenus *Decapaupopus* Remy, 1957

2 *Allopaupopus* (*Decapaupopus*) *cuenoti* (Remy, 1931)

Archs Zool. exp. gén. 71: 67-83, figs. 1-12.

Syn.:

Decapaupopus cuenoti Remy, 1931; Bagnall, 1935

Allopaupopus hirtus Remy, 1961

Distribution in Norway. AK. Oslo, Abildsö (S); Nes, Branderud and Hjellum (S); Feiring, SE the church (S). HE. Stange, Strandlykkja (S).

O. Fåberg, Børkje (S); Gjövik, NE Kolberg (S); Öyer, Hunderfoss (S); Kvam (B); Lesja, Stuguflåten (S).

VE. Borre, E Knutstad (S) and S the church (S).

AA. Grimstad, SW Dolholt (S); E Tvedestrand (S); Risør, SSW Bosvik (S); Froland, between Løddesøl and Lindtveit (S).

B. Skoger, N Eik (S).

VA. Sira, N Lannestad (S); Flekkefjord, N Loga (S); Lindesnes, Haugenes (S).

R. Eigersund, Tengs (S); Moi (S).

SF. Kaupanger (B).

ST. Ranheim (S); Malvik, Vikhammer (S); Trondheim, S Biologisk stasjon (S).

General distribution. Europe: Finland, Denmark, Great Britain, Belgium, Luxembourg, Germany, France, Switzerland, Austria, Czech Republic, Slovak Republic, Romania, Spain, Yugoslavia, Greece. North America: Canada. Africa: Madeira, Morocco, Algeria, Réunion.

A. cuenoti is very often met with in Europe, more often in the north than in the south.

3. *Allopaupopus* (*D.*) *gracilis* (Hansen, 1902)

Vidensk. Meddr dansk naturh. Foren. 1901: 395-397, pl. V, Figure 3 a-f.

Syn.:

Paupopus gracilis Hansen, 1902

Remyopus sequanus Verhoeff, 1934

Allopaupopus sequanus Remy, 1930, 1936a; Verhoeff, 1934

Allopaupopus sequanus var. *sinuatus* Remy, 1935 b
Decapaupopus sabaudianus Bagnall 1935; Remy 1936-1947

Allopaupopus amaudruti Remy, 1936 b,c

Allopaupopus amaudruti var. *cordieri* Remy, 1938

Allopaupopus gracilis var. *sabaudianus* Remy, 1953

Allopaupopus gracilis var. *sequanus* Remy, 1953

Distribution in Norway. Ö. Halden, Remmendalen (L); Marker, NNW Örje (S); Idd, Liholt (S); Eidsberg, S the church (S).

AK. Oslo, Leirskallen (S), Abildsö (S) and Botanisk Hage (S); Dröbak (B); Nes, Branderud (S).

HE. S Kongsvinger (S).

O. Fåberg, Børkje (S); Gjövik, NE Kolberg (S); Öyer, Hunderfoss (S).

B. Övre Eiker, Sunnhaugen (E); Lier, NNW Reistad (S); Hole, N Utvik (S).

VE. Tjøme, Eidene (F); Borre, S the church (S); NW Horten (S); Botne, Klevbrottet (S).

TE. Bamble, near the church (S); Kviteseid, Kyrkjebö (S); Heddal, ESE Hitterdal stave church (S); Gvarv, Norsjö (E).

AA. Grimstad, WSW Dolholt (S); Landvik, S the church (S); Moland, S Salterød (S); E Tvedestrand (S).

VA. Lyngdal (E). Flekkefjord, N Loga (S); Sira, Ersdal (S) and N Rannestad (S); Öyestad, between Løddesøl and Lindtveit (S); Kristiansand, Ålefjaer (S); Randesund, NE Bjørnstad (S) and Timenes (S).

R. S Egersund, Hadland (S) and Noddland(S); N Egersund, Tengs (S).

HO. Ullensvang, Lofthus (F); Fana, 3 sites: Myravann, Kyrkjetangen and Natlandsbotn (F); Bergen, Botanical Museum, hot-house (F).

ST. Leinstrand, Sundet (S); Lade, Skovgard (S); Malvik, Vikhammer (S).

General distribution. Europe: Finland, Denmark, Ireland, Great Britain, Belgium, Germany, Poland, France, Switzerland, Austria, Czech Republic, Slovak Republic, Romania, Spain, Italy, Yugoslavia, Bulgaria, Greece. Asia: Sri Lanka. Africa: Madeira, Canary Islands, Morocco, Algeria, Réunion. North America: US. South America: Chile.

The species seems to have a (sub)cosmopolitan distribution.

4. *Allopaupopus (D.) helveticus* (Hansen, 1902)

Vidensk. Meddr dansk naturh. Foren. 1901: 390-392, pl. VI, Figure 5 a-e.

Syn.: *Pauropus helveticus* Hansen, 1902

Distribution in Norway. Oslo, Botanisk Hage (S).

B. Hokksund, Skara (S).

General distribution. Europe: Denmark, Belgium, Germany, France, Switzerland, Austria, Czech Republic, Slovak Republic, Romania, Spain, Italy, Yugoslavia, Greece, Africa: Azores, Morocco, Algeria, North America: US.

The species is West Palaearctic - Nearctic and divided into two varieties with partly different ranges: f. *typica* known from Europe only and *obtusicornis* which is also in North Africa and North America. The material from Botanisk Hage in Oslo belongs to the latter and the material from Övre Eiker to the former.

A. helveticus has a very low abundance in Norway and is a rare species in Sweden and Finland as well. From the former country 3 localities are known and from the latter a single one. It seems to prefer broad-leaved deciduous forests.

5. *Allopaupopus (D.) multiplex* Remy, 1936

Zool. Anz. 116: 315-316, Figure 3.

Syn.: *Allopaupopus (Allopaupopus) multiplex* Remy 1936c

Distribution in Norway. ST. Lade, Skovgard (S).

The species seems to be very rare as one single specimen only, an adult male, has been collected.

General distribution. Europe: Sweden, Denmark, Great Britain, Belgium, Germany, France, Switzerland, Austria, Czech Republic, Slovak Republic, Andorra. North America: Canada. Africa: Morocco.

The species is West Palaearctic - Nearctic and is never abundant.

6. *Allopaupopus (D.) pseudomillotianus* Remy & Balland, 1958

Revue fr. Ent 24: 402-403, Figure 3

Distribution in Norway. HO. Bergen, Botanical Museum (F). Known only from flowerpots and a soil bed in a hothouse.

General distribution. Previous records of the species are few. It was described from a hothouse in Montpellier in France but has then been reported from Sri Lanka and Pondichéry (from the latter place as cf. *pseudomillotianus*). The species is probably introduced in Norway.

7. *Allopaupopus (D.) tenellus* Scheller, 1971

Ent. scand. 2: 304-306, Figure 1.

Distribution in Norway. VE. NW Horten (S); Borre, S the church (S).

AA. E Tvedestrand (S); Risør, SSW Bosvik (S); Moland, S Salteröd (S).

General distribution. The species is rare, earlier reported from two localities in Sweden (Scheller 1971), two in Finland (Scheller 1982), one in Austria (Meyer & Scheller 1992), one in South France (Scheller 1973) and one in East Canada (Scheller 1984).

Probably confined to broad-leaved deciduous forests where it preferably occurs below the upper humus layer.

8. *Allopaupopus (D.) verticillatus* Scheller, 1971

Ent. scand. 2: 306-308, Figure 2.

Syn.: *Allopaupopus viticolus* Hüther, 1975.

New synonymy.

Distribution in Norway. AK. Nannestad, Nordmoen (Leinaas 1974); Hurdal (L).

AA. Risør, SSW Bosvik (S); Grimstad, SW Dolholt (S).

R. Moi (F); N Egersund, Tengs (S).

General distribution. The species is probably rare and seems to prefer deeper soil layers. Known extra-Norwegian range: Sweden (Skåne, Västergötland), Germany.

Remarks. Hüther (1975) studied a subadult specimen from Moi in Rogaland and placed it in his *A. viticolus*. Though it was close to *verticillatus* Hüther considered it to be clearly distinguished from that species in the chaetotaxy of the head, the trichobothria and the tarsus of the last pair of legs. However, Hüther did not mention in what manner and his figures of the mentioned details (Figures. 4, 6, 10) do not indicate that species separating characters occur. A fresh study of the specimen from Moi did not show any such characters in relation to *verticillatus*.

9. *Allopaupopus (D.) vulgaris* (Hansen, 1902)

Vidensk. Meddr dansk naturh. Foren. 1901: 392-395, pl. V, Figure 2 a-g.

Syn.: *Pauropus vulgaris* Hansen, 1902

Distribution in Norway. Ö. Marker, NNW Örje (S); Eidsberg, S Eidsberg church (S).

AK. Oslo, Klemetsrud (S), Abildsö (S) and Botanisk Hage (S); Dröbak (B); at south part of Bundefjord (B); Nes, Branderud (S) and Hjellum (S).

HE. S Kongsvinger (S); Stange, Strandlykkja (S).

O. Fåberg (S); Gjøvik, NE Kolberg (S).
 B. Hokksund, Skara (S); Lier, NNW Reistad (S).
 VE. Borre, S the church (S); NW Horten (S); Hedrum, SSW Bommestad bridge (S); Sem, SW railway station (S).
 TE. Kragerø (S); Kviteseid, Kyrkjebø (S).
 AA. Lillesand, NNW Hövåg (S); Grimstad, (B); Grimstad, WSW Dolholt (S); Landvik, SE the church (S); Öyestad, between Lödöesöl and Lindtveit (S); Moland, S Salteröd (S) and and SW Heien (S). Birkesnes, Håbbesland (S); Flosta, S Vatnebu (S); E Tvedestrand (S); Risør, SSW Bosvik (S).
 VA. Randesund, N Bjørnstad (S) and Timenes (S); Lyngdal, N Möskå bridge (S); Kristiansand, Ålefjer (S); Lindesnes, Haugenes (S); Flekkefjord, Loga (S); Sira, Ersdal (S) and Rannestad (S).
 R. S. Egersund, Hadland (S).
 HO. Fana, 3 sites: Myravann, Fantoft and Natlandsbotn (F).
 SF. Joranger, Marifjöra, south bank of the Bygdeelv (S).
 ST. Trondheim, S Biologisk stasjon (S).
 General distribution. The species is very common in Europe and is there from Sweden to Spain and Italy. It has been reported also from Africa, Sri Lanka and North America.

Genus *Paupopus* Lubbock, 1867

10. *Paupopus lanceolatus* Remy, 1956

Mém. Inst. scient. Madagascar (A) 10: 109.

Syn.: *Paupopus huxleyi* Lubbock (partim), many authors

Paupopus huxleyi var. *lanceolatus* Remy, 1937

Distribution in Norway. Ö. Halden, Remmendalen (L).
 AK. Oslo, Aþildsø, (S); Ås, Slørstad and Nannestad, Nordmoen (Leinaas 1974).

O. Lom, Fossheim, ESE the church (S).

VE. Hedrum, SSW Bommestad bridge (S); Tjøme, near the harbour (F).

General distribution. The range of *P. lanceolatus* is at present not possible to delimit because the species was earlier often confused with *P. huxleyi* Lubbock. In North Europe it has been reported from 2 localities in Denmark, and one in Finland and 5 in Sweden. The extra-Norwegian range is unknown but may cover wide areas in the Holarctic. In Sweden it may have a south-eastern distribution.

Genus *Stylopauropus* Cook, 1896

11. *Stylopauropus pedunculatus* (Lubbock, 1867)

Trans. Linn. Soc. Lond. 26: 185, pl. 10, figure 20.

Syn.: *Paupopus pedunculatus* Lubbock, 1867

Distribution in Norway. R. Bergen, Botanical Museum, hot-house (F).

General distribution. It has been collected in most European countries and in North Africa, in North America and Australia.

Remarks. The species is widely distributed in natural habitats in the southern third of Sweden and it may be indigenous in Norway too.

Genus *Amphipauropus* Scheller, 1984

12. *Amphipauropus rhenanus* (Hüther, 1971)

Syn.: *Cauvetauropus rhenanus* Hüther, 1971

Distribution in Norway. VA. Farsund, Lomesanden, under moss and *Corynephorus* in active drift-sand area, 1 subadult female with 8 pairs of legs (F).

General distribution. The species is previously known from its German type locality only, 34 km SW Mannheim in Rheinland Pfalz.

Remarks. Hüther's (1971) material from SW Mannheim consisted of 3 subadult females and 17 juveniles from several soil samples from between 5 and 50 cm below the topsoil surface. The adult stage with 9 pairs of legs has not been recognised and up to the present males are unknown.

The genus is very incompletely known both as to species number and geographic range. Besides those 20 specimens from Germany mentioned above only 4 specimens have been reported, all from Ontario and Québec. They were identified by the present author (Scheller 1984) and appeared very alike the German species but could not be assigned to it. They were all juveniles and no longer in the best condition and may belong to a unique species. Under all circumstances the differences between the Canadian and the European populations are inconsiderable indicating an extremely slow evolution during those about 200 million years North America and Europe have been separated.

Recently Dr. Arne Fjellberg has collected *Amphipauropus* specimens also from Bornholm in Denmark and southernmost Skåne in Sweden. Moreover, Remy (1960) described a probably related species, *Brachypauropoides moselleus*, collected by means of water flotation of coarse gravel from a river-bank of the

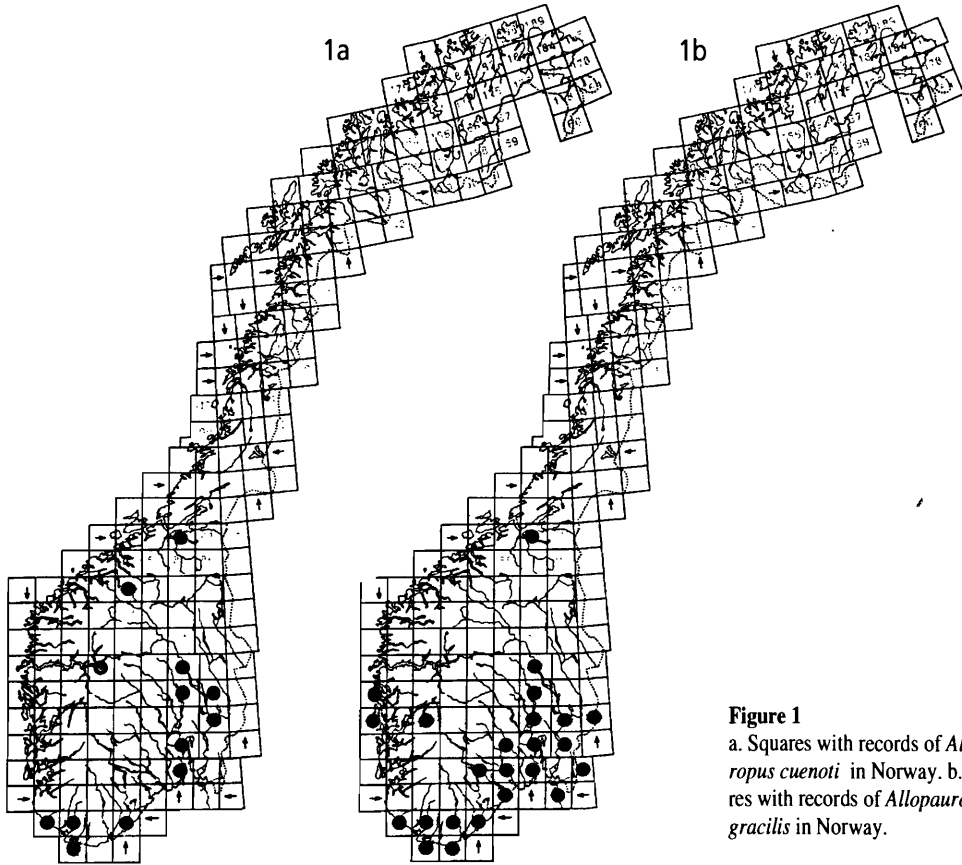


Figure 1

a. Squares with records of *Allopauropus cuenoti* in Norway. b. Squares with records of *Allopauropus gracilis* in Norway.

Moselle in Lorraine. The description suffers from incompleteness but the general shape of the legs, trichobothria and tergal and pygidial setae indicates relationship to *Amphipauropus*.

In most of its characters, including those of the antennae and the pygidium, *Amphipauropus*, is clearly a representant of Pauropodinae but its general appearance with very short legs and short bladder-shaped setae together with several untypical details in the shape of the antennae, trichobothria, legs and anal plate do not fit well there. So the assignment in Pauropodinae is provisional and when the taxonomy of the genus has been better known it may be necessary to create a new taxon of higher rank for it.

The German specimens were collected at a sampling depth of 5-50 cm and the North European specimens have been obtained by means of water flotation of deeper sand layers. Because *A. rhenanus* seems to live in deeper

soil layers and has short setae (antennae, head, collum segment, tergites, legs, pygidium), miniaturised trichobothria and proportionately short antennal flagella it may be an example of adaptation to the interstitial environment.

Subfamily *Scleropauropodinae*

Genus *Scleropauropus* Silvestri, 1902

13. *Scleropauropus lyrifer* Remy, 1936

Vogesia 2: 2 (1936 b) and Zool. Anz. 116: 316-317, Figure 4 (1936 c).

Distribution in Norway. AK. Baerum, NW Sandvika (S).

General distribution. The species shows a scattered occurrence and is known from a few countries in middle and south Europe (Great Britain, Belgium, Germany, France, Switzerland, Slovak Republic, Romania and Greece) and from North Africa and North America. The locality in Akershus is the northernmost collecting site of the species.

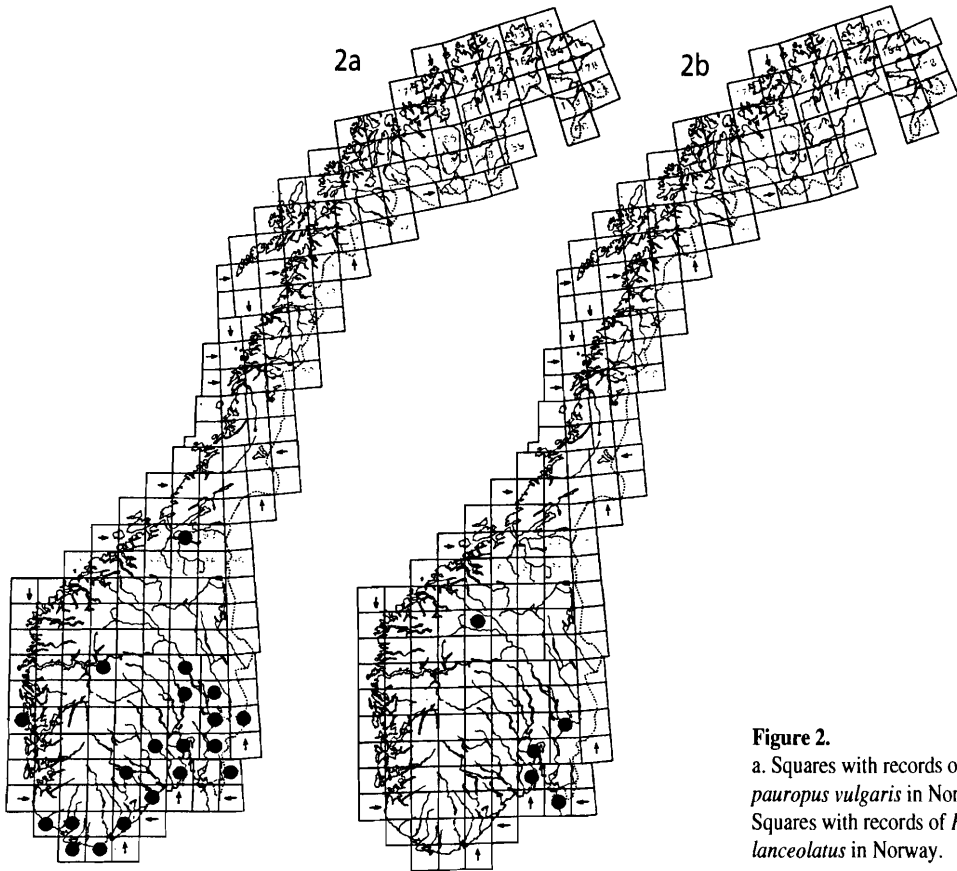


Figure 2.

a. Squares with records of *Allopauropus vulgaris* in Norway. b. Squares with records of *Pauropus lanceolatus* in Norway.

DISTRIBUTION PATTERN OF THE NORWEGIAN SPECIES

At present 13 species are known from Norway. The following distributional groups may be discerned.

Subcosmopolitan

The pauropods have patchy local occurrence but sometimes also broad global distributions. Two of the species most often met with in Norway, *Allopauropus gracilis* and *A. vulgaris*, and a third one, *A. danicus*, have so wide ranges that they may be considered as subcosmopolitan.

Nearctic - West Palaearctic

About 12% of some 200 species collected from the West Palaearctic and Nearctic are shared. At least six of the Norwegian species enter into this group: *Allo-*

pauropus cuenoti, *A. helveticus*, *A. multiplex* and *A. tenellus*, *Pauropus lanceolatus* and *Scleropauropus lyrifer*. Worth mentioning is also that *Stylopauropus pedunculatus* may belong here because its Australian occurrence probably not is indigenous.

West Palaearctic

Two species belong here, *Allopauropus verticillatus* and *Amphipauropus rhenanus*.

Unknown ranges

The origin of *Allopauropus pseudomillotianus* is unknown. It may be introduced.

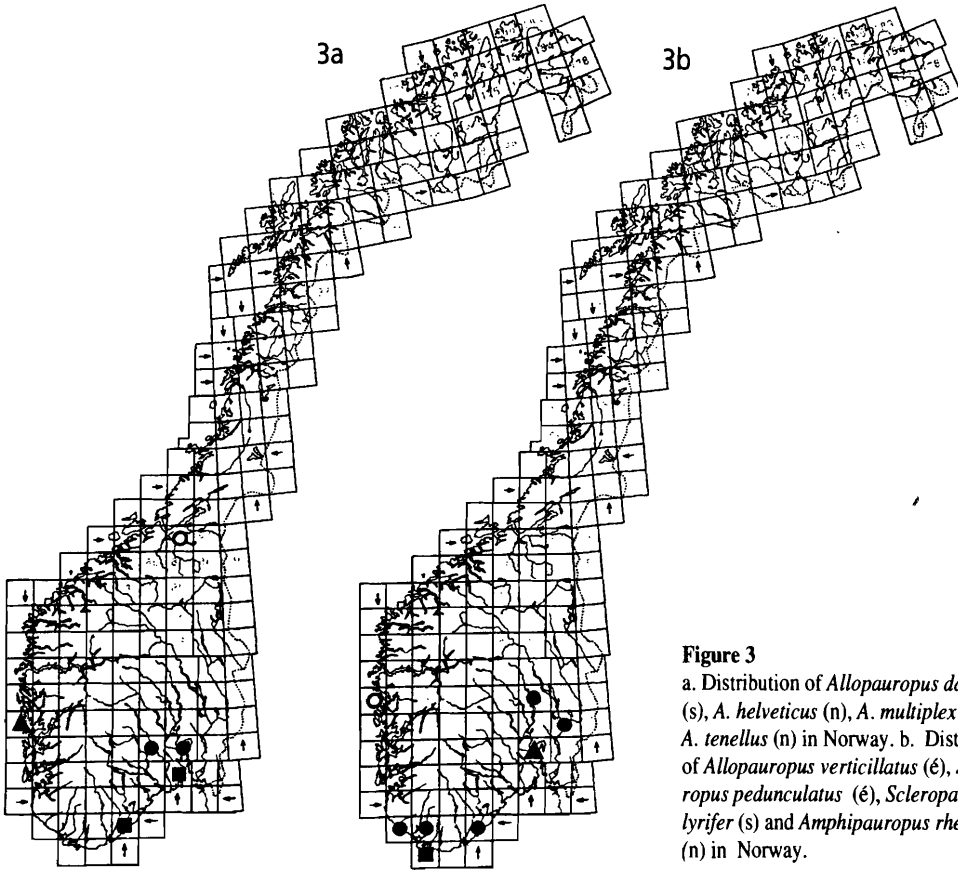


Figure 3

a. Distribution of *Allopauropus danicus* (s), *A. helveticus* (n), *A. multiplex* (é) and *A. tenellus* (n) in Norway. b. Distribution of *Allopauropus verticillatus* (é), *Stylopauropus pedunculatus* (é), *Scleropauropus lyrifer* (s) and *Amphipauropus rhenanus* (n) in Norway.

NORTHERN FAUNAS

Our present information indicates that the Norwegian Pauropoda fauna is poor in species, at present 13 species known, and that the ranges of the species are very large, at least 85% of the species have ranges extending outside West Palaearctic. In two other northern areas, Beringia and the Wisconsinan ice border region, the faunas are more diversified indicating that the poorness in species not is a result of latitudinal depauperation. It is more likely a manifestation of the difficulties for the species to recolonize after the ice retreat. The Scandinavian Pauropoda have their origin in a Holocene invasion which came probably from populations in the south belonging to an old Holarctic Pleistocene fauna (Scheller 1990) but since the pauropods are soil-dwellers which certainly have great difficul-

ties to cross broad water barriers, the recolonization has been slow and seems not yet to be finished.

The Pauropoda are poorly investigated in all countries and not the least are the northern faunas unexplored. Twelve species are known from Beringia (Scheller 1986) and 35 species have been reported from an east-west belt in Canada and the U.S. to the north of and/or just to the south of the Wisconsinan glaciation limit (Scheller 1990). With the fauna accounted for in this paper and those species known from Finland (Scheller 1982) and Sweden (unpublished) it is now also possible to get a better picture of the Fennoscandian fauna than the one earlier recognised. Up to now 14 species in one family have been found there, most of them having very wide ranges. They are more or less distributed in the

West Palaearctic but some also outside. Not a single species is exclusive to the region. A comparison of this fauna with the other two shows great differences. The most diversified fauna seems to occur in the Wisconsinan life zone which has 32 species in Pauropodidae, one species in Brachypauropodidae and 2 in Eurypauropodidae. Most species have wide ranges in Nearctic or even far outside but this element is less dominating than in Fennoscandia as 10 species (29%) are as far as known exclusive to the Wisconsinan region. Though only a low number of specimens have been identified from Beringia its fauna seems be odd. Two families and 12 species have been identified from there and no less than 11 are exclusive to the area (Scheller 1990). These two faunas form an obvious contrast to the poor Fennoscandian fauna.

NORTH LIMIT

Those collections of the northern faunas studied have revealed the approximate species composition only but they do not allow us to fix the northern limit. In Norway *Allopauropus cuenoti*, *A. gracilis* and *A. vulgaris* have passed 63° N. Probably at least the first two mentioned go further northwards as they have been collected at 63.84° and 65.85°N respectively in Sweden (Scheller 1990). It seems not to exist any climatic barriers which put obstacles for the occurrence of pauropods to the north of their present north limit in Sör Tröndelag.

EXPECTED SPECIES

The Norwegian Pauropoda are now known to belong to one family and five genera, all with wide distribution. Since they are investigated only to a very limited extent the list of species will certainly grow longer than the present thirteen ones. The appearance of the German *Amphipauropus rhenanus* and the middle and south European *Scleropauropus lyrifer* indicates that not only those species already known from other areas in North Europe belongs to the conceivable species but also species with other types of ranges. It is difficult to guess but at least *Allopauropus broelemanni* Remy which has been collected in Finland (Scheller 1982) and *Stylopauropus brito* occurring in Denmark (Scheller 1954) might appear.

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SAMMENDRAG

Norges Pauropoda

Ovanstående översikt redogör för den kända förekomsten av pauropoder i Norge. I ett systematiskt avsnitt förtecknas de 13 arter som hittills påträffats. De härrör från 5 släkten inom familjen Pauropodidae. För varje art anges den kända utbredningen såväl i Norge som utanför. Nio arter är nya för Norge. Utbredningsmönstret tycks tyda på att det ingår tre vitt spridda element. Det första, med två arter, utgöres av subkosmopoliter, det andra är sammansatt av åtminstone sex arter som är gemensamma för Västpalearktis och Nearktis och det tredje är ett västpalearktiskt element med två arter. Alla tre utgöres av mer eller mindre utarmade versioner av en pleistocen fauna som utrotades i Nordeuropa under den senaste istiden och som sedan långsamt återkoloniserat Skandinavien från söder.

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Annotated Catalogue of the Hemiptera-Heteroptera of Norway

Carl-Cedric Coulianos

Coulianos, C.-C. 1998. Annotated Catalogue of the Hemiptera-Heteroptera of Norway. Fauna norv. Ser. B 45: 11-40.

A list of the 439 species of Heteroptera at present known from Norway is given. The local distribution of each species is given by data on their presence in the 37 Norwegian faunistic regions. New, rare, and doubtful records are presented in more detail. The following 21 species are reported for the first time from Norway: *Glaenocoris propinqua propinqua* (Fieber), *Sigara longipalis* (J. Sahlberg), *Deraeocoris morio* (Boheman), *Lygocoris rhamnocola* (Reuter), *Lygus adpersus* (Schilling), *Pithanus hrabei* Stehlik, *Trigonotylus fuscitarsis* Lammes, *Labops sahlbergii* (Fallén), *Heterotoma planicornis* (Pallas), *Pseudoloxops coccineus* (Meyer-Dür), *Tythus pygmaeus* (Zetterstedt) *Europiella artemisiae* (Becker), *Europiella decolor* (Uhler), *Psallus lapponicus* Reuter, *Nabis punctatus* Costa, *Anthocoris amplicollis* Horváth, *Xylocoris galactinus* (Fieber), *Dufouriellus ater* (Dufour), *Aneurus avenius* (Dufour), *Taphropeltus contractus* (Herrich-Schaeffer) and *Elasmostethus brevis* Lindberg.

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INTRODUCTION

The present catalogue is the fifth edition of check-lists of the Hemiptera-Heteroptera known from Norway. The previous lists were published between 1874 and 1976 (Siebke 1874, Warloe 1925, Ossiannilsson 1947, Coulianos & Ossiannilsson 1976).

Siebke (1874) listed and gave localities for 181 species. This can be corrected to 179, as some species were later sunk as synonyms and some taxa included as varieties have been raised to specific status. In his list Siebke also included previously published records by H. Ström, J.N. Wilse, J.C. Fabricius, S.C. Sommerfelt, J.W. Zetterstedt, M.F. Wocke & O. Staudinger and H. Siebke (see References). A supplement was published by W.M. Schøyen (1880).

Warloe (1925) listed - with localities - 357 (corrected 356) species including 78 species new to Norway, most of them collected by himself, T. Munster and T. Helliesen. He also included Siebke's list and published records by O.M. Reuter, T.H. Schøyen, W.M. Schøyen, J. Sahlberg, J. Sparre-Schneider, E. Strand and Warloe (see References).

Ossiannilsson (1947) listed 377 (corrected 372) species, adding *Cymatia coleoprata* (Fabricius) and *Phytocoris dimidiatus* Kirschbaum to the Norwegian list.

Coulianos & Ossiannilsson (1976) listed 395 (corrected 401) species, including four species new to Norway, viz. *Sigara dorsalis* (Leach), *Strongylocoris steganoides* (J. Sahlberg), *Psallus perrisi* (Mulsant & Rey) and *Anthocoris simulans* Reuter. Five previously recorded species were accidentally omitted, viz. *Halticus apterus* (Linnaeus), *Orthocephalus saltator* (Hahn), *Nabis ericetorum* Scholtz, *Nabis rugosus* (Linnaeus) and *Aneurus laevis* (Fabricius).

Since the publication of this list, important contributions to the knowledge of Norwegian Heteroptera have been made by several workers e.g. D. Dolmen, A. Fjellberg, L. Greve Jensen, L.O. Hansen, S. Hågvar, J. Jas-trey, H. Olsvik, F. Ossiannilsson, B. Sagvolden, G. Taksdal, H.W. Walden, F. Ødegaard, J. And K.A. Økland and the present author. Especially the aquatic and semiaquatic families have been the object of extensive field work during the last two decades. Many records have been published (see References) but

much undetermined material has been deposited in museum and private collections.

With regard to this and to the systematic and nomenclatural changes that has been made since the last check-list, it seems important to present an updated list of Norwegian Heteroptera and their local distribution. The present catalogue lists 439 species, 21 of which are new records for Norway.

As can be seen by the known records from the different faunistic regions, it is obvious that many of them have been strongly neglected by collectors. The Heteroptera-fauna even of the most investigated regions e.g. Ø, AK, BØ, VE, AAY, RY, HOI, STI and FI are still unsatisfactory known. Accordingly, the present catalogue can not be considered to present a complete picture of the true distribution of the Norwegian Heteroptera. However, one of the aims of the catalogue is to draw attention to such gaps in our knowledge, in the hope of having them filled in a not too remote future.

FORMAT OF THE CATALOGUE

Included are species which are known or considered to have breeding populations in Norway. Accidentally introduced species are not included, although some of them are not infrequently recorded, e.g. *Nezara viridula* (Linnaeus) and *Eurydema* spp.

The sequence of families and the nomenclature within the families Dipsocoridae - Reduviidae are according to Catalogue of the Heteroptera of the Palaearctic Region (Ed. B. Aukema & C. Rieger) Vol. 1 (1995), Vol. 2 (1996). Nomenclature within the remaining families follows Coulianos & Ossiannilsson (1976), but with regard to later changes. Synonyms are as a rule only given for names diverging from those in Coulianos & Ossiannilsson (1976). Within genera the species are arranged in alphabetical order. All species are sequentially numbered throughout. An asterisk (*) before the species number refer to the corresponding number in the Remarks-section. As the arrangement of families and genera diverges from the arrangement in previous Norwegian check-lists, an index to generic names is given.

The division of Norway into 37 faunistic regions follows K.A. Økland (1981). In the columns for the different regions the following symbols are used:

- + records verified by the author
- ? doubtful, published records, which have not been found in the collections studied by the present author
- no records

STUDIED MATERIAL

Museum collections.

Zoological Museum, University of Oslo (ZMO). Most specimens collected by L. Esmark, H. Siebke, H. Warloe, Strand, T. Munster, F. Jensen, T. Helliesen, J. and K.A. Økland, H.W. Waldén and L.O. Hånsen. Zoological Museum, University of Bergen (ZMB). Mainly collected by H. Tambs-Lyche, N. Knaben, A. Løken, L. Greve Jensen, A. Fjeldså, J. Jastrey and A. Fjellberg. Zoological Department, Stavanger Museum (ZMS). Aquatic species leg. T. Helliesen. Zoological Department, Tromsø Museum (ZMT). Aquatic and semiaquatic species leg. H. Huru and A. Klemetsen. See also Ossiannilsson (1943). Plantevernet, Planteforsk, Ås (formerly Statens Plantevern) (SPV). Mainly collected by T. Edland, J. Fjeldalen. O. Sørum and G. Taksdal. Zoological Museum, University of Lund (ZML). Leg. J.W. Zetterstedt and smaller number of specimens by modern collectors. Swedish Museum of Natural History, Stockholm (NRM). Leg. C. Boheman, J. Sahlberg, H. Warloe and O. Sjöberg.

Private collections of S. Hågvar, B. Sagvolden and the present author. The studied publications containing records of Norwegian Heteroptera are listed in the References-section. In most cases it has been possible to verify such records in the various collections studied. However, doubtful, published records exist and these are commented upon in the Remarks-section.

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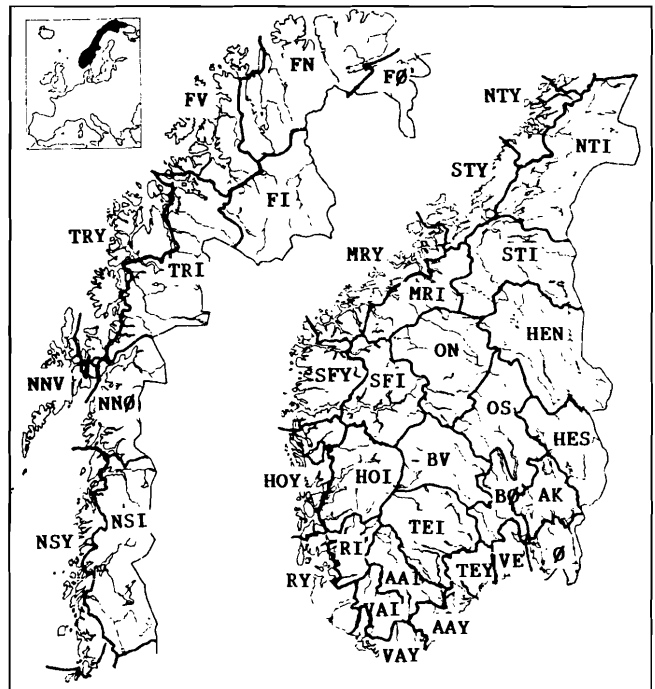
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SAMMANFATNING

Kommenterad katalog över norska skinnbaggar (Hemiptera-Heteroptera)

Katalogen ger en översikt av de 439 arter skinnbaggar som hittills är kända från Norge. Av dessa är 21 arter inte tidigare rapporterade från Norge. Artenas förekomst i de 37 faunistiska regionerna anges. Fynd av för Norge nya, sällsynta eller osäkra arter är kortfattat kommenterade.

Ø	Østfold
AK	Akershus
HES	Hedmark, southern part
HEN	Hedmark, northern part
OS	Opland, southern part
ON	Opland, northern part
BØ	Buskerud, eastern part
BV	Buskerud, western part
VE	Vestfold
TEY	Telemark, coastal part
TEI	Telemark, interior part
AAY	Aust-Agder, coastal part
AAI	Aust-Agder, interior part
VAY	Vest-Agder, coastal part
VAI	Vest-Agder, interior part
RY	Rogaland, coastal part
RI	Rogaland, interior part
HOY	Hordaland, coastal part
HOI	Hordaland, interior part
SFY	Sogn og Fjordane, coastal part
SFI	Sogn og Fjordane, interior part
MRY	Møre og Romsdal, coastal part
MRI	Møre og Romsdal, interior part
STY	Sør-Trøndelag, coastal part
STI	Sør-Trøndelag, interior part
NTY	Nord-Trøndelag, coastal part
NTI	Nord-Trøndelag, interior part
NSY	Nordland, southern coastal part
NSI	Nordland, southern interior part



NNØ	Nordland, north-eastern part
NNV	Nordland, north-western part
TRY	Troms, coastal part
TRI	Troms, interior part
FV	Finnmark, western part
FI	Finnmark, interior part
FN	Finnmark, northern part
FØ	Finnmark, eastern part

Figure 1
Division of Norway into 37 faunistic regions. After K.A. Økland (1981)

	Ø	AK	HE	HE	O	O	B	B	VE	TE	TE	AA	AA	VA	VA	R	R	HO	HO	SF	SF	MR	MR	ST	ST	NT	NT	NS	NS	NN	NN	TR	TR	F	F	F	F	
	s	n	s	n	s	n	ø	v	y	i	y	i	y	i	y	i	y	i	y	i	y	i	y	i	y	i	y	i	ø	v	y	i	v	i	n	ø		
CERATOCOMBIDAE																																						
<i>Ceratocombus</i> Signoret, 1852																																						
<i>coleoptratus</i> (Zetterstedt, 1819)	1	+	+	-	-	+	-	+	-	+	+	-	+	-	-	-	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
DIPSOCORIDAE																																						
<i>Cryptostemma</i> Herrich-Schaeffer, 1835																																						
<i>pusillum</i> (J.Sahlberg, 1870)	2	-	+	-	-	-	-	+	-	-	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>walhi</i> (Fieber, 1860)	3	+	+	-	+	+	+	+	-	-	+	-	+	-	-	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	
NEPIDAE																																						
<i>Nepa</i> Linnaeus, 1758																																						
<i>cinerea</i> Linnaeus, 1758	4	+	+	+	-	+	-	+	-	+	+	-	+	-	+	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>Ranatra</i> Fabricius, 1790																																						
<i>linearis</i> (Linnaeus, 1758)	5	+	+	-	-	-	-	-	-	+	+	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
CORIXIDAE																																						
<i>Micronecta</i> Kirkaldy, 1897																																						
<i>minutissima</i> (Linnaeus, 1758)	*	6	-	+	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>poweri</i> (Douglas & Scott, 1869)	*	7	+	+	+	-	+	-	-	-	-	-	-	-	+	-	+	-	-	-	-	+	-	+	+	+	+	-	-	-	-	-	-	-	-	-	-	
<i>Cymatia</i> Flor, 1860																																						
<i>bonsdorffii</i> (C.R.Sahlberg, 1819)	8	+	+	+	+	-	+	+	+	+	-	+	+	+	+	-	+	+	-	-	-	+	-	+	+	+	-	-	-	-	-	-	-	-	+	-	+	+
<i>coleoptrata</i> (Fabricius, 1777)	*	9	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>Glaenocorixa</i> Thomson, 1869																																						
<i>propinqua cavifrons</i> (Thomson, 1869)	10	+	+	-	-	+	+	+	+	-	-	+	+	+	+	+	+	+	+	+	+	-	+	-	+	+	-	-	-	+	+	+	+	+	+	+	+	
<i>propinqua propinqua</i> (Fieber, 1860)	*	11	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>Arctocorixa</i> Wallengren, 1894																																						
<i>carinata</i> (C.R.Sahlberg, 1819)	12	+	+	-	+	-	+	+	+	-	-	+	+	+	+	-	+	+	+	-	+	+	+	-	+	-	+	-	+	+	+	+	+	+	+	+	+	
<i>germari</i> (Fieber, 1848)	13	+	+	-	-	-	+	+	+	-	+	+	+	+	+	-	+	-	+	+	+	-	-	+	+	+	-	+	+	+	-	-	-	-	-	-	-	
<i>Callicorixa</i> White, 1873																																						
<i>praeusta</i> (Fieber, 1848)	*	14	+	+	+	-	-	+	-	-	-	+	-	-	-	+	-	-	-	-	-	-	-	-	+	-	+	-	-	-	-	-	-	-	-	-	-	
<i>producta</i> (Reuter, 1880)	15	+	+	-	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
<i>wollastoni</i> (Douglas & Scott, 1865)	*	16	?	?	?	+	?	+	+	+	-	+	+	-	?	+	+	+	+	+	+	+	+	+	+	+	+	-	-	-	-	-	-	+	-	+	-	
<i>Corixa</i> Geoffroy, 1762																																						
<i>dentipes</i> Thomson, 1869	17	+	+	-	-	-	-	+	-	+	+	-	+	-	+	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>punctata</i> (Illiger, 1807)	18	+	+	-	-	-	+	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>Hesperocorixa</i> Kirkaldy, 1908																																						
<i>castanea</i> (Thomson, 1869)	*	19	+	-	-	-	-	-	-	-	-	+	+	+	+	-	+	-	+	-	+	-	+	-	+	-	+	-	-	-	-	-	-	-	-	-	-	
<i>linnaei</i> (Fieber, 1848)	20	+	+	-	-	-	-	-	-	+	+	-	+	-	+	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>sahlbergi</i> (Fieber, 1848)	21	+	+	-	-	+	-	+	+	+	-	+	-	+	-	+	-	+	+	+	-	+	+	+	+	+	+	-	-	-	-	-	-	-	-	-	-	

	Ø	AK	HE	HE	O	O	B	B	VE	TE	TE	AA	AA	V	V	A	R	R	HO	HO	SF	SF	MR	MR	ST	ST	NT	NT	NS	NS	NN	NN	TR	TR	F	F	F	F	
			s	n	s	n	ø	v	y	i	y	AA	AA	V	V	A	R	R	y	y	i	i	y	y	i	y	i	y	i	ø	v	y	i	v	i	n	ø		
Paracoridae																																							
<i>Paracoridae</i> Poisson, 1957																																							
<i>concinna</i> (Fieber, 1848)	*	22	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>Sigara</i> Fabricius, 1775																																							
<i>distincta</i> (Fieber, 1848)		23	+	+	-	+	+	+	-	+	+	+	+	+	+	+	+	+	+	-	+	-	+	+	+	+	+	+	+	-	-	-	-	-	-	-	-	-	
<i>dorsalis</i> (Leach, 1817)		24	+	+	-	-	-	+	-	+	+	-	+	-	+	+	+	+	+	-	+	-	+	+	+	+	+	+	+	+	-	-	-	-	-	-	-	-	
<i>falleni</i> (Fieber, 1848)	*	25	+	+	+	-	-	+	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>fallenoidea</i> (Hungerford, 1926)	*	26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	
<i>fossarum</i> (Leach, 1817)	*	27	+	+	+	-	-	-	+	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>hellensii</i> (C.R.Sahlberg, 1819)	*	28	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>lateralis</i> (Leach, 1817)	*	29	+	-	-	-	-	-	-	-	-	-	-	-	-	-	?	-	-	-	-	-	-	?	-	-	-	?	-	-	-	-	-	-	-	-	-	-	
<i>limitata</i> (Fieber, 1848)	*	30	+	+	-	-	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>longipalis</i> (J. Sahlberg, 1878)	*	31	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>nigrolineata</i> (Fieber, 1848)		32	+	+	-	-	+	-	+	-	-	+	-	+	+	-	+	+	+	+	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	
<i>scotti</i> (Douglas & Scott, 1868)		33	+	+	-	-	-	-	-	-	-	-	-	+	+	+	+	+	+	+	+	-	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>semistriata</i> (Fieber, 1848)		34	+	+	+	-	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	-	-	-	-	-	-	-	-	
<i>striata</i> (Linnaeus, 1758)	*	35	+	+	-	-	-	?	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
APHELOCHEIRIDAE																																							
<i>Aphelocheirus</i> Westwood, 1833																																							
<i>aestivalis</i> (Fabricius, 1794)		36	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NOTONECTIDAE																																							
<i>Notonecta</i> Linnaeus, 1758																																							
<i>glauca</i> Linnaeus, 1758		37	+	+	+	-	+	+	+	+	-	+	+	+	-	+	-	+	+	+	-	-	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>lutea</i> Müller, 1776		38	+	+	+	-	+	+	-	+	+	-	-	+	-	+	-	-	+	+	-	-	-	+	+	+	+	+	+	+	-	-	-	-	-	-	-	-	-
<i>reuteri</i> Hungerford, 1928	*	39	+	+	-	-	-	-	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MESOVELIIDAE																																							
<i>Mesovelia</i> Mulsant & Rey, 1852																																							
<i>furcata</i> Mulsant & Rey, 1852		40	+	+	+	-	-	-	+	-	+	-	+	+	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HEBRIDAE																																							
<i>Hebrus</i> Curtis, 1833																																							
<i>pusillus</i> (Fallén, 1807)		41	+	+	-	-	-	-	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>ruficeps</i> Thomson, 1871		42	+	+	+	+	-	+	+	+	-	+	-	+	-	+	-	+	+	+	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
HYDROMETRIDAE																																							
<i>Hydrometra</i> Latreille, 1796																																							
<i>gracilentata</i> Horváth, 1899		43	+	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>stagnorum</i> (Linnaeus, 1758)		44	-	-	-	-	-	-	-	-	-	+	-	+	-	+	-	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

	Ø	AK	HE	HE	O	O	B	B	VE	TE	TE	AA	AA	VA	VA	R	R	HO	HO	SF	SF	MR	MR	ST	ST	NT	NT	NS	NS	NN	NN	TR	TR	F	F	F	F
			s	n	s	n	ø	v	y	i	y	i	y	i	y	i	y	i	y	i	y	i	y	i	y	i	y	i	ø	v	y	i	v	i	n	ø	
VELIIDAE																																					
<i>Microvelia</i> Westwood, 1834																																					
<i>reticulata</i> (Burmeister, 1835)	45	+	+	-	-	-	+	-	+	+	+	+	-	+	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Velia</i> Latreille, 1804																																					
<i>caprai</i> Tamanini, 1947	46	-	-	-	-	-	-	-	-	+	-	+	-	+	-	+	-	+	+	-	+	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-
<i>saulii</i> Tamanini, 1947	* 47	-	+	-	-	-	+	-	-	-	-	?	-	?	+	+	+	+	+	?	-	+	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-
GERRIDAE																																					
<i>Aquarius</i> Schellenberg, 1800																																					
<i>najas</i> (DeGeer, 1773)	48	+	+	-	-	-	-	-	-	+	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>paludum</i> (Fabricius, 1794)	49	+	+	-	-	-	-	-	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>Gerris</i> Fabricius, 1794																																					
<i>argentatus</i> Schummel, 1832	50	+	+	-	-	+	-	-	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>lacustris</i> (Linnaeus, 1758)	51	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	-	+	+	+	+	+	+	+	+	+	+	-	-	-	-	-	
<i>lateralis</i> Schummel, 1832	52	+	+	+	+	+	+	+	-	+	-	+	-	+	-	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	-	+	+
<i>odontogaster</i> (Zetterstedt, 1828)	53	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	-	+	-	+	-	+	+
<i>thoracicus</i> Schummel, 1832	54	+	+	-	-	-	-	-	-	-	-	+	-	-	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>Limnoporus</i> Stål, 1868																																					
<i>rufoscutellatus</i> (Latreille, 1807)	55	+	+	+	-	+	-	+	+	+	-	+	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	
SALDIDAE																																					
<i>Chiloxanthus</i> Reuter, 1891																																					
<i>arcticus</i> (J.Sahlberg, 1878)	56	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	
<i>pilosus</i> (Fallén, 1807)	57	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>stellatus</i> (Curtis, 1835)	58	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	+	+	+	+	+	
<i>Calacanthia</i> Reuter, 1891																																					
<i>alpicola</i> (J.Sahlberg, 1880)	59	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	
<i>Chartoscirta</i> Stål, 1868																																					
<i>cincta</i> (Herrich-Schaeffer, 1841)	* 60	+	+	-	-	+	-	-	+	-	-	-	+	-	-	+	-	+	-	-	-	-	-	-	-	-	-	?	-	-	-	?	-	-	-	?	
<i>cocksii</i> (Curtis, 1835)	61	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>elegantula</i> (Fallén, 1807)	62	+	+	-	-	+	+	+	-	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	
<i>Halosalda</i> Reuter, 1912																																					
<i>lateralis</i> (Fallén, 1807)	63	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	
<i>Macrosaldula</i> Leston & Southwood, 1964																																					
<i>scotica</i> (Curtis, 1835)	64	-	+	-	-	-	+	-	-	-	+	+	-	+	-	+	+	-	+	+	-	-	-	-	-	-	+	-	+	+	+	-	+	-	+	-	
<i>Micracanthia</i> Reuter, 1912																																					
<i>fennica</i> (Reuter, 1884)	65	-	-	-	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>marginalis</i> (Fallén, 1807)	66	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

	Ø	AK	HE	HE	O	O	B	B	VE	TE	TE	AA	AA	VA	VA	R	R	HO	HO	SF	SF	MR	MR	ST	ST	NT	NT	NS	NS	NN	NN	TR	TR	F	F	F	F	
			s	n	s	n	ø	v	y	i	y	i	y	i	y	i	y	i	y	i	y	i	y	i	y	i	y	i	ø	v	y	i	v	i	n	ø		
<i>Saldula</i> VanDuzee, 1914																																						
<i>arenicola</i> (Scholtz, 1847)	*	67	-	-	-	-	+	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>c-album</i> (Fieber, 1859)	*	68	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	
<i>fucicola</i> (J.Sahlberg, 1870)	*	69	-	+	+	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	+	+	+	+	+	
<i>opacula</i> (Zetterstedt, 1838)		70	+	+	+	+	+	+	-	-	-	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	+	-	+	+	+	+	
<i>orthochila</i> (Fieber, 1859)		71	+	-	+	+	+	+	-	-	-	-	-	-	+	+	+	+	+	+	-	-	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
<i>pallipes</i> (Fabricius, 1794)		72	+	+	+	+	+	+	-	-	-	-	-	+	+	+	+	-	-	-	-	-	+	+	+	+	+	-	-	-	-	+	+	-	+	-	-	
<i>palustris</i> (Douglas, 1874)		73	+	+	-	-	-	-	-	-	-	-	-	-	+	+	+	-	-	-	-	-	-	-	-	-	+	-	-	+	-	-	-	-	-	+	-	
<i>pilosella</i> (Thomson, 1871)		74	-	+	-	-	-	-	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>saltatoria</i> (Linnaeus, 1758)		75	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
<i>Salda</i> Fabricius, 1803																																						
<i>littoralis</i> (Linnaeus, 1758)		76	+	+	-	+	-	+	+	+	-	+	+	+	+	+	+	+	+	-	+	+	+	-	+	-	+	+	+	+	+	+	+	+	+	+	+	+
<i>morio</i> Zetterstedt, 1838		77	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>muelleri</i> (Gmelin, 1790)	*	78	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>sahlbergi</i> Reuter, 1875		79	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>Teloleuca</i> Reuter, 1912																																						
<i>bifasciata</i> (Thomson, 1871)		80	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	+	+
<i>pellucens</i> (Fabricius, 1779)		81	+	-	-	+	+	-	+	-	-	-	-	-	+	+	+	-	-	+	-	-	-	-	-	-	-	+	+	+	+	+	+	+	+	-	+	-
TINGIDAE																																						
<i>Campylosteira</i> Fieber, 1844																																						
<i>verna</i> (Fallén, 1826)		82	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Acalypta</i> Westwood, 1840																																						
<i>carinata</i> (Panzer, 1806)		83	+	+	+	-	+	+	+	+	-	+	+	+	+	-	-	+	-	+	-	-	-	-	+	-	+	+	+	-	+	+	+	+	+	+	+	+
<i>gracilis</i> (Fieber, 1844)		84	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>marginata</i> (Wolff, 1804)	*	85	-	+	+	?	-	+	-	-	?	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-
<i>nigrina</i> (Fallén, 1807)		86	+	+	+	-	+	-	+	+	-	+	-	-	-	+	+	+	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	+	+	-
<i>parvula</i> (Fallén, 1807)		87	+	+	-	-	-	+	+	+	-	+	-	+	+	-	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-
<i>platycheila</i> (Fieber, 1844)		88	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	
<i>Kalama</i> Puton, 1876																																						
<i>tricornis</i> (Schränk, 1801)		89	+	+	+	+	+	+	+	+	-	+	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Derephysia</i> Spinola, 1837																																						
<i>foliacea</i> (Fallén, 1807)		90	+	+	-	-	+	-	+	+	+	-	+	-	-	+	-	+	+	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Galeatus</i> Curtis, 1833																																						
<i>spinifrons</i> (Fallén, 1807)		91	+	+	-	+	+	-	+	+	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Stephanitis</i> Stål, 1873																																						
<i>oberti</i> (Kolenati, 1856)		92	+	+	-	-	+	-	+	-	-	+	-	+	+	-	+	+	-	+	-	-	-	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-
<i>Tingis</i> Fabricius, 1803																																						
<i>cardui</i> (Linnaeus, 1758)		93	+	+	+	-	-	+	+	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

	Ø	AK	HE	HE	O	O	B	B	VE	TE	TE	AA	AA	VA	VA	R	R	HO	HO	SF	SF	MR	MR	ST	ST	NT	NT	NS	NS	NN	NN	TR	TR	F	F	F	F		
			s	n	s	n	ø	v	y	i	y	i	y	i	y	i	y	i	y	i	y	i	y	i	y	i	y	i	ø	v	y	i	v	i	n	ø			
<i>Catoplatus</i> Spinola, 1837																																							
<i>fabricii</i> (Stål, 1868)	94	+	+	+	-	+	+	+	-	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>Physatocheila</i> Fieber, 1844																																							
<i>costata</i> (Fabricius, 1794)	95	+	+	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>smreczynskii</i> China, 1952	* 96	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>Dictyla</i> Stål, 1874																																							
<i>echii</i> (Schränk, 1782)	97	-	-	-	-	-	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>Agramma</i> Stephens, 1829																																							
<i>laetum</i> (Fallén, 1807)	98	+	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
MICROPHYSIDAE																																							
<i>Loricula</i> Curtis, 1833																																							
<i>elegantula</i> (Bärensprung, 1858)	99	+	+	-	-	-	-	-	-	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>pselaphiformis</i> Curtis, 1833	100	+	-	-	+	+	+	+	+	-	-	-	+	-	-	+	-	-	+	-	+	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	
<i>Myrmedobia</i> Bärensprung, 1857																																							
<i>coleoprata</i> (Fallén, 1807)	101	-	+	-	-	-	-	+	-	-	-	+	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>exilis</i> (Fallén, 1807)	102	+	+	+	+	+	+	+	+	+	-	-	-	-	+	+	-	+	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	+	+	+	+	+	
MIRIDAE																																							
<i>Bryocoris</i> Fallén, 1829																																							
<i>pteridis</i> (Fallén, 1807)	103	-	+	+	-	+	+	+	+	+	-	-	+	+	-	+	+	+	+	-	+	-	-	+	-	-	+	+	-	-	-	-	-	-	-	-	-	-	
<i>Monalocoris</i> Dahlbom, 1851																																							
<i>filicis</i> (Linnaeus, 1758)	104	+	+	+	+	+	-	+	+	+	+	+	+	-	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	-	+	-	-	-	-	-	-	-	
<i>Campyloneura</i> Fieber, 1861																																							
<i>virgula</i> (Herrich-Schaeffer, 1836)	105	+	-	-	-	-	+	-	+	-	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>Dicyphus</i> Fieber, 1858																																							
<i>constrictus</i> (Boheman, 1852)	106	+	+	-	-	-	+	-	+	-	-	-	-	-	-	-	-	+	-	-	-	-	-	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-	
<i>errans</i> (Wolff, 1804)	* 107	+	-	-	-	-	-	-	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>globulifer</i> (Fallén, 1829)	108	+	+	-	-	+	+	+	+	-	-	+	-	-	-	-	-	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>pallicornis</i> (Fieber, 1861)	109	+	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>stachydis</i> J.Sahlberg, 1878	110	-	+	-	-	-	+	-	+	+	-	-	-	-	-	-	-	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>Macrolophus</i> Fieber, 1858																																							
<i>pygmaeus</i> (Rambur, 1839)	111	+	+	-	-	-	+	-	+	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>=nubilus</i> (Herrich-Schaeffer, 1835)																																							
<i>Bothynosus</i> Fieber, 1864																																							
<i>pilosus</i> (Boheman, 1852)	112	-	+	-	-	-	+	+	-	-	+	-	-	-	-	-	-	-	+	-	-	-	-	+	-	-	+	+	-	-	-	-	-	+	+	+	-	-	
<i>Alloeotomus</i> Fieber, 1858																																							
<i>germanicus</i> Wagner, 1939	* 113	-	+	-	-	-	+	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>gothicus</i> (Fallén, 1807)	114	+	+	-	-	-	+	-	-	-	-	+	-	-	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		

	Ø	AK	HE	HE	O	O	B	B	VE	TE	TE	AA	AA	VA	VA	R	R	HO	HO	SF	SF	MR	MR	ST	ST	NT	NT	NS	NS	NN	NN	TR	TR	F	F	F	F	
			s	n	s	n	ø	v	y	i	y	i	y	i	y	i	y	i	y	i	y	i	y	i	y	i	y	i	ø	v	y	i	v	i	n	ø		
<i>Deraeocoris</i> Kirschbaum, 1856																																						
<i>morio</i> (Boheman, 1852)	*	115	-	+	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>ruber</i> (Linnaeus, 1758)		116	-	+	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>scutellaris</i> (Fabricius, 1794)		117	-	+	+	-	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>Adelphocoris</i> Reuter, 1896																																						
<i>lineolatus</i> (Goeze, 1778)		118	-	+	-	-	-	+	+	-	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>quadripunctatus</i> (Fabricius, 1794)		119	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>seticornis</i> (Fabricius, 1775)		120	-	+	+	-	+	+	+	+	-	-	+	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>Agnocoris</i> Reuter, 1875																																						
<i>rubicundus</i> (Fallén, 1807)		121	+	+	+	+	+	+	-	+	+	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>Calocoris</i> Fieber, 1858																																						
<i>alpestris</i> (Meyer-Dür, 1843)		122	-	-	-	-	-	+	-	-	-	+	-	-	-	-	-	-	-	+	-	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	
<i>biclavatus</i> (Herrich-Schaeffer, 1835)	*	123	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>fulvomaculatus</i> (DeGeer, 1773)		124	+	+	+	+	+	+	-	+	-	+	-	+	+	+	+	+	+	+	+	+	+	-	-	+	-	+	+	-	-	-	+	-	+	-	-	
<i>norvegicus</i> (Gmelin, 1790)		125	+	+	-	-	+	+	+	-	+	-	+	-	+	+	+	+	+	+	+	+	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	
<i>roseomaculatus</i> (DeGeer, 1773)		126	+	+	-	-	-	+	+	+	+	-	+	-	+	+	+	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>sexguttatus</i> (Fabricius, 1777)		127	+	+	-	+	+	+	+	-	-	-	-	-	+	+	+	-	+	+	+	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	
<i>striatellus</i> (Fabricius, 1794)		128	+	+	-	-	-	-	-	-	-	+	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>Camptozygum</i> Reuter, 1896																																						
<i>aequale</i> (Villers, 1789)		129	+	+	-	+	+	-	+	-	+	+	-	+	-	+	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>Capsus</i> Fabricius, 1803																																						
<i>ater</i> (Linnaeus, 1758)		130	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>Charagochilus</i> Fieber, 1858																																						
<i>gyllenhalii</i> (Fallén, 1807)		131	+	+	+	-	-	+	+	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>Dichrooscytus</i> Fieber, 1858																																						
<i>intermedius</i> Reuter, 1885		132	-	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>rufipennis</i> (Fallén, 1807)		133	+	+	-	+	+	+	+	-	-	-	+	+	-	+	+	-	+	+	+	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Liocoris</i> Fieber, 1858																																						
<i>tripustulatus</i> (Fabricius, 1781)		134	+	+	+	-	+	-	+	+	+	+	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>Lygocoris</i> Reuter, 1875																																						
<i>contaminatus</i> (Fallén, 1807)		135	+	+	-	+	+	+	+	+	-	+	+	-	+	+	+	+	+	+	+	+	+	-	-	+	-	-	-	-	-	-	-	+	+	-	-	
<i>limbatus</i> (Fallén, 1807)		136	-	+	-	-	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>lucorum</i> (Meyer-Dür, 1843)		137	+	+	-	-	-	+	-	+	+	+	-	-	-	-	-	-	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>pabulinus</i> (Linnaeus, 1761)		138	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
<i>rhannicola</i> (Reuter, 1885)	*	139	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>rugicollis</i> (Fallén, 1807)	*	140	+	+	+	+	+	+	-	-	-	-	+	+	-	+	+	+	+	+	+	+	+	-	+	-	+	+	+	+	+	+	+	+	+	+	+	
<i>spinolae</i> (Meyer-Dür, 1841)		141	+	+	-	-	-	+	-	-	-	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>viridis</i> (Fallén, 1807)		142	+	+	-	-	+	-	+	-	+	+	-	+	+	-	+	+	+	+	+	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	

	Ø	AK	HE	HE	O	O	B	B	VE	TE	TE	AA	AA	VA	VA	R	R	HO	HO	SF	SF	MR	MR	ST	ST	NT	NT	NS	NS	NN	NN	TR	TR	F	F	F	F	
			s	n	s	n	ø	v	y	i	y	i	y	i	y	i	y	i	y	i	y	i	y	i	y	i	y	i	y	ø	v	y	i	v	i	n	ø	
<i>Lygus</i> Hahn, 1833																																						
<i>adpersus</i> (Schilling, 1837)	*	143	+	+	-	+	-	+	+	+	-	-	+	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>pratensis</i> (Linnaeus, 1758)	*	144	+	+	-	-	-	+	-	-	-	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>punctatus</i> (Zetterstedt, 1838)		145	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>rugulipennis</i> Poppius, 1911		146	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
<i>wagneri</i> Remane, 1955		147	+	+	+	-	+	-	+	+	+	+	+	-	-	-	+	+	+	+	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Megacoelum</i> Fieber, 1858																																						
<i>infusum</i> (Herrich-Schaeffer, 1837)		148	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>Miris</i> Fabricius, 1794																																						
<i>striatus</i> (Linnaeus, 1758)		149	+	+	-	-	-	+	+	+	-	-	+	-	+	-	+	+	+	-	+	+	+	-	-	-	-	+	+	+	-	-	-	-	-	-	-	-
<i>Orthops</i> Fieber, 1858																																						
<i>basalis</i> (Costa, 1853)		150	+	+	+	-	+	-	+	+	+	+	-	-	-	-	-	-	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>campestris</i> (Linnaeus, 1758)		151	+	+	+	-	+	+	+	-	-	+	-	+	+	+	+	+	+	+	+	+	-	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-
<i>kalmii</i> (Linnaeus, 1758)		152	+	+	+	-	+	-	+	+	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Pantilius</i> Curtis, 1833																																						
<i>tunicatus</i> (Fabricius, 1781)		153	+	+	-	-	-	-	-	-	-	+	+	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Phytocoris</i> Fallén, 1814																																						
<i>dimidiatus</i> Kirschbaum, 1856		154	+	+	-	-	-	-	-	-	+	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>intricatus</i> Flor, 1861		155	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+
<i>longipennis</i> Flor, 1861		156	+	+	-	-	-	+	-	+	-	+	+	-	+	-	+	+	+	-	+	-	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
<i>pini</i> Kirschbaum, 1856		157	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	+	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>populi</i> (Linnaeus, 1758)		158	+	+	-	+	+	+	-	+	-	+	+	-	+	+	+	+	+	-	+	-	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
<i>tiliae</i> (Fabricius, 1777)		159	+	+	-	-	+	-	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>ulmi</i> (Linnaeus, 1758)		160	+	+	-	-	+	-	+	+	+	+	-	+	-	-	-	-	-	-	?	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>varipes</i> Boheman, 1852		161	-	+	-	-	-	+	-	+	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>Pinalitus</i> Kelton, 1955																																						
<i>cervinus</i> (Herrich-Schaeffer, 1841)		162	-	+	-	-	-	-	+	-	+	+	-	+	-	+	+	+	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-
<i>rubricatus</i> (Fallén, 1807)		163	+	+	+	-	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
<i>Polymerus</i> Hahn, 1831																																						
<i>nigritus</i> (Fallén, 1807)		164	-	-	-	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>tepastus</i> Rinne, 1989	*	165	-	-	-	-	-	+	-	-	+	-	-	-	-	-	-	-	-	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	
<i>unifasciatus</i> (Fabricius, 1794)	*	166	+	+	+	+	-	+	+	+	-	-	-	-	-	-	-	-	-	-	?	-	-	-	?	-	-	-	-	-	-	-	-	-	-	?	-	
<i>Stenotus</i> Jakovlev, 1877																																						
<i>binotatus</i> (Fabricius, 1794)		167	-	+	-	-	+	-	+	-	-	+	+	-	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>Zyginus</i> Fieber, 1870																																						
<i>nigriceps</i> (Fallén, 1829)		168	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>Leptopterna</i> Fieber, 1858																																						
<i>dolabrata</i> (Linnaeus, 1758)		169	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
<i>ferrugata</i> (Fallén, 1807)		170	+	+	-	-	+	+	+	+	-	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+

	Ø	AK	HE	HE	O	O	B	B	VE	TE	TE	AA	AA	VA	VA	R	R	HO	HO	SF	SF	MR	MR	ST	ST	NT	NT	NS	NS	NN	NN	TR	TR	F	F	F	F	
			s	n	s	n	ø	v	y	y	y	i	y	i	y	i	y	i	y	i	y	i	y	i	y	i	y	i	ø	v	y	i	v	i	n	ø		
<i>Myrmecoris</i> Gorski, 1852																																						
<i>gracilis</i> (R.F.Sahlberg, 1848)	171	-	+	-	-	-	-	-	-	+	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>Notostira</i> Fieber, 1858																																						
<i>elongata</i> (Geoffroy, 1785)	172	+	+	-	-	-	+	-	+	+	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>erratica</i> (Linnaeus, 1758)	173	+	+	-	-	-	+	-	+	+	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>Pithanus</i> Fieber, 1858																																						
<i>hrabei</i> Stehlik, 1952	* 174	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>maerkelii</i> (Herrich-Schaeffer, 1838)	175	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	-	-	+	-	+	-	-	-	-	-	-	
<i>Stenodema</i> Laporte, 1832																																						
<i>calcarata</i> (Fallén, 1807)	176	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>holsata</i> (Fabricius, 1787)	177	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	
<i>laevigata</i> (Linnaeus, 1758)	178	+	+	+	+	+	+	+	+	+	+	+	-	+	-	+	-	-	-	+	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>trispinosa</i> Reuter, 1904	* 179	+	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>virens</i> (Linnaeus, 1767)	180	+	+	+	-	+	+	-	-	+	-	+	-	+	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>Teratocoris</i> Fieber, 1858																																						
<i>antennatus</i> (Boheman, 1852)	181	-	-	-	-	-	-	+	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>paludum</i> J.Sahlberg, 1870	182	-	+	-	-	-	-	+	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>saundersi</i> Douglas & Scott, 1869	183	+	-	-	-	-	-	-	-	-	-	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-	+	+	-	-	+	+	+	+	+	+	
<i>viridis</i> Douglas & Scott, 1867	184	-	-	-	+	+	-	+	-	-	+	-	-	-	-	+	-	+	+	-	+	-	-	-	-	-	-	-	+	-	+	+	-	+	-	+	-	
<i>Trigonotylus</i> Fieber, 1858																																						
<i>caelestialium</i> (Kirkaldy, 1902)	* 185	-	+	-	-	-	+	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>fuscitarsis</i> Lammes, 1987	* 186	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	
<i>psammaecolor</i> Reuter, 1885	187	+	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>=elymi</i> (Thomson, 1896)																																						
<i>ruficornis</i> (Geoffroy, 1785)	188	+	+	+	+	?	+	+	+	-	+	+	-	+	+	+	+	+	+	-	+	?	-	-	-	-	-	-	?	-	-	?	-	?	-	-	-	
<i>Halticus</i> Hahn, 1833																																						
<i>apterus</i> (Linnaeus, 1761)	189	-	+	-	-	+	+	+	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>Labops</i> Burmeister, 1835																																						
<i>sahlbergii</i> (Fallén, 1829)	* 190	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>Orthocephalus</i> Fieber, 1858																																						
<i>coriaceus</i> (Fabricius, 1777)	191	+	+	+	+	-	+	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>saltator</i> (Hahn, 1835)	* 192	+	+	-	-	+	+	+	-	-	-	+	-	-	+	+	+	+	+	+	-	-	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	
<i>Strongylocoris</i> Blanchard, 1840																																						
<i>leucocephalus</i> (Linnaeus, 1758)	193	+	+	+	-	?	+	+	+	+	+	+	+	+	-	+	+	+	+	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>luridus</i> (Fallén, 1807)	194	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>steganoides</i> (J.Sahlberg, 1875)	* 195	-	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	+	-	-	-	-	-	-	-	+	+	+	-	-	
<i>Blepharidopterus</i> Kolenati, 1845																																						
<i>angulatus</i> (Fallén, 1807)	196	+	+	+	-	+	+	+	-	+	-	+	+	-	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
<i>Cyllocoris</i> Hahn, 1834																																						
<i>histrionicus</i> (Linnaeus, 1767)	197	+	+	-	-	-	-	-	+	-	-	+	-	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+

	Ø	AK	HE	HE	O	O	B	B	VE	TE	TE	AA	AA	V	A	V	A	R	R	HO	HO	SF	SF	MR	MR	ST	ST	NT	NT	NS	NS	NN	NN	TR	TR	F	F	F	F			
			s	n	s	n	ø	v	y	i	y	i	y	i	y	i	y	i	y	i	y	i	y	i	y	i	y	i	y	i	ø	v	y	i	v	i	n	ø				
Cyrtorhinus Fieber, 1858																																										
<i>caricus</i> (Fallén, 1807)	198	-	+	-	-	-	+	+	-	+	+	-	+	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Dryophilocoris Reuter, 1875																																										
<i>flavoquadrimaculatus</i> (DeGeer, 1773)	199	+	+	-	-	-	-	-	-	+	+	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Globiceps LePeletier & Serville, 1825																																										
<i>flavomaculatus</i> (Fabricius, 1794)	200	+	+	-	+	+	+	+	+	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
<i>fulvicollis</i> Jakovlev, 1877	201	-	-	-	+	+	-	-	-	-	-	-	-	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
<i>salicicola</i> Reuter, 1880	202	+	-	-	-	-	+	-	-	-	-	-	-	-	-	-	+	-	-	-	-	+	+	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-		
Heterotoma LePeletier & Serville, 1825																																										
<i>planicornis</i> (Pallas, 1772)	* 203	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Malacocoris Fieber, 1858																																										
<i>chlorizans</i> (Panzer, 1794)	204	+	+	-	-	-	+	-	+	-	-	+	-	+	-	+	-	-	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Mecomma Fieber, 1858																																										
<i>ambulans</i> (Fallén, 1807)	205	+	+	+	+	+	+	+	+	+	-	+	+	+	-	+	+	+	+	+	+	+	+	-	-	-	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	
<i>dispar</i> (Boheman, 1852)	206	-	+	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	
Orthotylus Fieber, 1858																																										
<i>billineatus</i> (Fallén, 1807)	207	+	+	+	-	+	+	-	+	-	-	-	-	-	-	+	-	-	-	-	+	-	-	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>boreellus</i> (Zetterstedt, 1828)	208	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	
<i>ericetorum</i> (Fallén, 1807)	209	+	+	-	-	-	+	-	+	-	-	+	-	-	-	+	-	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>flavosparsus</i> (C.R.Sahlberg, 1842)	210	+	+	+	-	-	+	-	+	-	-	+	-	+	-	-	-	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>fusciscens</i> (Kirschbaum, 1856)	211	-	-	-	+	-	-	-	-	-	-	+	-	+	-	+	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>marginalis</i> Reuter, 1883	212	+	+	+	+	+	+	-	+	-	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	-	+	-	+	+	-	-	-	-	-	-	-	-
<i>nassatus</i> (Fabricius, 1787)	* 213	+	+	-	-	-	+	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>prasinus</i> (Fallén, 1826)	214	-	+	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
<i>tenellus</i> (Fallén, 1807)	215	+	+	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
<i>virens</i> (Fallén, 1807)	216	-	+	-	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
<i>viridinervis</i> (Kirschbaum, 1856)	217	-	+	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Pseudoloxops Kirkaldy, 1905																																										
<i>coccineus</i> (Meyer-Dür, 1843)	* 218	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Cremonocephalus Fieber, 1860																																										
<i>albolineatus</i> Reuter, 1875	219	+	+	-	-	-	+	-	+	-	-	+	-	-	-	+	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Hallodapus Fieber, 1858																																										
<i>rufescens</i> (Burmeister, 1835)	220	-	+	+	-	-	-	-	-	-	-	-	-	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Systellonotus Fieber, 1858																																										
<i>triguttatus</i> (Linnaeus, 1767)	221	-	+	-	-	-	-	-	+	-	-	+	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Tytthus Fieber, 1864																																										
<i>pygmaeus</i> (Zetterstedt, 1838)	* 222	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Atractotomus Fieber, 1858																																										
<i>magnicornis</i> (Fallén, 1807)	223	+	+	-	+	+	-	+	+	+	-	+	+	-	-	+	-	-	-	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>mali</i> (Meyer-Dür, 1843)	224	+	+	-	-	-	-	+	-	-	+	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

	Ø	AK	HE	HE	O	O	B	B	VE	TE	TE	AA	AA	VA	VA	R	R	HO	HO	SF	SF	MR	MR	ST	ST	NT	NT	NS	NS	NN	NN	TR	TR	F	F	F	F			
			s	n	s	n	ø	v	y	i	y	i	y	i	y	i	i	y	i	y	i	y	i	y	i	y	i	y	i	ø	v	y	i	v	i	n	ø			
<i>Brachyarthrum</i> Fieber, 1858																																								
<i>limitatum</i> Fieber, 1858	*	225	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
<i>Campylomma</i> Reuter, 1878																																								
<i>verbasci</i> (Meyer-Dür, 1843)		226	+	+	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
<i>Chlamydatus</i> Curtis, 1833																																								
<i>evanescens</i> (Boheman, 1852)		227	+	+	-	-	-	+	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
<i>opacus</i> (Zetterstedt, 1838)		228	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
<i>pulicarius</i> (Fallén, 1807)		229	+	+	+	-	+	+	+	+	+	-	+	-	+	+	+	+	+	-	+	-	-	-	+	-	-	-	+	-	+	-	+	+	+	+	-	-		
<i>pullus</i> (Reuter, 1870)		230	+	+	-	+	-	+	+	+	+	+	-	-	-	-	-	-	-	-	+	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-		
<i>saltitans</i> (Fallén, 1807)		231	+	-	-	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
<i>wilkinsoni</i> (Douglas & Scott, 1866)		232	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
<i>Compsidolon</i> Reuter, 1899																																								
<i>salicellum</i> (Herrich-Schaeffer, 1841)		233	+	+	-	-	-	+	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
<i>Criocoris</i> Fieber, 1858																																								
<i>quadrinaculatus</i> (Fallén, 1807)		234	-	+	+	+	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
<i>Europiella</i> Reuter, 1909																																								
<i>artemisiae</i> (Becker, 1864)	*	235	+	+	-	-	+	-	+	+	-	-	+	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
<i>decolor</i> (Uhler, 1893)	*	236	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
<i>Harpocera</i> Curtis, 1838																																								
<i>thoracica</i> (Fallén, 1807)		237	+	-	-	-	-	-	-	+	-	-	+	-	+	-	+	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
<i>Hoplomachus</i> Fieber, 1858																																								
<i>thunbergii</i> (Fallén, 1807)		238	+	+	+	-	-	+	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>Lopus</i> Hahn, 1833																																								
<i>decolor</i> (Fallén, 1807)		239	+	+	+	-	+	-	+	+	+	+	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>Macrotylus</i> Fieber, 1858																																								
<i>paykullii</i> (Fallén, 1807)		240	-	+	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>Megalocoleus</i> Reuter, 1890																																								
<i>molliculus</i> (Fallén, 1807)		241	+	+	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>Monosynamma</i> Scott, 1864																																								
<i>bohemanni</i> (Fallén, 1829)		242	-	+	+	+	+	+	+	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>=nigritula</i> (Zetterstedt, 1838)																																								
<i>Oncotylus</i> Fieber, 1858																																								
<i>punctipes</i> Reuter, 1875		243	-	-	-	-	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>Orthonotus</i> Stephens, 1829																																								
<i>ruffrons</i> (Fallén, 1807)		244	-	+	-	-	-	-	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>Phoenicocoris</i> Reuter, 1875																																								
<i>modestus</i> (Meyer-Dür, 1843)	*	245	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>obscurus</i> (Fallén, 1829)		246	-	+	-	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

	Ø	AK	HE	HE	O	O	B	B	VE	TE	TE	AA	AA	V	V	R	R	HO	HO	SF	SF	MR	MR	ST	ST	NT	NT	NS	NS	NN	NN	TR	TR	F	F	F	F			
			s	n	s	n	ø	v	y	i	y	i	y	i	y	i	y	i	y	i	y	i	y	i	y	i	y	i	ø	v	y	i	v	i	n	ø				
Phylus Hahn, 1831																																								
<i>coryli</i> (Linnaeus, 1758)	247	+	-	+	+	+	+	-	+	+	-	+	+	+	-	+	+	+	-	-	-	+	-	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-		
<i>melanocephalus</i> (Linnaeus, 1767)	248	+	+	-	-	-	-	-	+	-	-	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Placochilus Fieber, 1858																																								
<i>seladonicus</i> (Fallén, 1807)	249	+	+	-	-	-	-	+	-	+	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Plagiognathus Fieber, 1858																																								
<i>arbustorum</i> (Fabricius, 1794)	250	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	-	-	-	+	-	+	-	+	-	-	-	-	-	-	-	-	-	-		
<i>chrysanthemi</i> (Wolff, 1804)	251	+	+	+	-	+	+	+	+	-	+	+	+	+	-	+	+	-	+	+	-	-	-	+	-	+	-	+	-	-	-	-	-	-	-	+	-	-		
Plesiodema Reuter, 1875																																								
<i>pinetella</i> (Zetterstedt, 1828)	252	-	-	-	-	-	-	-	-	-	-	-	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	-	-	
Psallus Fieber, 1858																																								
<i>aethiops</i> (Zetterstedt, 1838)	* 253	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	+	-	-	-	-	-	-	+	-	+	+	+	+	
<i>ambiguus</i> (Fallén, 1807)	254	+	+	+	+	+	+	+	-	-	+	+	+	+	-	+	+	+	+	+	+	+	-	-	+	-	-	-	+	+	-	-	-	-	-	-	-	-	-	
<i>betuleti</i> (Fallén, 1826)	255	+	+	-	-	+	+	+	-	-	-	+	-	+	+	+	-	+	-	-	+	-	-	+	-	+	-	-	+	+	+	-	-	-	-	+	-	+	-	
<i>confusus</i> Rieger, 1981	256	+	+	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
= <i>diminutus</i> auct. non Kirschbaum, 1856																																								
<i>fallenii</i> Reuter, 1883	257	+	+	-	-	-	+	+	+	-	-	-	-	-	-	-	-	+	+	-	+	-	-	+	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	
<i>flavellus</i> Stichel, 1933	* 258	?	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>graminicola</i> (Zetterstedt, 1828)	259	-	-	-	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	+	-	+	-	
<i>haematodes</i> (Gmelin, 1790)	260	+	+	-	-	-	+	-	-	-	+	+	-	-	+	-	-	+	+	-	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>lapponicus</i> Reuter, 1874	* 261	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	
<i>lepidus</i> Fieber, 1858	* 262	-	+	-	-	-	+	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>perrisi</i> (Mulsant & Rey, 1852)	* 263	+	+	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>quercus</i> (Kirschbaum, 1856)	264	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>salicis</i> (Kirschbaum, 1856)	265	+	+	-	-	-	+	-	-	-	-	+	-	+	-	+	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
= <i>scholtzi</i> Fieber, 1861																																								
= <i>alnicola</i> Douglas & Scott, 1871																																								
<i>variabilis</i> (Fallén, 1807)	266	+	+	-	-	+	+	-	-	-	-	+	-	+	-	+	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>varians</i> (Herrich-Schaeffer, 1841)	267	+	+	-	-	-	-	-	-	-	-	+	-	+	+	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Salicarus Kerzhner, 1962																																								
<i>roseri</i> (Herrich-Schaeffer, 1838)	268	-	+	-	-	+	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Pilophorus Hahn, 1826																																								
<i>cinnamopterus</i> (Kirschbaum, 1856)	269	-	+	-	-	-	+	-	-	-	-	+	-	-	-	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>clavatus</i> (Linnaeus, 1767)	270	+	+	-	-	+	+	+	-	-	+	+	+	-	-	+	+	+	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>perplexus</i> Douglas & Scott, 1875	271	-	+	-	-	-	+	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
NABIDAE																																								
Himacerus Wolff, 1811																																								
<i>mirmicoides</i> (O. Costa, 1834)	272	-	-	-	-	-	+	-	-	+	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

	Ø	AK	HE	HE	O	O	B	B	VE	TE	TE	AA	AA	V	V	R	R	HO	HO	SF	SF	MR	MR	ST	ST	NT	NT	NS	NS	NN	NN	TR	TR	F	F	F	F		
	s	n	s	s	n	ø	v	y	i	y	i	y	i	y	i	y	i	y	i	y	i	y	i	y	i	y	i	y	i	ø	v	y	i	v	i	n	ø		
<i>Nabis</i> Latreille, 1802																																							
<i>brevis</i> Scholtz, 1847	273	+	+	+	-	+	+	+	+	+	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>ericetorum</i> Scholtz, 1847	274	+	+	-	-	-	-	+	-	-	-	+	-	+	+	+	-	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>ferus</i> (Linnaeus, 1758)	275	+	+	?	-	+	-	+	?	+	?	-	?	-	?	-	-	-	-	-	?	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>flavomarginatus</i> Scholtz, 1847	276	+	+	+	+	+	+	+	+	+	+	+	+	-	+	-	+	+	+	+	+	-	+	+	+	-	+	+	-	+	+	-	+	+	-	+	+	-	
<i>limbatus</i> Dahlbom, 1851	277	+	+	+	+	+	+	+	+	+	+	+	+	-	+	-	+	+	+	+	+	-	+	+	+	+	-	+	+	+	+	-	+	+	-	+	+	-	
<i>pseudoferus</i> Remane, 1949	278	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>punctatus</i> A. Costa, 1847	* 279	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>rugosus</i> (Linnaeus, 1758)	280	+	+	+	-	+	+	+	+	+	+	+	-	-	-	+	-	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
ANTHOCORIDAE																																							
<i>Temnostethus</i> Fieber, 1860																																							
<i>gracilis</i> Horváth, 1907	281	+	+	-	-	+	-	+	+	-	-	-	+	-	-	-	-	+	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>pusillus</i> (Herrich-Schaeffer, 1835)	* 282	-	+	-	-	-	-	-	-	?	-	-	+	-	-	-	?	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>Elatophilus</i> Reuter, 1884																																							
<i>nigrellus</i> (Zetterstedt, 1838)	* 283	-	-	-	-	-	?	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>nigricornis</i> (Zetterstedt, 1838)	284	+	+	+	+	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>stigmatellus</i> (Zetterstedt, 1838)	285	-	?	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>Anthocoris</i> Fallén, 1814																																							
<i>amplicollis</i> Horváth, 1893	* 286	-	-	-	-	-	-	-	-	+	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>confusus</i> Reuter, 1884	287	-	+	-	-	+	-	+	-	-	-	+	-	-	-	+	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>gallarum-ulmi</i> (DeGeer, 1773)	288	+	+	+	-	-	+	+	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>limbatus</i> Fieber, 1836	289	-	+	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>nemoralis</i> (Fabricius, 1794)	290	+	+	-	-	-	+	-	+	-	-	+	-	-	-	+	-	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>nemorum</i> (Linnaeus, 1761)	291	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
<i>pilosus</i> (Jakovlev, 1877)	292	-	+	+	-	-	+	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
= <i>sibiricus</i> auctt. non Reuter, 1875																																							
<i>simulans</i> Reuter, 1884	* 293	-	+	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>Acompocoris</i> Reuter, 1875																																							
<i>alpinus</i> Reuter, 1875	294	-	-	-	-	+	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>montanus</i> Wagner, 1955	* 295	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>pygmaeus</i> (Fallén, 1807)	296	-	+	-	-	+	+	+	-	-	-	+	-	+	+	-	-	+	-	+	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>Tetrableps</i> Fieber, 1860																																							
<i>bicuspis</i> (Herrich-Schaeffer, 1835)	297	-	-	-	-	-	-	+	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>Orius</i> Wolff, 1811																																							
<i>majusculus</i> (Reuter, 1879)	* 298	+	+	-	?	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>minutus</i> (Linnaeus, 1758)	299	+	+	-	-	-	+	-	+	?	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>niger</i> (Wolff, 1811)	300	+	+	-	-	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>vicinus</i> (Ribaut, 1923)	* 301	-	+	-	-	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

	Ø	AK	HE	HE	O	O	B	B	VE	TE	TE	AA	AA	VA	VA	R	R	HO	HO	SF	SF	MR	MR	ST	ST	NT	NT	NS	NS	NN	NN	TR	TR	F	F	F	F	
			s	n	s	n	ø	v	y	i	y	i	y	i	y	i	y	i	y	i	y	i	y	i	y	i	y	i	ø	v	y	i	v	i	n	ø		
<i>Lycocoris</i> Hahn, 1835																																						
<i>campestris</i> (Fabricius, 1794)	302	-	+	-	-	-	+	-	-	-	-	+	-	-	-	+	-	+	+	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	
<i>Xylocoris</i> Dufour, 1831																																						
<i>cursor</i> (Fallén, 1807)	303	+	+	+	-	+	+	+	-	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>formicetorum</i> (Boheman, 1844)	304	+	+	-	-	+	-	+	+	-	-	+	-	+	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>galatinus</i> (Fieber, 1836)	* 305	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>Dufouriellus</i> Kirkaldy, 1906																																						
<i>ater</i> (Dufour, 1833)	* 306	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>Scoloposcelis</i> Fieber, 1864																																						
<i>pulchella</i> (Zetterstedt, 1838)	307	-	+	-	-	-	-	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
CIMICIDAE																																						
<i>Cimex</i> Linnaeus, 1758																																						
<i>lectularius</i> Linnaeus, 1758	* 308	+	+	+	+	+	+	+	-	+	+	+	+	+	-	+	+	+	+	+	-	+	+	-	-	-	+	-	-	-	+	+	-	+	-	-	-	
<i>Oeciacus</i> Stål, 1873																																						
<i>hirundinis</i> (Lamarck, 1816)	309	-	+	-	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
REDUVIIDAE																																						
<i>Empicoris</i> Wolff, 1811																																						
<i>culiciformis</i> (DeGeer, 1773)	310	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>vagabundus</i> (Linnaeus, 1758)	311	-	+	-	-	-	+	-	+	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>Pygolampis</i> Germar, 1817																																						
<i>bidentata</i> (Goeze, 1778)	312	-	-	-	-	-	+	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>Coranus</i> Curtis, 1833																																						
<i>aethiops</i> Jakovlev, 1893	* 313	-	-	+	-	-	-	-	+	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>subapterus</i> (DeGeer, 1773)	314	-	-	-	-	+	-	+	-	-	+	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>Rhynocoris</i> Hahn, 1834																																						
<i>annulatus</i> (Linnaeus, 1758)	315	-	+	+	-	-	+	+	-	+	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>Reduvius</i> Fabricius, 1775																																						
<i>personatus</i> (Linnaeus, 1758)	316	-	+	-	-	-	-	-	+	+	+	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
ARADIDAE																																						
<i>Aradus</i> Fabricius, 1803																																						
<i>betulae</i> (Linnaeus, 1758)	317	+	+	+	+	+	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	+	-	-	+	+	-	-	-	-	-	
<i>benulinus</i> Fallén, 1829	318	-	+	-	-	-	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>brevicollis</i> Fallén, 1807	319	-	-	+	-	+	?	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>cinnamomeus</i> (Panzer, 1806)	* 320	+	+	+	-	-	+	+	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>conspicuus</i> (Herrich-Schaeffer, 1835)	321	-	+	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
= <i>crenatus</i> auctt. nec Say, 1832																																						
<i>corticalis</i> (Linnaeus, 1758)	322	+	+	+	-	+	-	+	+	+	+	+	-	+	-	-	-	-	-	-	-	-	-	-	+	-	-	-	+	-	-	-	-	-	-	-	-	

	Ø	AK	HE	HE	O	O	B	B	VE	TE	TE	AA	AA	VA	VA	R	R	HO	HO	SF	SF	MR	MR	ST	ST	NT	NT	NS	NS	NN	NN	TR	TR	F	F	F	F	
	s	n	s	n	ø	v	y	i	y	i	y	i	y	i	y	i	y	i	y	i	y	i	y	i	y	i	y	i	ø	v	y	i	v	i	n	ø		
<i>crenaticollis</i> R.F. Sahlberg, 1848	323	-	-	+	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	
<i>depressus</i> (Fabricius, 1794)	324	+	+	+	-	+	-	+	+	+	-	+	-	+	-	+	-	+	-	+	-	-	-	-	-	-	-	-	+	-	+	+	+	-	-	-	+	
<i>erosus</i> Fallén, 1807	325	-	+	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>laeviusculus</i> Reuter, 1875	326	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>lugubris</i> Fallén, 1807	327	+	+	-	-	+	-	+	-	-	-	-	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	+	+	+	+	+	+	
<i>obtectus</i> Vasarhelyi, 1988	328	-	+	-	+	+	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>=pictus</i> auctt. nec Bärensprung, 1859																																						
<i>truncatus</i> Fieber, 1861	* 329	-	-	-	-	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Mezira Amyot & Serville, 1843																																						
<i>tremulae</i> (Buettner, 1822)	* 330	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>Aneurus</i> Curtis, 1825																																						
<i>avenius</i> (Dufour, 1833)	* 331	-	+	-	-	-	-	-	+	+	-	+	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>laevis</i> (Fabricius, 1775)	* 332	-	-	-	-	-	-	-	-	-	-	+	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
PIESMATIDAE																																						
Piesma LePeletier & Serville, 1828																																						
<i>capitatum</i> (Wolff, 1804)	333	+	-	-	-	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>maculatum</i> (Laporte, 1833)	334	+	+	+	-	+	-	+	+	+	+	+	+	-	+	-	+	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>quadratum</i> (Fieber, 1844)	335	+	+	-	-	-	-	+	-	+	-	+	-	+	-	+	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>unicolor</i> Wagner, 1954	* 336	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
BERYTIDAE																																						
Berytinus Kirkaldy, 1900																																						
<i>clavipes</i> (Fabricius, 1775)	* 337	-	-	?	-	-	-	-	-	-	-	-	-	?	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>minor</i> (Herrich-Schaeffer, 1835)	338	+	+	-	-	-	+	+	+	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>signoreti</i> (Fieber, 1859)	339	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Neides Latreille, 1802																																						
<i>tipularius</i> (Linnaeus, 1758)	* 340	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Metatropis Fieber, 1859																																						
<i>rufescens</i> (Herrich-Schaeffer, 1835)	341	+	+	-	-	-	-	-	-	-	-	+	-	-	-	-	-	+	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
LYGAEIDAE																																						
Nithecus Horváth, 1890																																						
<i>jacobaee</i> (Schilling, 1829)	342	+	+	+	-	+	+	+	+	+	+	+	+	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Nysius Dallas, 1852																																						
<i>ericae</i> (Schilling, 1829)	343	+	-	-	-	-	+	+	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>groenlandicus</i> (Zetterstedt, 1838)	344	-	-	-	-	-	+	-	+	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>helveticus</i> (Herrich-Schaeffer, 1850)	345	+	+	-	-	-	-	+	-	-	-	+	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>thymi</i> (Wolff, 1804)	346	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	-	-	-	+	-	+	+	+	

	Ø	AK	HE	HE	O	O	B	B	VE	TE	TE	AA	AA	VA	VA	R	R	HO	HO	SF	SF	MR	MR	ST	ST	NT	NT	NS	NS	NN	NN	TR	TR	F	F	F	F	
			s	n	s	n	ø	v	y	i	y			i	y	i	y	i	y	i	y	i	y	i	y	i	y	i	ø	v	y	i	v	i	n	ø		
<i>Ortholomus</i> Stål, 1872																																						
<i>punctipennis</i> (Herrich-Schaeffer, 1838)	347	+	+	-	-	-	-	+	-	+	+	-	+	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>Kleidocerys</i> Stephens, 1829																																						
<i>resedae</i> (Panzer, 1797)	348	+	+	-	+	-	-	+	+	+	-	-	+	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>Cymus</i> Hahn, 1832																																						
<i>clavicularis</i> (Fallén, 1807)	349	+	+	-	-	+	-	+	-	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>glandicolor</i> Hahn, 1832	350	+	+	+	-	+	-	+	+	+	-	+	+	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>Geocoris</i> Fallén, 1814																																						
<i>lapponicus</i> Zetterstedt, 1838	351	+	+	-	-	+	+	+	+	-	-	-	-	+	-	-	+	-	+	-	-	-	+	-	+	-	-	-	+	-	-	-	-	-	-	-	-	
<i>Oxycarenus</i> Fieber, 1837																																						
<i>modestus</i> (Fallén, 1829)	352	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>Philomyrmex</i> R.F.Sahlberg, 1848																																						
<i>insignis</i> R.F.Sahlberg, 1848	353	-	-	-	-	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>Plinthus</i> Stephens, 1829																																						
<i>brevipennis</i> (Latreille, 1807)	354	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>pusillus</i> (Scholtz, 1847)	355	+	+	+	-	-	-	+	-	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>Tropistethus</i> Fieber, 1860																																						
<i>holosericeus</i> (Scholtz, 1846)	356	-	+	-	-	-	+	+	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>Drymus</i> Fieber, 1860																																						
<i>brunneus</i> (R.F.Sahlberg, 1848)	357	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
<i>ryeii</i> Douglas & Scott, 1865	358	+	+	-	-	-	-	+	-	+	-	-	+	-	+	+	+	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>sylvaticus</i> (Fabricius, 1775)	359	+	+	-	+	-	-	+	-	+	-	+	+	+	-	+	+	+	+	+	+	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-	
<i>Eremocoris</i> Fieber, 1860																																						
<i>abietis</i> (Linnaeus, 1758)	360	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
<i>plebejus</i> (Fallén, 1807)	361	+	+	-	-	-	-	+	-	-	+	+	+	-	+	+	+	+	+	+	+	-	-	-	-	-	-	-	+	-	-	+	-	+	-	-	-	
<i>Gastrodes</i> Westwood, 1840																																						
<i>abietum</i> Bergroth, 1914	362	+	+	+	+	-	+	+	+	-	-	-	-	-	-	+	-	-	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>grossipes</i> (DeGeer, 1773)	363	-	+	-	-	+	+	+	+	+	-	+	-	-	-	+	-	+	+	+	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>Ischnocoris</i> Fieber, 1860																																						
<i>angustulus</i> (Boheman, 1852)	364	+	+	-	-	-	+	-	-	+	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>Lamproplax</i> Douglas & Scott, 1868																																						
<i>picea</i> (Flor, 1860)	365	-	+	+	-	-	+	+	-	-	-	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>Scolopostethus</i> Fieber, 1860																																						
<i>affinis</i> (Schilling, 1829)	366	+	+	-	-	-	-	+	-	+	+	+	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>decoratus</i> (Hahn, 1833)	367	+	+	-	-	-	+	-	-	+	-	+	-	+	+	+	+	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>pictus</i> (Schilling, 1829)	368	-	+	-	-	-	-	+	-	-	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>pilosus</i> Reuter, 1874	369	-	-	+	-	-	-	+	+	+	-	-	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>thomsoni</i> Reuter, 1874	370	+	+	+	-	+	+	+	+	-	+	+	+	+	-	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	

	Ø	AK	HE	HE	O	O	B	B	VE	TE	TE	AA	AA	VA	VA	R	R	HO	HO	SF	SF	MR	MR	ST	ST	NT	NT	NS	NS	NN	NN	TR	TR	F	F	F	F				
	s	n	s	n	ø	v	y	i	y	i	y	i	y	i	y	i	y	i	y	i	y	i	y	i	y	i	y	i	ø	v	y	i	v	i	n	ø					
Taphropeltus Stål, 1872																																									
<i>contractus</i> (Herrich-Schaeffer, 1835)	*	371	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
<i>hamulatus</i> (Thomson, 1870)		372	+	+	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Acompus Fieber, 1860																																									
<i>rufipes</i> , (Wolff, 1804)		373	-	+	-	-	-	-	+	-	+	-	-	-	-	-	-	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Stygnocoris Douglas & Scott, 1865																																									
<i>fuliginus</i> (Geoffroy, 1785)		374	+	+	-	-	-	-	+	-	+	-	+	-	+	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
<i>pygmaeus</i> (R.F.Sahlberg, 1848)		375	-	-	-	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
<i>rusticus</i> (Fallén, 1807)		376	+	+	-	-	+	+	+	-	+	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>sabulosus</i> (Schilling, 1829)		377	+	+	+	-	+	-	+	+	+	-	+	-	+	-	+	+	+	+	+	-	-	-	+	+	-	+	+	-	-	-	-	+	-	-	-	-	-		
= <i>pedestris</i> (Fallén, 1807)																																									
Ligyrocoris Stål, 1872																																									
<i>sylvestris</i> (Linnaeus, 1758)		378	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	-	-	-	-	+	-	-	+	+	-	-	-	-	-	-	-	
Pachybrachius Hahn, 1826																																									
<i>fracticollis</i> (Schilling, 1829)		379	+	+	-	-	-	-	-	+	-	+	-	-	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Graptopeltus Stål, 1872																																									
<i>lynceus</i> (Fabricius, 1775)		380	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Peritrechus Fieber, 1860																																									
<i>angusticollis</i> (R.F.Sahlberg, 1848)		381	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>convivus</i> (Stål, 1858)		382	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
= <i>distinguendus</i> (Flor, 1860)																																									
<i>geniculatus</i> (Hahn, 1832)		383	-	+	-	-	-	-	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Rhyparochromus Hahn, 1826																																									
<i>phoenicus</i> (Rossi, 1794)		384	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>pini</i> (Linnaeus, 1758)		385	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	-	-	-	+	+	+	-	-	-	-	-	-	-	-	-	-	
Megalonotus Fieber, 1860																																									
<i>antennatus</i> (Schilling, 1829)		386	+	+	-	-	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>chiragrus</i> (Fabricius, 1794)		387	+	+	-	-	-	-	+	-	-	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Sphragisticus Stål, 1872																																									
<i>nebulosus</i> (Fallén, 1807)		388	+	+	-	-	+	+	+	+	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Aphanus Laporte, 1833																																									
<i>rolandri</i> (Linnaeus, 1758)	*	389	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Macrodema Fieber, 1860																																									
<i>micropterum</i> (Curtis, 1836)		390	+	+	-	-	-	+	-	+	+	+	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Pterotmetus Amyot & Serville, 1843																																									
<i>staphyliniformis</i> (Schilling, 1829)		391	+	+	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Trapezonotus Fieber, 1860																																									
<i>anorus</i> (Flor, 1860)		392	-	+	-	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>arenarius</i> (Linnaeus, 1758)		393	+	+	+	-	+	+	+	+	+	+	+	-	+	+	+	+	+	-	-	+	-	-	-	-	-	-	+	-	+	+	+	+	+	+	+	+	+	+	
<i>desertus</i> Seidenstücker, 1951		394	-	+	-	-	-	+	+	+	-	+	-	+	-	+	-	+	+	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	

	Ø	AK	HE	HE	O	O	B	B	VE	TE	TE	AA	AA	VA	VA	R	R	HO	HO	SF	SF	MR	MR	ST	ST	NT	NT	NS	NS	NN	NN	TR	TR	F	F	F	F		
			s	n	s	n	ø	v	y	i	y	i	y	i	y	i	y	i	y	i	y	i	y	i	y	i	y	i	ø	v	y	i	v	i	n	ø			
COREIDAE																																							
<i>Coreus</i> Fabricius, 1794																																							
<i>marginatus</i> (Linnaeus, 1758)	395	+	+	+	-	-	-	+	+	+	+	+	-	+	+	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
<i>Spathocera</i> Stein, 1860																																							
<i>dahlmani</i> (Schilling, 1829)	396	+	+	-	-	-	-	-	+	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
<i>Ulmicola</i> Kirkaldy, 1909																																							
<i>spinipes</i> (Fallén, 1807)	397	+	+	-	-	+	-	+	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
<i>Nemocoris</i> R.F.Sahlberg, 1848																																							
<i>falleni</i> R.F.Sahlberg, 1848	398	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
RHOPALIDAE																																							
<i>Corizus</i> Fallén, 1814																																							
<i>hyoscyami</i> (Linnaeus, 1758)	399	+	+	+	-	+	-	+	+	+	+	+	+	+	-	+	+	+	+	-	+	-	+	+	-	-	-	+	-	-	-	-	-	-	-	-	-	-	
<i>Rhopalus</i> Schilling, 1827																																							
<i>maculatus</i> (Fieber, 1837)	400	+	+	+	-	-	-	+	-	+	+	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>parumpunctatus</i> Schilling, 1829	401	+	+	+	-	-	-	+	+	+	-	+	-	-	+	-	+	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>subrufus</i> (Gmelin, 1790)	402	+	+	-	-	-	-	+	-	+	+	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>Stictopleurus</i> Stål, 1872																																							
<i>abutilon</i> (Rossi, 1790)	403	-	+	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>crassicornis</i> (Linnaeus, 1758)	404	+	+	+	-	+	-	+	+	+	+	-	+	+	-	+	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>Myrmus</i> Hahn, 1831																																							
<i>miriformis</i> (Fallén, 1807)	405	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
ALYDIDAE																																							
<i>Alydus</i> Fabricius, 1803																																							
<i>calcaratus</i> (Linnaeus, 1758)	406	+	+	-	-	-	+	+	+	+	-	+	-	+	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
CYDNIDAE																																							
<i>Adomerus</i> Mulsant & Rey, 1866																																							
<i>biguttatus</i> (Linnaeus, 1758)	407	+	+	+	-	+	-	+	+	+	-	+	-	+	-	+	-	+	+	+	-	-	-	-	-	-	+	+	-	-	+	+	-	-	-	-	-	-	
<i>Sehirus</i> Amyot & Serville, 1843																																							
<i>luctuosus</i> Mulsant & Rey, 1866	408	+	+	-	-	-	-	+	+	+	-	+	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>Tritomegas</i> Amyot & Serville, 1843																																							
<i>bicolor</i> (Linnaeus, 1758)	409	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>Legnotus</i> Schødte, 1848																																							
<i>picipes</i> (Fallén, 1807)	* 410	+	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
THYREOCORIDAE																																							
<i>Thyreocoris</i> Schrank, 1801																																							
<i>scarabaeoides</i> (Linnaeus, 1758)	411	+	+	-	-	-	-	+	+	+	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

	Ø	AK	HE	HE	O	O	B	B	VE	TE	TE	AA	AA	VA	VA	R	R	HO	HO	SF	SF	MR	MR	ST	ST	NT	NT	NS	NS	NN	NN	TR	TR	F	F	F	F	
			s	n	s	n	ø	v	y	i	y	i	y	i	y	i	y	i	y	i	y	i	y	i	y	i	y	i	ø	v	y	i	v	i	n	ø		
SCUTELLERIDAE																																						
<i>Odontoscelis</i> Laporte, 1832																																						
<i>fuliginosa</i> (Linnaeus, 1761)	412	-	+	-	-	-	+	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>Phimodera</i> Germar, 1839																																						
<i>lapponica</i> (Zetterstedt, 1828)	413	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>Eurygaster</i> Laporte, 1832																																						
<i>testudinaria</i> (Geoffroy, 1785)	414	-	+	+	-	-	-	+	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	
PENTATOMIDAE																																						
<i>Sciocoris</i> Fallén, 1829																																						
<i>cursitans</i> (Fabricius, 1794)	415	-	+	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>microphthalmus</i> Flor, 1860	* 416	?	+	-	-	+	+	-	-	-	-	?	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>umbrinus</i> (Wolff, 1804)	417	+	+	+	+	+	-	+	+	+	-	+	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>Aelia</i> Fabricius, 1803																																						
<i>acuminata</i> (Linnaeus, 1758)	418	+	+	-	-	-	-	+	-	+	+	-	+	-	+	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>Neottiglossa</i> Kirby, 1837																																						
<i>pusilla</i> (Gmelin, 1789)	419	+	+	+	-	+	-	+	+	+	-	+	-	-	-	-	-	-	-	-	-	+	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	
<i>Stagonomus</i> Gorski, 1852																																						
<i>pusillus</i> (Herrich-Schaeffer, 1830)	420	+	-	-	-	-	-	+	-	-	+	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>Holcostethus</i> Fieber, 1860																																						
<i>vernalis</i> (Wolff, 1804)	421	+	+	+	-	-	-	+	-	+	+	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>Palomena</i> Mulsant & Rey, 1866																																						
<i>prasina</i> (Linnaeus, 1761)	422	+	+	-	-	-	-	+	+	+	-	+	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>Chlorochroa</i> Stål, 1872																																						
<i>juniperina</i> (Linnaeus, 1758)	423	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	-	+	+	-	+	-	+	-	-	-	-	-	-	-	-	-	
<i>pinicola</i> (Mulsant, 1852)	424	+	+	+	-	-	-	+	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>Carpocoris</i> Kolenati, 1846																																						
<i>purpureipennis</i> (DeGeer, 1773)	* 425	-	+	+	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>Dolycoris</i> Mulsant & Rey, 1866																																						
<i>baccarum</i> (Linnaeus, 1758)	426	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	-	-	-	+	-	-	-	-	-	-	-	-	-	-	
<i>Eurydema</i> Laporte, 1832																																						
<i>oleracea</i> (Linnaeus, 1758)	427	+	+	+	-	+	+	+	+	+	+	+	+	-	+	-	+	-	-	-	-	+	+	-	-	-	-	+	-	-	-	-	-	-	-	-	-	
<i>Pentatoma</i> Olivier, 1789																																						
<i>rufipes</i> (Linnaeus, 1758)	428	+	+	-	-	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	
<i>Picromerus</i> Amyot & Serville, 1843																																						
<i>bidens</i> (Linnaeus, 1758)	429	+	+	+	-	+	-	+	+	+	+	+	+	-	+	+	+	-	+	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>Troilus</i> Stål, 1868																																						
<i>luridus</i> (Fabricius, 1775)	430	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<i>Rhacognathus</i> Fieber, 1860																																						
<i>punctatus</i> (Linnaeus, 1758)	431	+	+	+	-	-	+	+	-	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

31. *longipalis*. First recorded from Norway by Spikkeland & Dolmen. See Spikkeland et al. 1998.
35. *striata*. The records from ON, RY and NTI in Siebke (1874) and Warloe are *dorsalis* according to exx. in ZMO and ZMS. A catalogue in ZMB has a record from BØ: Drammen (det. F. Ossiannilsson), but I have not seen these specimens.
39. *reuteri*. See Dolmen (1989).
47. *saulii*. The records from AK: Lillestrømmen and BØ: Kongsberg in Warloe (1925) (as *currens*) are *saulii* according to exx. in ZMO. The specimens from AAY, VAY and SFY leg. J. Økland, coll. ZMO consists only of larvae and the determination is somewhat uncertain.
60. *cincta*. Strand (1912) recorded this species from NTI, TRY and FØ, but no specimens have been found in museum collections.
67. *arenicola*. I have not seen any specimens in museum collections.
68. *c-album*. The records from NTI and FØ in Strand (1912) and Warloe (1925) are *fucicola* according to exx. in ZMO. The first verified records from Norway are those in Warloe (1927).
69. *fucicola*. See remarks to No. 68 and Lindskog (1974).
78. *muelleri*. Only found in OS: Lillehammer 1850, leg. Siebke, one specimen in coll. ZMO. Recorded as *littoralis* by Siebke (1853, 1874). The records from ON in Siebke (1874) and Warloe (1925) are *littoralis* according to exx. in ZMO.
85. *marginata*. The records from OS, TEY and STI in Warloe (1925) are possible, but no specimens have been found in museum collections.
96. *smreczynskii*. First reported from Norway by Hansen & Coulianos (1998). It lives on *Sorbus* and *Pyrus*. The very similar *P. costata* lives on *Alnus* and *Betula*. The foodplant should be noted when collecting these species.
107. *errans*. The record from BØ: Bragemaesaasen in Warloe (1927) is *D. constrictus* according to exx. in ZMO.
113. *germanicus*. First reported from Norway by Hansen & Coulianos (1998). All records of *A. gothicus* in Warloe (1925) have been checked in coll. ZMO and belong to the latter species.
115. *morio*. New to Norway. AK: Kristiania (= Oslo), Lysaker, June 1927, one male, leg. Munster, coll. ZMO (published by Warloe (1925) as *D. scutellaris*), AK: Nesodden, Fagerstrand, light trap, July 1994, July 1995, leg. S. Kobro, coll. ZMB, AK: Ås, June 1960 and July 1971, leg. T. Edland, coll. SPV, TEI: Sauherad preste-gaard, July 1971, July 1972, leg. T. Edland, coll. SPV.
123. *biclavatus*. Only found in AAY: Risør /at Sondeled gaard/ 11 July 1902, leg. Warloe, coll. ZMO (Warloe 1925) and AAY: Risør, Kiijordet 1-2 Aug. 1996, leg. L. Greve, coll. ZMB.
139. *rhamnocola*. New to Norway. TEY: Drangedal, Nås 14 July 1970, 3 exx. leg. J. Fjeldalen, coll. SPV. The foodplant is *Frangula alnus*.
140. *rugicollis*. Formerly placed in the genus *Plesiocoris*.
143. *adpersus*. New to Norway. Up to now confused with *L. gemellatus* (Herrich-Schaeffer, 1835) and recorded under that name by Warloe (1925), Tunstad (1983) and Sagvolden & Coulianos (1984). It lives on *Artemisia*, mostly on *A. vulgaris*.
144. *pratensis*. Many records published before 1965 refers to *L. punctatus*, *rugulipennis* and *wagneri*.
165. *tepastus*. First reported from Norway by Hansen & Coulianos (1998). Up to now confused with *P. microphthalmus* (Wagner, 1951) which may occur in southern Norway.
166. *unifasciatus*. Reported from SFI and STI by Warloe (1925) and FI by Huldén (1982), but I have not seen any specimens from these districts. The record from ON: Dovre in Siebke (1874) and Warloe (1925) is *tepastus* according to exx. in ZMO.
174. *hrabei*. New to Norway. ON: Valdres, Vang, Helinstrand, 1 Aug. 1944, one brachypterous female, leg. N. Knaben, coll. ZMB. It has the apical quarter of hind femora black, whereas *P. maerkelii* has the hind femora completely light. It lives on grasses and has been recorded from Slovenia, northern Finland, northern Sweden and NW Russia.
179. *trispinosa*. First reported from Norway by Hansen & Coulianos (1998).
185. *caelestialium*. First reported from Norway by Hansen & Coulianos (1998). In museum collections several specimens have been found, placed under the name of *T. ruficornis*.
186. *fuscitarsis*. New to Norway. NTI: Frosta, 2 Aug. 1969, one female, leg. Lillehammer, coll. ZMO. It has also been found in central and northern Finland, northern Sweden and NW Russia. It lives on grass meadows and found on *Festuca*, *Poa* and *Agrostis* spp.
190. *sahlbergii*. New to Norway. HEN: Åmot: Østersjøen, IIsås and Rena, 17 and 18 July 1987, leg. A. Fjledså, coll. ZMB. In Sweden it is common and abundant in the adjacent provinces of Dalarna and Värmland, so its occurrence in east Norway is not surprising. The species seem to have expanded its distribution in a SW direction during the last 20 years. It lives on grasses.
192. *saltator*. Reuter (1875) reports *O. vittipennis* (Herrich-Schaeffer, 1835) as common in southern Norway and this species has been on the Norwegian list ever since. However, it seems clear that Reuter (l.c.) confused the distribution of this species with that of *O. saltator* which he did not report from Norway although it is widely distributed and quite common there. In Sweden *vittipennis*

- has only been found in the provinces of Skåne, Blekinge and Småland.
195. *steganoides*. Reported from Norway as *S. leucocephalus* var. b by Zetterstedt (1828, 1838) and Siebke (1872, 1874). See also Coulianos & Ossiannilsson (1976).
203. *planicornis*. New to Norway. VAY:Søgne 10 Aug. 1981, one specimen swept from oak, leg. G. Taksdal, coll. Hågvar. It occurs also in southern Sweden, the nearest record is from the province of Bohuslän, and can be locally abundant on bushes and herbs, often on *Urtica dioica*.
213. *nassatus*. Note that *nassatus* (Fallén, 1829) of older authors e.g. Siebke and E. Strand refers to *O. marginalis*. *O. nassatus* s.str. was first reported from Norway by Jonsson (1983).
218. *coccineus*. New to Norway. AK:Oslo, Hovedøya, 30 July 1983, one male, leg. A. Fjeldså, coll. ZMB. It lives on *Fraxinus*, especially on large trees with numerous fruits. The nearest records are from southern Sweden, where it is rare, but may certain years be locally abundant.
222. *pygmaeus*. New to Norway. VE:Tjome, Mostrand, 20 July 1983, one male, leg. A. Fjellberg, coll. ZMB. It has a wide distribution in Sweden, but with large gaps probably depending on underrecording as it is easy to overlook this small species. It occurs in swampy places at the bases of rushes and grasses and it is a predator on eggs and larvae of leafhoppers. It has also been found on sandy shores at the bases of grasses.
225. *limitatum*. The only records from Norway are AK:Brönöya 1933, leg. F. Jensen and OS:Gjøvik 1900, leg. Warloe (Warloe 1925). Both specimens in coll. ZMO. It lives on *Populus tremula*.
235. *Europiella*. Schuh, Lindskog & Kerzhner (1995 Proc.Entomol.Soc. Wash. 97:379-395) have placed the subgenus *Poliopterus* Wagner of *Plagiognathus* Fieber in synonymy with *Europiella* Reuter. The species formerly known as *Plagiognathus albipennis* (Fallén) consists of three species: the Palearctic *E. albipennis* (Fallén)(syn. *arenicola* Wagner, *collinus* Wagner) living on *Artemisia campestris*, and the two Holarctic species *E. decolor* (Uhler), which in the Palearctic lives on *A. absinthium*, *maritima* and *abrotani*, and *E. artemisiae* (Becker), which in the Palearctic lives on *A. vulgaris*, *montana* and *rubripes*. Norwegian material of "*albipennis*" should be revised, and host plants noted in all collecting.
245. *modestus*. First reported from Norway by Hansen & Coulianos (1998). Among specimens recorded from BØ:Ringerike as obscurellus by Warloe (1925), I have seen two specimens of *modestus* in coll. ZMO.
253. *aethiops*. The records from AK (Strand 1912) and AAI (Strand 1905) (Warloe 1925) are *ambiguus* according to exx. in ZMO.
254. *ambiguus*. The record from FI: Karasjok in Warloe (1925) is *aethiops* and *betuleti* according to exx. in ZMO.
258. *flavellus*. Recorded by Tunstad (1983) from AK:Asker, Sem. I have not seen these specimens.
261. *lapponicus*. New to Norway. NSI:Røsvand and Hatfjelddal, no date, 6 males, 3 females, leg. E. Strand, coll. ZMO. In Sweden it has only been found in the province of Dalarna 1963 and in middle Lappland by Boheman. It lives on coniferous trees, in Dalarna it was found on *Picea abies*.
262. *lepidus*. First reported from Norway by Coulianos & Ossiannilsson (1976). See also Tunstad (1983). It lives on *Fraxinus*, and I have found it very abundant on ash trees in STI: Trondheim, Domkirkegården and Munkholmen 1981. See also Hansen & Coulianos (1998).
263. *perrisi*. First reported from Norway by Coulianos & Ossiannilsson (1976).
279. *punctatus*. New to Norway. AAY:Risør 8 Sept. 1901, one male, 6 Sept. 1902, one male. Leg. Warloe, coll. ZMO. In Sweden it has only been found in the province of Uppland.
282. *pusillus*. The record from OS:Gjøvik in Warloe (1925) is *gracilis* according to exx. in ZMO.
283. *nigrellus*. The only record from Norway is a specimen in coll. NRM from "Nv.alp"/Norwegian alps/ leg. Boheman, probably in 1832 in ON:Dovre.
286. *amplicollis*. New to Norway. VE:Sem, 11 Aug. 1968, VAY:Oddernes 6 Aug. 1967, both leg. A. Fjellberg, coll. ZMB. In Sweden it is a rare species, found in the provinces of Skåne, Blekinge, Öland and Gotland. It lives on *Fraxinus* and is a predator on galligenous aphids.
293. *simulans*. First recorded from Norway by Coulianos & Ossiannilsson (1976). See also Austreng & Sømme (1980) and Tunstad (1983).
295. *montanus*. According to Wagner (1955), one of the male paratypes was found in "Norwegen (Dalarna)". Coulianos & Ossiannilsson presumed the locality to be RY: Dalane. However, the presence of this species in Norway should be verified.
298. *majusculus*. First reported from Norway by Strand (1912) from HES: Tønset, but no specimens have been found to verify this record, and it is not mentioned by Warloe (1925). Tunstad (1983) reported it from AK:Asker, Sem. I have seen a specimen from Ø:Tune, Glømvik, 18 Aug. 1967, leg. G. Taksdal, coll. SPV.
301. *vicinus*. First reported from Norway by Coulianos & Ossiannilsson (1976). Tunstad (1983) recorded it from AK:Asker, Sem. I have seen specimens from BØ:Hurum, Tofteholmen 1991 and VE:Våle, Langoya 1991, both leg. L.O.Hansen, coll. ZMO.
305. *galactinus*. New to Norway. Ø:Bukten, Bygdøy 1930 and 1932, leg. Munster, coll. ZMO. In Sweden it is

- widely distributed, up to the province of Västerbotten in the north, but the records are quite few and it is probably overlooked. It is found in manure-heaps, hotbeds, stable straw, grass- and seed composts and other habitats where the temperature is quite high. It is a predator on small insects and mites.
306. *ater*. New to Norway. Ø: Råde, Tomb, one female in a window trap 2-22 June 1995, leg. L.O.Hansen & J.I.I. Båtvik, coll. ZMO. In Sweden it is a very rare species, found in the provinces of Skåne, Blekinge, Halland and Gotland. It lives beneath the bark on various trees, especially apple and other fruit trees and is a predator on small arthropods.
308. *lectularius*. Formerly widely distributed in Norway, but now only occasional records. In museum collections, I have seen specimens collected after 1950 only from AK:Oslo, HOY:Bergen and HOI:Voss. A more detailed survey of its present status in Norway is desirable.
313. *aethiops*. First reported from Norway by Putshkov (1994 Bull. Soc. Ent. France 99(2):169-180) from AAI: Austad, leg. Strand. No specimens from this locality are in Norwegian museum collections, but it seems certain that it is the same record published by Strand (1905) and Warloe (1925) as *subapterus*. I have seen specimens from HES: Eidskog 1974, one male (recorded by Hågvar (1977) as *subapterus*), VE:Stokke, Gjennestadmyra, Aug. 1996, leg. A. Fjellberg, coll. ZMB.
320. *cinnamomeus*. See Pettersen (1975).
329. *truncatus*. First reported from Norway by Hansen & Coulianos (1998).
330. *tremulae*. First reported from Norway by Fjellberg, Hanssen & Hansen (1996).
331. *avenius*. New to Norway. All specimens recorded as *laevis* by Warloe (1896, 1925) are in coll. ZMO. Among them are *avenius* from AK: Drøbak 1893, leg. Warloe, TEY:Sandnes, Drangedal 1919, 1920, leg. Munster, AAY:Risør 1901, 1905, 1909, leg. Warloe and VAY:Kristiansand, no date, leg. Ullman. I have also seen specimens from AK: Asker, Bjørkås 1995, leg. L.O.Hansen, coll. ZMO, VE:Tjøme, Eidane 1965, leg. A. Fjellberg, coll. ZMB and VE:Stavem 1981, leg. F. Midtgaard, coll. Hågvar.
332. *laevis*. The only records from Norway are in coll. ZMO. AAY:Risør 1909, leg. Warloe, VAY:Kristiansand, no date, leg. Ullman, VAY; Lybgdal, no date, probably collected by Holmboe.
336. *unicolor*. This species is only known from the type locality ON: Dovre, Vålasjö 1953 on *Silene acaulis*. I have seen specimens leg. A. Strand in coll. ZMO and leg. O. Sjöberg in ZML and NRM.
337. *clavipes*. Warloe (1925) records *B. affinis* Reuter from HES and VAY. This name is a synonym of *crassipes* (Herrich-Schaeffer) (part.) and of *montivagus* (Meyer-Duer)(part.). No specimens have been found in museum collections. Later authors e.g. Ossiannilsson (1947) and Coulianos & Ossiannilsson (1976) have considered Warloe's record to be *clavipes*, which is a more likely species in Norway. The record of *clavipes* by Siebke (1874) refers to *B. minor* according to Schoyen (1889) and specimens in coll. ZMO. Thus the presence of *clavipes* in Norway should be verified.
340. *tipularius*. The only Norwegian record is AK:Røa, V. Aker 1941, leg. A. Strand. See Holgersen (1942). I have not seen any specimens in museum collections.
371. *contractus*. New to Norway. AK:Asker, Bjørkås, one specimen 1995 in pit-fall trap, leg. L.O.Hansen & J.O.Hanssen, coll. ZMO. The record of this species from AK:Drøbak by Warloe (1896, 1925) is *hamulatus* according to a specimen in coll. ZMO.
389. *rolandri*. The only specimen known from Norway is a male from "Nv.m." = *Norvegia meridionalis*/ leg. Boheman, coll. NRM. This record was first reported by Nordberg (1943).
410. *picipes*. Recorded from Ø: Jeløya by Hågvar & Kvamme (1977). An earlier record is VE:Torre, Bastø, 17 June 1969, leg. A. Fjellberg, coll. ZMB.
416. *microphthalmus*. The records from Ø and AAY in Strand (1900b, Warloe 1925) have not been found in museum collections. The records in Warloe (1925) from HEN, BØ, BV, AAY and VAY are *umbrinus* according to specimens in coll. ZMO.
425. *purpureipennis*. All records from Norway are old, leg. Esmark, Siebke and W.M. Schøyen, the last one from 1887. The record from BØ:Nedre Eiker, Miletjern 1988 (Hansen & Bergmark 1990) depends on a misidentification (L.O. Hansen *in litt.*).
434. *brevis*. New to Norway. AK:Drøbak 15 Sept. 1895, 2 males, leg. Warloe, coll. ZMO. The foodplant is *Salix pentandra*. It is not uncommon in Sweden and recorded up to the province of Uppland. Tunstad (1983) records this species from AK:Asker, Sem on *Corylus*, but I have not seen this specimen.

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The genus *Anthoseius* De Leon (ACARI: MESOSTIGMATA) in Norway

Evans, G.O. & Edland, T. 1998. The genus *Anthoseius* De Leon (Acari: Mesostigmata) in Norway. - Fauna norv. Ser. B 45 : 41-62.

Eleven species of *Anthoseius* De Leon were collected during an extensive survey of phytoseiid mites in Norway. One of the species, *Anthoseius parinopinatus*, is described as a new taxon and *Anthoseius piceae* Karg & Edland, *A. clavatus* Wainstein, and *A. toruli* Karg & Edland are considered to be junior synonyms of *Anthoseius foenilis* (Oudemans), *A. bakeri* (Garman) and *A. caucasicus* (Abbasova), respectively. A key has been constructed for the identification of the *Anthoseius* species represented in the fauna of Norway. Distribution maps are given for eight species and the frequency of *Anthoseius* species on a range of host plants is presented in tabular form. *Picea abies* showed the highest frequency of the species of *Anthoseius*, and eight and nine species were found on *Picea abies* and *Pinus sylvestris*, respectively.

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INTRODUCTION

A country-wide survey was started in 1984 to study the occurrence of phytoseiid species in Norway, their host plants and geographical distribution. In addition to the survey, a separate investigation was carried out in 1990-95 in commercial apple orchards to study the species composition and densities in differently treated plots (Edland 1994). The comprehensive data obtained during the 12 years of study, will be published in a series of papers.

This contribution to a survey of the phytoseiid mites of Norway deals with genus *Anthoseius* De Leon 1959 (type: *Anthoseius hebetis* De Leon).

Karg & Edland (1987), in the only noteworthy account of the taxonomy of Norwegian Phytoseiidae prior to the study of the genus *Typhlodromus* Scheuten by Edland & Evans (1989), recorded 21 species of which five species were assigned to the genus *Anthoseius*, namely, *Anthoseius bakeri* (Garman), *Anthoseius rhenanus* (Oudemans), *Anthoseius richteri* (Karg) and two new species, *Anthoseius piceae* Karg & Edland and *Anthoseius toruli* Karg and Edland.

In their review of the subfamily Phytoseiinae and Typhlodrominae, Chant & McMurtry (1994) treated *Anthoseius* as a subgenus of *Typhlodromus* and within it recognised 9 species groups of which members of two of these groups occur in the Norwegian fauna, namely, the *singularis*-group, represented by *Anthoseius algonquinensis* (Chant, Hansell & Yoshida) and *Anthoseius suecicus* (Sellnick), and the *rhenanus*-group containing the remaining nine species. The present work follows Karg (1993) in giving generic status to *Anthoseius*.

The terminologies used for the chaetotaxy and porotaxy of the dorsal and ventri-anal shields follow Lindquist and Evans (1963) for the chaetotaxy and Athias-Henriot (1975) for the porotaxy and are shown in Figures 22, 23 and 56. The nomenclature for the components of the spermatheca (sperm access system) follows Evans (1992).

The extent of the material examined in this study (1984-96), the methods, nomenclature and distribution maps used, are described in Edland & Evans (1998).

RESULTS

During the main survey, where more than 11 000 phytoseiid specimens were recorded from a total of 126 plant hosts, the genus *Anthoseius* was represented by 11 species, collected on 99 different plant species (Table 1). Of these plants a total of 1 377 samples containing phytoseiid mites was examined, and members of *Anthoseius* occurred on 722 of them. However, on the majority of plants (60 %) only one or two species were recorded, probably due to the small number of samples examined per plant. On other hosts, each with more than 30 samples, five or six species were frequently found, and on *Picea abies* (n: 91) and *Pinus*

sylvestris (n: 79) eight and nine species were recorded, respectively.

As indicated in Table 1, *Picea abies* showed the highest frequency of *Anthoseius* spp., 78 % of n: 91 samples, followed by *Pinus sylvestris* 76 % (n: 79), *Rubus fruticosus* 74 % (n: 42), *Quercus* sp. 71 % (n: 38), *Corylus avellana* 68 % (n: 71) and *Juniperus communis* 63 % (n: 65). On various fruit trees the frequency of *Anthoseius* spp. varied from 34 (plum, n: 29) to 75 % (pear, n: 12). In commercial fruit orchards, members of *Anthoseius* are frequently recorded on the bark, but very seldom on the leaves.

Table 1. Host plants of *Anthoseius* species, and their frequency in Norway.

	No. samples containing												
	phytoseiid mites	<i>Anthoseius</i> species	<i>A. algonquinensis</i>	<i>A. bakeri</i>	<i>A. caucasicus</i>	<i>A. caudiglans</i>	<i>A. foenilis</i>	<i>A. (?) halinae</i>	<i>A. inopinatus</i>	<i>A. parinopinatus</i>	<i>A. rhenanus</i>	<i>A. richieri</i>	<i>A. suecicus</i>
<i>Abies alba</i>	3	3		1	2								1
<i>Abies concolor</i>	1	1											1
<i>Acer platanoides</i>	38	14	1		5					2		6	
<i>Acer pseudoplatanus</i>	14	4		1	2								1
<i>Aesculus hippocastanum</i>	14	2			2								
<i>Alchemilla</i> sp.	1	1											1
<i>Alnus glutinosa</i>	37	21		5	12					4		1	1
<i>Alnus incana</i>	73	18		6	5				1	7		2	
<i>Alnus</i> sp.	7	5		2	3								
<i>Berberis vulgaris</i>	3	2			1					1		1	
<i>Betula nana</i>	8	2								1		1	
<i>Betula pendula</i>	15	6		1	1								2
<i>Betula pubescens</i>	78	25		7	2		1			5		5	9
<i>Buxus sempervirens</i>	2	1		1	1								
<i>Calluna vulgaris</i>	40	15		3	2		3			6		3	
<i>Caragana arborescens</i>	1	1		1									
<i>Chamaecyparis</i> sp.	1	1			1		1						1
<i>Corylus avellana</i>	71	48		6	18	1	2			30		6	
<i>Crataegus</i> sp.	5	2		1									1
<i>Daphne mezereum</i>	1	1											1
<i>Digitalis purpurea</i>	3	3			2					1			
<i>Echium vulgare</i>	2	2								2			
<i>Epilobium angustifolium</i>	2	1								1		1	

Table 1. Cont.

	No. samples containing												
	phytoseid mites	<i>Anthroseius</i> species	<i>A. algonquinensis</i>	<i>A. bakeri</i>	<i>A. caucasicus</i>	<i>A. caudiglans</i>	<i>A. foenilis</i>	<i>A.(?) halinae</i>	<i>A. inopinatus</i>	<i>A. parinopinatus</i>	<i>A. rhenanus</i>	<i>A. richteri</i>	<i>A. suecicus</i>
<i>Fagus sylvatica</i>	11	7	1		6							1	
<i>Filipendula ulmaria</i>	2	1		1									
<i>Forsythia</i> sp.	2	2			1							1	
<i>Fragaria</i> sp.	1	1									1		
<i>Frangula alnus</i>	1	1										1	
<i>Fraxinus excelsior</i>	34	18		1	11	1					5	4	1
<i>Geranium sanguineum</i>	4	4									4		
<i>Hedera helix</i>	2	1		1								1	
<i>Hepatica nobilis</i>	1	1									1		
<i>Hippophae rhamnoides</i>	1	1		1		1							
<i>Humulus lupulus</i>	1	1									1		
<i>Hypochoeris maculata</i>	1	1									1		
<i>Ilex aquifolium</i>	1	1			1								
<i>Juglans regia</i>	2	1									1		
<i>Juniperus communis</i>	65	41	3	18	11		1				1	18	
<i>Kolkwitzia amabilis</i>	1	1									1	1	
<i>Laburnum</i> sp.	3	2			2								
<i>Larix</i> sp.	7	3	1	1	1							2	
<i>Ledum palustre</i>	3	2						2	1		1		
<i>Leucanthemum vulgare</i>	1	1									1		
<i>Lonicera caerulea</i>	2	2									1	1	
<i>Lonicera periclymenum</i>	10	8		1	3						5		
<i>Lupinus</i> sp.	1	1									1		
<i>Lythrum salicaria</i>	1	1									1		
<i>Magnolia</i> sp.	2	2			2								
<i>Malus domestica</i>	86	42		5	13		1				3	23	2
<i>Malus</i> sp.	8	4			4								
<i>Notofagus</i> sp.	1	1										1	
<i>Origanum vulgare</i>	3	1									1		
<i>Picea abies</i>	91	71	10	23	9		7			1	3	51	1
<i>Picea sitchensis</i>	5	4	1	1	1							2	
<i>Pinus mugo</i>	3	3	1									3	
<i>Pinus sylvestris</i>	79	60	3	10	5		4	1	8		2	42	1
<i>Populus tremula</i>	3	2		1									1
<i>Prunus avium</i>	11	4		1	2							2	
<i>Prunus cerasus</i>	6	4		1							1	3	1
<i>Prunus domestica</i>	29	10		2	6							4	
<i>Prunus padus</i>	21	7		2	1						3	2	
<i>Prunus spinosa</i>	2	1		1	1								
<i>Pteridium aquilinum</i>	1	1									1		
<i>Pyracantha coccinea</i>	1	1									1		

Table 1. Cont.

	No. samples containing												
	phytoseiid mites	<i>Anthoseius</i> species	<i>A. algonquinensis</i>	<i>A. bakeri</i>	<i>A. caucasicus</i>	<i>A. caudiglans</i>	<i>A. foenilis</i>	<i>A. (?) halinae</i>	<i>A. inopinatus</i>	<i>A. parinopinatus</i>	<i>A. rhenanus</i>	<i>A. richteri</i>	<i>A. suecicus</i>
<i>Pyrus c. cult</i>	12	9			9								2
<i>Quercus petraea</i>	3	3		1	2					1			
<i>Quercus robur</i>	13	8		2	3							5	2
<i>Quercus rubra</i>	1	1			1								
<i>Quercus sp.</i>	38	27		8	16		1			3	7		1
<i>Rhamnus catharticus</i>	2	2		2	1								
<i>Rhododendron sp.</i>	2	2										2	
<i>Ribes nigrum</i>	10	6		2	1					2		1	
<i>Ribes rubrum</i>	33	20		3	3		1			13		3	
<i>Ribes uva-crispa</i>	5	3			1					3			
<i>Rubus fruticosus</i>	42	31		2	3		1			30			1
<i>Rubus idaeus</i>	24	11		3						9	2		1
<i>Rubus saxatilis</i>	3	3	1							3			
<i>Salix caprea</i>	42	9		3	3					4		1	
<i>Salix sp.</i>	39	9	1	5	1							1	2
<i>Sambucus racemosa</i>	5	3		1	1					1		3	
<i>Satureja vulgaris</i>	1	1								1			
<i>Seseli libanotis</i>	1	1								1			
<i>Sorbus aucuparia</i>	80	28		5	4			3		14	5		3
<i>Sorbus sp.</i>	4	1		1									
<i>Syringa chinensis</i>	1	1			1							1	
<i>Syringa sp.</i>	2	1											1
<i>Taxus baccata</i>	6	5			1					2		3	
<i>Thuja sp.</i>	1	1			1								
<i>Tilia cordata</i>	18	7			3					4		1	
<i>Tilia platyphyllos</i>	8	3										3	
<i>Tussilago farfara</i>	7	4		1						3			
<i>Ulmus glabra</i>	21	4			1					3			
<i>Vaccinium myrtillus</i>	3	3			1					2		1	
<i>Vaccinium uliginosum</i>	2	2						1		1			
<i>Vaccinium vitis-idaea</i>	2	2								1		1	
<i>Verbascum nigrum</i>	2	2								2			
<i>Verbascum thapsus</i>	8	5								4		1	
<i>Viburnum opulus</i>	5	3		2	2					2			
<i>Vinca minor</i>	1	1								1			

Genus *Anthoseius* De Leon**Key to females occurring in Norway**

1. Opisthogastric setae Jv3 lacking, ventri-anal shield with only three pairs of pre-anal setae in both sexes (Figure 2) 2
- Opisthogastric setae Jv3 present, ventri-anal shield with four pairs of pre-anal setae in female (Figure 15), four or five pairs in the male (Figure 52)..... 3
2. Genu II and III each with 6 setae (1-2/0-2/0-1); distance of gland pore gd9 from seta S5 about equal to the length of S5. (Figure 1)..... *A. suecicus* (Sellnick)
- Genu II and III each with 7 setae (2-2/0-2/0-1 and 1-2/1-2/0-1, respectively); distance of gland pore gd9 from seta S5 less than one-half the length of S5. (Figure 8) ... *A. algonquinensis* (Chant, Hansell & Yoshida)
3. Macroseta of basitarsus IV longer than the distance between its base and the dorsal slit organ..... 4
- Macroseta of basitarsus IV distinctly shorter than the distance between its base and the dorsal slit organ 6
4. Dorsal shield with 5 pairs of dorsal gland pores (gd 2, 4, 6, 8, 9); ventri-anal shield lacking gland pores gv3; peritreme extending to about the level of j1; movable digit of chelicera with two teeth. *A. foenilis* (Oudemans)
- Dorsal shield with 3 pairs of gland pores, gd 2, 6, 9 (Figure 14); gv3 present on ventri-anal shield (Figure 15); peritreme extending to between s4 and j3; movable digit of chelicera with one tooth (Figure 20). 5
5. Peritreme greater than 150µm in length and extending to a level between z2 and j3; setae j3 (24-26µm) and z2 (24-25µm) shorter or about equal to the length to the distances between j3-z2 (24-25µm) and z2-z3 (19-22µm), respectively (Figure 14) *A. inopinatus* Wainstein
- Peritreme less than 120µm in length and extending to a level between s4 and z4; setae j3 (24-26µm) and z2 (24-25µm) distinctly longer than the distances between j3-z2 (20-23µm) and z2-z3 (18-21µm), respectively (Figure 22) *A. parinopinatus* sp. n.
6. Distance between gland pores gv3 on ventri-anal shield less than two-thirds of the distance between setae Jv2 (Figure 44) 7
- Distance between gland pores gv3 more than three-quarters of the distance between setae Jv2 (Figure 30) 8
7. Spermatheca with cylindrical calyx and short cervix (Figure 49)..... *A. caucasicus* (Abbasova)
- Spermatheca with very narrow calyx and long cervix (Figure 55).. *A. caudiglans* (Schuster)
8. Macroseta of basitarsus IV clavate 9
- Macroseta of basitarsus IV tapering to a blunt or pointed tip..... 10
9. Dorsal setae Z5 clavate (Figure 29); fixed digit of chelicerae with 6 or 7 teeth (Figures 33-34); spermatheca with a short broad cervix and a sub-globose atrium (Figure 31)..... *A. bakeri* (Garman)
- Dorsal setae Z5 terminating in a blunt point (Figure 36); fixed digit of the chelicerae with 4 teeth (Figure 41); spermatheca with a long narrow cervix (Figure 38) *A. richteri* (Karg)
10. Genu II with 8 setae (2-2/1-2/0-1); setae Z4 spiculate, setae Jv5 48-54µm in length (Figure 56)..... *A. rhenanus* (Oudemans)
- Genu II with 7 setae (2-2/0-2/0-1); setae Z4 smooth, setae Jv5 33-40µm in length (Figure 61)..... *Anthoseius* (?) *halinae* Wainstein & Kolodochka

***Anthoseius suecicus* (Sellnick, 1958)**

(Figures 1-7)

Neoseiulus suecicus Sellnick, 1958

Amblydromella suecica: Moraes et al., 1986

Anthoseius suecicus: Tuovinen, 1993; Karg, 1993

Typhlodromus gilvus Wainstein, 1975

This species has been recently described and illustrated by Tuovinen (1993). We have compared our material with the type.

Dorsal shield of female 367-400µm in length and with three pairs of gland pores (gd8 lacking); distance of gland pore gd9 from seta S5 about equal to the length of S5 (Figure 1); poroids relatively large and conspicuous. Dorsal setae smooth except for Z5 which is sparsely spiculate; length of dorsal setae (in µm) as follows:

j1, 17-20	z2, 16-17	s4, 23-25
j3, 19-21	z3, 17-20	s6, 24-27
j4, 13-14	z4, 20-21	S2, 26-27
j5, 14-15	z5, 14-15	S4, 22-26
j6, 17-19	Z4, 25-32	S5, 20-22
J2, 18-20	Z5, 40-43	r3, 20-22
J5, 9-10		R1, 15-19

Ventri-anal shield (118-132x72-79µm) showing variation in shape, with 3 pairs of pre-anal setae, setae Jv3 lacking, and gland pores gv 3 conspicuous (Figures 2-3). Setae Jv5 23-26µm in length. Peritreme extending to between level of j3 and j1. Spermathecae as in Figures 4-6.

Chelicera with movable digit unidentate, fixed digit tridentate. Anterior denticles of the subcapitular groove are arranged in a single file in this species and in *A. algonquinensis* whereas each tranverse row in the other Norwegian species of the genus typically comprises two denticles.

Genu II with 6 setae (1-2/0-2/0-1), genu III with 7 setae (1/2/1-2/0-1). Macroseta of basitarsus IV 21-24µm in length and clavate.

Ventri-anal shield of male with only three pairs of pre-anal setae. Movable digit of chelicera with one tooth, fixed digit with 3 or 4 teeth; spermatodactyl with small antiramus (Figure 7).

This species was originally described from grass in Sweden and Tuovinen (1993) records it from *Malus domestica* in Finland. *A. gilvus* was described from *Prunus padus* at Yaroslavl, Russia.

Plant Hosts and Localities: *A. suecicus* has been recorded in low numbers from 13 counties, from the coastline in the south, through the inland area, north to Pasvikdalen, Sør-Varanger in Finnmark (EIS 160, 168 and 169), as shown in Map 1. The species occurred in 31 samples of 17 different plant species, and was most commonly found on *Betula* spp. (Table 1).

***Anthoseius algonquinensis* (Chant, Hansell & Yoshida, 1974)**

(Figures 8-13)

Typhlodromus algonquinensis Chant, Hansell & Yoshida, 1974

Anthoseius viktorovi Wainstein, 1975; Tuovinen, 1993

Dorsal shield of female 357-395µm in length and with three pairs of gland pores (gd2, 6 and 9), distance of gland pore gd9 from seta S5 less than one-half the length of setae S5 (Figure 8). All dorsal setae simple except for Z5 which is spiculate; lengths of dorsal setae (in µm) as follows:

j1, 20-22	z2, 14-15	s4, 23-24
j3, 20-22	z3, 18-20	s6, 23-25
j4, 17-18	z4, 19-20	S2, 25-26
j5, 17	z5, 15-18	S4, 24-27
j6, 18-19	Z4, 24-27	S5, 16-23
J2, 20-22	Z5, 36-43	r3, 20-22
J5, 9-11		R1, 20-22

Ventri-anal shield (115-130x90-95µm) with three pairs of pre-anal setae, pores gv3 present (Figures 9-10). Setae Jv5 25-28µm in length. Peritreme extending to the level between j3 and j1. Spermatheca as in Figures 11-12. Chelicerae with movable digit unidentate or, more rarely, bidentate; fixed digit with 4, rarely 3, teeth.

Genu II and III each with 7 setae (2-2/0-2/0-1 and 1-2/1-2/0-1, respectively). Macroseta of basitarsus IV 27-31µm in length with blunt or slightly swollen tip.

Ventri-anal shield of male with three pairs of setae as in *A. suecicus*. Movable digit of the male chelicera unidentate, fixed digit with 3 or 4 teeth, end of large proximal tooth often divided into two denticles. Spermatodactyl with large antiramus and distinct velum (Figure 13).

The type material was collected on cedar in Ontario, Canada. It has been recorded (as *A. viktorovi*) from *Pinus* in the Yaroslavl province of Russia and on *Malus domestica* in Finland.

Plant Hosts and Localities: *A. algonquinensis* was also recorded only in low numbers on its host plants. It was recorded from 8 counties as far north as Evenes, Nordland at 68°29'N (EIS 139), and it appeared to be most frequent in the inland or mountain areas (Map 2). The species occurred in 23 samples of 10 host plants. It was most frequent on *Picea abies*, (10 samples) and other coniferous plants, but was also found in a few samples from five non-conifers (Table 1).

***Anthoseius inopinatus* Wainstein, 1975**

(Figures 14-21)

Anthoseius inopinatus Wainstein, 1975; Beglyarov, 1981; Karg 1993

Dorsal shield of female 355-380µm in length with three pairs of gland pores (gd 2, 6, 9); surface densely micropunctate but weakly reticulate (Figure 14). Lengths of dorsal setae (in µm) as follows:

j1, 23-25	z2, 19-22	s4, 25-27
j3, 24-28	z3, 21-23	s6, 26-27
j4, 14-15	z4, 22-24	S2, 29-30
j5, 15-16	z5, 16-17	S4, 29-30
j6, 16-18	Z4, 27-31	S5, 27-32
J2, 20-21	Z5, 53-55	r3, 25-27
J5, 7-8		R1, 25-26

All dorsal setae smooth except Z5 and J5 (basally) which are spiculate; distances between the bases of j3-z2, z2-z3 and z3-z4, respectively, 23-25, 18-22 and 24-25µm. Distance between Z4 and gd9, 37-45µm.

Ventri-anal shield (116-125x95-103µm) with four pairs of pre-anal setae; gv3 conspicuous and relatively widely spaced (Figure 15). Setae Jv5 range from 44 to 47µm in

length. Peritreme, 155-165µm in length, extending to a level between z2 and j3. Metapodal shields slender, posterior member about two to three times the length of the anterior one (Figure 16). Calyx-atrium of the spermatheca elongate (16-18µm in length and 6-6,5µm in width) with the embolus located a short distance from the entry of the major duct (Figures 17-19).

Chelicerae with movable digit unidentate and fixed digit tridentate; antiaxial (external) face of fixed digit developed into a flange, *pilus dentilis* inconspicuous, not apparent in the specimens examined but this may be due to over-clearing of the specimens (Figure 20).

Genu II and III with 7 setae. Macroseta of basitarsus IV long (47-51µm) and blunt-ended or slightly swollen at tip, distance between base of macroseta and dorsal slit organ 40-44µm.

Male with dorsal shield 285µm in length; setae j3=23µm; z2=18; z3=17; Z4=27; Z5=49; Jv5=35. Distance between bases of setae j3-z2=19µm, z2-z3=18 and z3-z4=24. Ventrianal shield with 5 pre-anal setae on the right side and 4 on the left; setae Jv5=35µm. Peritreme extending to a level between z4-z3. Movable digit of chelicera unidentate and fixed digit bidentate; spermatodactyl as in Figure 21. Genu II and III with 7 setae; macroseta of basitarsus IV 42µm in length.

The Norwegian specimens differ from the description of the type material in the absence of spicules on Z4 and in the apparent longer length of setae J3 and z2 relative to the distance between the bases of j3-z2 and z2-z3, respectively. According to Wainstein's (1975) illustration, these setae are shown to be shorter than the distances between the bases but this may be due to the angle at which the setae lie in relation to the surface of the shield (cf Figure 16). According to Beglyarov (1981), this species has been collected previously from pine (*Pinus*) and other plants in the Yaroslavl province of Russia and the Ukraine.

Plant Hosts and Localities: With the exception of one female, which was collected from *Pinus sylvestris* on the coast of Tjøme, Vestfold (EIS 11b), this species (2 males and 17 females) was recorded only in Finnmark. One female was collected at Valjok, Karasjok at 69°41'N (EIS 167), and the remaining specimens in

Pasvikdalen, Sør-Varanger (EIS 160, 168 and 169) near the Russian border. The species occurred in 9 samples, one from *Ledum palustre*, the others from *Pinus sylvestris* (Table 1).

***Anthoseius parinopinatus* sp. n.**

(Figures 22-26)

Specimens from two samples comprising 9 females from *Picea abies* and one female from *Alnus incana* were found to differ from those referred to *Anthoseius inopinatus* in certain setal and peritrematic characteristics which appear to be outside the range of intraspecific variation observed in *A. inopinatus*. We propose the erection of a new taxon for these specimens.

Dorsal shield of female (368-380µm in length) with three pairs of pores, weakly reticulated and micropunctate (Figure 22). The lengths of the dorsal setae (in µm) are as follows:

<i>Picea</i>	<i>Alnus</i>	<i>Picea</i>	<i>Alnus</i>	<i>Picea</i>	<i>Alnus</i>
j1,	24-26	24	z2,	24-25	24
j3,	28-31	30	z3,	26-28	26
j4,	20-21	20	z4,	27-28	27
j5,	21-23	21	z5,	19-22	20
j6,	22-23	21	Z4,	34-38	32
J2,	23-25	21	Z5,	50-59	48
J5,	6-7	7	r3,	26-28	29
			R1,	22-25	23

The dorsal setae are smooth except for Z4, Z5 and J5 (basally) which are spiculate. The distances between the bases of setae j3-z2, z2-z3 and z3-z4, are, respectively, 20-23, 18-21 and 24-27µm from *Picea* and 20, 20 and 23µm from *Alnus*.; distance between seta Z4 and pore gd9, 37-41µm from *Picea* and 38µm from *Alnus*.

The form of the ventri-anal and metapodal shields are similar to *Anthoseius inopinatus* (Figure 23). Jv5 is 43-48µm in length. The peritremes are shorter but variable, 82-118µm in length and extending to a level between s4 and z3 in the *Picea* population and 114µm in length in the *Alnus* specimen. Spermathecae are similar in shape but the calyx-atrium larger (Figures 24-26), 20-24µm in length and 7-8µm in width, than in *A. inopinatus*. The dentition and configuration of the cheliceral digits are as in *A. inopinatus*. Chaetotaxy of palps (2-5-6-14-15) normal.

Chaetotaxy of the femora-tibiae of legs I-IV: femur I 2-5/3-2, II 2-5/2-1, III & IV 1-3/1-1; genu I 2-2/1-2/1-2, II 2-2/0-2/0-1, III 1-2/1-2/0-1, IV 1-2/1-2/0-1; tibia I 2-2/1-2/1-2, II 1-1/1-2/1-1, III 1-1/1-2/1-1, IV 1-1/1-2/0-1. Macroseta of basitarsus IV 53-57µm in length and slightly tapering to a blunt or slightly expanded tip from *Picea*; 57µm and of equal diameter throughout its length and truncated at tip in the *Alnus* specimen.

This taxon is closely related to *A. inopinatus* and belongs to a group of species which also includes the eastern European *Anthoseius commenticus* (Livshitz & Kusnetsov) and *Anthoseius repens* Beglyarov, in which pores gv3 are present but only three pairs of gland pores open on to the dorsal shield (gd2, 6 and 9). We have examined specimens of *A. commenticus* collected on *Quercus* sp. in Greece (det. N. Emmanouel) in which the antero-lateral setae are considerably longer than in the *A. inopinatus*, for example, setae j3, z2 and z4 measure, respectively, 36, 29 and 34µm in length with the distances between the bases of j3-z2, z2-z3 and z3-z4, 20, 18 and 25µm, respectively while genu II bears 8 setae (2-2/1-2/0-1) and genu III 7 setae. The calyx-atrium in *A. commenticus* although cylindrical is shorter and broader relative to its length than in *A. inopinatus* (Figures 27-28). The original description of *A. repens* is based on a single damaged female and it appears very close to, if not conspecific with, *A. commenticus*.

A. parinopinatus may be distinguished from *A. inopinatus* by the lengths of setae j3 and z2 relative to the distances between the bases of j3-z2 and z2-z3, respectively, by the conspicuously shorter peritreme, and the larger calyx-atrium of the spermatheca relative to the size of the dorsal shield (cf Figure 19 and Figure 26, drawn to same scale).

Plant Hosts and Localities: One female from *Alnus incana* was collected at Badderer, Kvænangen, Troms at 69°50'N (EIS 164) (Prep. No. 3800) and nine females from *Picea abies*, sub sp. *obovata* at Svanvik, Sør-Varanger, Finnmark at 69°27'N (EIS 169) (Prep. No. 3858). The latter specimens were collected from a stand of approx. 150 year old trees, introduced to Svanvik, probably from Russia. The type material is deposited in The Natural History Museum, London.

Anthoseius foenilis* (Oudemans, 1930)Typhlodromus foenilis* Oudemans, 1930*Typhlodromus cryptus* Athias-Henriot, 1960*Typhlodromella foenilis*: Evans & Momen, 1988*Anthoseius piceae* Karg & Edland, 1987 syn. n.

The Norwegian material of this species agrees well with the redescription of Evans & Momen (1988). There is a tendency for the macroseta of basitarsus IV to be longer (53-64µm in specimens from *Rubus*, *Quercus*, *Pinus* and *Picea* than was observed in the specimens from England, Ireland and Belgium by Evans & Momen in which the length ranged from 48-54µm.

The description of *Anthoseius piceae* by Karg & Edland (1987), based on material from fruit trees in Belgium and *Picea abies* in Norway, is misleading in that the species is stated to have gv3 present on the ventri-anal shield and the macroseta of basitarsus IV terminating in a needle-like point. Examination of the holotype and some of the paratypes showed that pores gv3 are not present and the macroseta has a swollen tip as in *A. foenilis*. The lengths of the macrosetae of basitarsi IV in the holotype are 53µm on one leg and 56µm on the other. We consider *A. piceae* to be a junior synonym of *A. foenilis*.

Plant Hosts and Localities: This species occurs scattered in southern Norway north to Elverhøy, Sunndal, Møre og Romådal (EIS 78). It was recorded from eight counties (Map 3), and occurred in 19 samples from nine host plants (Table 1). In Norway, it was found in dense populations only on *Picea abies* on a few small islands in the Oslofjord, Akershus (EIS 28). On the other eight hosts it occurred in very low numbers.

***Anthoseius bakeri* (Garman, 1948)**

(Figures 29-35)

Seiulus bakeri Garman, 1948*Typhlodromus bakeri*: Chant, 1958*Anthoseius (Aphanoseius) clavatus* Wainstein, 1972 syn.n.*Anthoseius clavatus*: Karg, 1993? *Anthoseius rivulus* Karg, 1991

There is considerable confusion in the literature concerning the identity of *A. bakeri*. The original description and illustrations of the species are inadequate for its certain identity and the condition of the type specimen, which we have examined, does not allow critical study. However, two features of the type, the clavate form of setae Z5 and the broad triangular form of the calyx of the spermatheca distinguish it from a related species, *Anthoseius richteri* (Karg). We consider *Anthoseius (Aphanoseius) clavatus* to be a junior synonym of *A. bakeri*. More recently, Karg (1991) described *Anthoseius rivulus* which also has clavate Z5 setae and a similar shaped calyx but differs from *A. bakeri* in the apparent location of the embolus on the anterior of the calyx. Our examination of the holotype, however, showed that the spermatheca has been inaccurately described and illustrated. On one side of the body the embolus is well removed from the calyx and on the other side the calyx overlies part of the atrium and the embolus, giving the impression of the embolus rising from the calyx. The form of the atrium could not be determined. It appeared collapsed and similar in appearance to the condition observed in some specimens of *A. bakeri* examined by us. The dimensions of the dorsal setae and the dentition of the fixed digit of the chelicera comprising six teeth of which the proximal is pointed and spine-like, suggest that *A. rivulus* is probably a synonym of *A. bakeri* but this cannot be established until the form of the atrium of the spermatheca has been clarified.

Dorsal shield of the female 385-395µm in length, with four pairs of gland pores and coarsely reticulated. Dorsal setae smooth and simple except for Z5 which is clavate and spiculate (Figure 29). The degree of terminal enlargement of Z5 is less conspicuous in some of the specimens we have examined and appears as a semi-transparent blunt tip. The lengths (in µm) of the dorsal setae are as follows:

j1, 22-24	z2, 17	s4, 22-23
j3, 21-24	z3, 19-20	s6, 25-27
j4, 13-14	z4, 19	S2, 27-28
j5, 13-14	z5, 18-19	S4, 28-32
j6, 15-17	Z4, 24-27	S5, 31-32
J2, 19-20	Z5, 41-47	r3, 26-27
J5, 10-13		R1, 20-23

Sternal shield with two pairs of setae, setae st3 and st4 each on separate platelets. Ventri-anal shield (122-128x102-108µm) with four pairs of preanal setae, gland gv3 conspicuous (Figure 30). Setae Jv5 measure 34-36µm in length. Peritreme extends to beyond the level of setae j1. Spermatheca with inflated, sub-globose atrium (Figures 31-32). Movable digit of the chelicerae with three teeth, proximal tooth small and appears to be lacking in some specimens; fixed digit with six or seven teeth, proximal tooth characteristically sharply pointed and spine-like (Figures 33-34).

Genua of leg II and III each with 7 setae, (2-2/0-2/0-1) and (1-2/1-2/0-1), respectively. Leg IV with macroseta (pd3) of basitarsus IV 31-34µm in length and distinctly clavate; setae ad3 of basitarsus IV and setae adl of genu and tibia IV with slightly swollen tips.

Ventri-anal shield of the male with 4 or 5 pairs of pre-anal setae. Movable digit of chelicera with a single tooth, dentition of fixed digit variable with 3-6 teeth. Spermatodactyl as in Figure 35.

The type material was described from *Malus* bark, Connecticut, USA. The species has been confused with *Anthoseius richteri* Karg and early records in the literature are unreliable.

Plant Hosts and Localities: *A. bakeri* is a common species in southern Norway. It was recorded in all counties, except Finnmark, and as far north as Burfjorddal, Kvænangen, Troms at 69°55'N (EIS 172) (Map 4). It occurred on 44 different plant hosts and was often abundant on conifers (Table 1). On those plants, each with more than 36 samples examined, *Juniperus communis* showed the highest frequency of *A. bakeri*, 28 % of n: 65 samples, followed by *Picea abies* 25 % (n: 91), *Quercus* 21 % (n: 38) and *Alnus glutinosa* 14 % (n: 37).

***Anthoseius richteri* (Karg, 1970)**

(Figures 36-43)

Typhlodromus richteri Karg, 1970; Karg 1993

Typhlodromus verrucosus Wainstein, 1972

Dorsal shield of the female is 400-410µm in length, with four pairs of gland pores and coarsely reticulated

as in *A. bakeri*. Setae Z5 terminating in a blunt point and distinctly spiculate (Figure 36); in some specimens, Z4 and S5 sparsely spinulate. Measurements (in µm) of the dorsal setae as follows:

j1, 26-27	z2, 18-21	s4, 25-30
j3, 25-26	z3, 23-24	s6, 27-28
j4, 20	z4, 23-25	S2, 28-29
j5, 17	z5, 19-20	S4, 28-31
j6, 20-21	Z4, 29-30	S5, 32-33
J2, 23-24	Z5, 47-51	r3, 25-28
J5, 8-9		R1, 20-23

Ventri-anal shield (123-130x95-98µm) with four pairs of pre-anal setae and gv3 prominent (Figures 37). Setae Jv5 are 38-41µm in length. Peritreme extends to the level of J1. Spermatheca characteristic and lacking the strongly inflated atrium of *A. bakeri*; cervix appears to be more attenuated in specimens with the vesicle containing sperm packets (cf Figures 38-39 with Figure 40). Movable digit of the chelicera usually with 3 teeth, the proximal tooth being the smaller, more rarely with 1 or 2 teeth; fixed digit with 4 teeth (Figure 41).

Genu II and genu III each with 7 setae as in *A. bakeri*. Macroseta of basitarsus IV is 36-38µm in length and distinctly clavate; setae ad3 of basitarsus IV and usually adl of tibia IV tapering to a blunt tip, erect seta adl of genu IV with slightly swollen tip.

Ventri-anal shield of male typically with 4 pairs of pre-anal setae – one specimen with 3 setae on the left side and 4 on the right; chelicera with movable digit with a single tooth, fixed digit with three teeth and spermatodactyl (Figures 42-43).

Plant Hosts and Localities: *A. richteri* is a widespread species on a wide range of host plants. As shown in Map 5 it occurred in all counties, except Troms, from the southern coast to Finnmark in the north, where it was found at Neiden, Sør-Varanger at 69°42'N (EIS 168) and at Børselv, Porsanger at 70°19'N (EIS 182). It was found in 241 samples of 53 host plants (Table 1), sometimes in high numbers, especially on conifers and fruit trees. The highest frequency of *A. richteri* occurred on *Picea abies*, 56 % of n: 91 samples, followed by *Pinus sylvestris* 53 % (n: 79), *Juniperus communis* 28 % (n: 65) and *Malus domestica* 27 % (n: 86).

In leaf samples of apple, however, *A. richteri* occurs very rarely, indicating that this species normally lives on the bark.

***Anthoseius caucasicus* (Abbasova, 1970)**

(Figures 44-53)

Mumaseius caucasicus Abbasova, 1970

Anthoseius caucasicus: Beglyarov, 1981

Anthoseius toruli Karg & Edland, 1987 syn. n.

The specimens we have examined agree with the original description of the species given by Abbasova (1970). The measurements of the dorsal setae of females in the Norwegian material are given below together with those of the type in parentheses:

j1, 23-24 (20)	z2, 16-18 (15)	s4, 22-24 (22)
j3, 21-22 (18)	z3, 20-22 (21)	s6, 25-27 (25)
j4, 13-15 (13)	z4, 21-23 (21)	S2, 25-29 (29)
j5, 14-15 (15)	z5, 13-18 (15)	S4, 29-35 (33)
j6, 14-15 (16)	Z4, 23-27 (23)	S5, 25-29 (27)
J2, 20-21 (21)	Z5, 47-54 (54)	r3, 24-26 (-)
J5, 11-13 (-)		R1, 20-22 (-)

Setae Z5 are strong and spiculate while the other dorsal setae are smooth. Dorsal shield 360-370 in length and with four pairs of gland pores. The ventri-anal shield (113-120 in length and 88-98 in width at the level of Zv2) with four pairs of ventri-anal setae; pores gv3 approximate (Figure 44). Setae Jv5 32-36 in length. Peritreme extending to the level of j1. Macroseta of basitarsus IV measures 29-31 in length, with blunt tip and with distance from its base to the dorsal slit organ 45-46. Movable digit of the chelicerae with one or two teeth, movable digit with two or three teeth (Figures 45-48). Spermatheca with cylindrical calyx and short cervix (Figures 49-50), cervix obscured in some orientations so that the embolus appears to be situated on the anterior end of the calyx (Figure 51).

Ventri-anal shield of male with 5 pairs of pre-anal setae (Figure 52). Movable digit of chelicera with a single tooth, fixed digit with 2 teeth and spermatodactyl (Figure 53).

Karg & Edland (1987) distinguished *Anthoseius toruli* from *A. caucasicus* on apparent differences in the denti-

tion of the movable digit of the chelicera and the form of the spermatheca. In the original description of *A. caucasicus*, the movable digit is stated to be bidentate whereas in *A. toruli* only one tooth is present. We have found this character to be variable and in the material examined by us some specimens were unidentate, others bidentate and in some individuals one movable digit was unidentate and the other bidentate. The difference in the form of the spermatheca was based by Karg and Edland on the illustration in Abbasova (1970) which shows the apparent absence of a cervix. However the cervix can be concealed in certain orientations of the spermatheca as illustrated in Figure 56, from a specimen with unidentate movable digits. On this basis, we consider *A. toruli* to be a junior synonym of *A. caucasicus*.

The species was originally described from Azerbaijan. Beglyarov (1981) states that it occurs on spruce (*Picea*). Karg & Edland (1987) recorded *A. toruli* from coniferous trees, *Calluna*, *Vaccinium* and *Juniperus* in Norway.

Plant Hosts and Localities: This species is commonly distributed, especially in the coastal regions of southern Norway. It was recorded from all counties, except Hedmark, and as shown in Map 6, as far north as Badderen, Kvænangen, at 69°50'N in Troms (EIS 164) and Valjok, Karasjok, at 69°41'N in Finnmark (EIS 167). It occurred in 198 samples of 54 host plants (Table 1), occasionally in dense populations. On host plants, from which more than 33 samples were examined, the highest frequency was found on *Quercus* spp, 40 % of n: 55 samples, followed by *Alnus glutinosa* 32 % (n: 37), *Fraxinus excelsior* 32 % (n: 34), *Corylus avellana* 25 % (n: 71), *Juniperus communis* 17 % (n: 65) and *Malus domestica* 15 % (n: 86). *A. caucasicus* was frequently recorded from twig samples of fruit trees, but seldom if ever from leaf samples (Edland 1994).

***Anthoseius caudiglans* (Schuster, 1959)**

(Figures 54-55)

Typhlodromus caudiglans Schuster, 1959; Chant, Hansell & Yoshida, 1974; Schicha, 1987

Anthoseius caudiglans: Beglyarov, 1981; Karg, 1993

This species resembles *Anthoseius caucasicus* in having ventri-anal gland pores gv3 approximate (Fig-

re 54) but the female may be readily distinguished by the form of the spermatheca (Figure 55). The length of the dorsal shield in the females collected in Norway ranged from 340 to 350µm and the lengths of the dorsal setae are as follows:

j1, 21-24	z2, 16-19	s4, 24-26
j3, 23-25	z3, 21-22	s6, 26-29
j4, 13-14	z4, 22-24	S2, 28-31
j5, 16-18	z5, 15-16	S4, 25-30
j6, 18-20	Z4, 28-36	S5, 24-25
J2, 20-22	Z5, 47-56	r3, 24-25
J5, 10-11		R1, 21-22

Setae Z5 spiculate and, in some specimens, Z4 sparsely spiculate.

Ventri-anal shield (99-110 x 85-92µm) with four pairs of pre-anal setae; setae Jv5 34-40µm. Peritreme extending to the level of j1. Movable digit of the chelicera with a single tooth, fixed digit with four teeth. Genu II with 7 setae (2-2/0-2/0-1); macroseta of basitarsus IV 25-29µm in length, distinctly or slightly capitate.

This species has been recorded from North America, Europe and New Zealand on a wide range of plants including deciduous trees and shrubs.

Plant Hosts and Localities: *A. caudiglans* was recorded from only three localities, from a large stand of wild growing *Hippophae rhamnoides* at Ørmelen, Verdal, from *Fraxinus excelsior* at Stiklestad, Verdal, and from *Corylus avellana* at Staup, Levanger (Table 1). All localities are situated in Nord Trøndelag (EIS 98).

***Anthoseius rhenanus* (Oudemans, 1915)**

(Figures 56-60)

Seiulus rhenanus Oudemans, 1915

Anthoseius rhenanus: Wainstein & Kolodochka, 1974

Typhlodromella rhenanus: Evans & Momen, 1988

Anthoseius tortor Beglyarov, 1981

The Norwegian specimens of this species agree in all details with the redescription by Evans & Momen (1988). A characteristic feature of *A. rhenanus* is the presence of 8 setae (2-2/1-2/0-1) on genu II, a condition

on which has not been observed in any other species of *Anthoseius* occurring in Norway. The chaetotaxy, porotaxy and poroidotaxy of the posterior region of the dorsal shield (Figure 56), the form of the ventri-anal shield (Figure 57), and shape of the spermatheca (Figures 58-60) are shown in the Figures.

Plant Hosts and Localities: This is a common species in Norway, occurring on many different plant species. Unlike the other *Anthoseius* species, *A. rhenanus* was recorded on a range of herbaceous and ericaceous plants. In total, it occurred in 211 samples of 58 different plant hosts (Table 1). As indicated by Map 7, it was recorded from all counties, except Sør Trøndelag, and north to Burfjorddal, Kvænangen, Troms at 69°55'N (EIS 172) and east to Svanvik, Sør-Varanger, Finnmark at 69°27'N (EIS 169). On *Rubus fruticosus* it was frequently abundant, and occurred in 30 of 42 samples. It also occurred commonly on *Corylus avellana*, in 30 of 71 examined samples. On fruit trees it was usually a rare species, where it always occurred in low numbers.

***Anthoseius* (?) *halinae* Wainstein & Kolodochka, 1974**

(Figures 61-65)

Anthoseius (*Amblydromellus*) *halinae* Wainstein & Kolodochka, 1974

Dorsal shield of female (336-375 in length) reticulated and with 5 pairs of gland pores; lengths of dorsal setae compared to those given for the type (in square brackets):

j1, 18-20 [20]	z2, 15-16 [17]	s4, 22-25 [28]
j3, 18-20 [22]	z3, 20-21 [25]	s6, 21-25 [28]
j4, 12-13 [14]	z4, 19-20 [20]	S2, 25-28 [28]
j5, 12-13 [17]	z5, 14-15 [17]	S4, 24-27 [28]
j6, 16 [20]	Z4, 25-28 [28]	S5, 21-24 [22]
J2, 17-19 [20]	Z5, 35-48 [47]	r3, 20-22 [25]
J5, 10-11 [8]		R1, 19-21 [22]

All dorsal setae smooth except Z5 which is conspicuously spiculate (Figure 61). Distances between the bases of setae j3 and z2 and z2 and z3, respectively, 19-22µm and 18-20µm; distance between the base of Z4 and pore gd9, 36-41µm.

Ventri-anal shield (104-111 x 92-99 μ m) with four pairs of pre-anal setae, pores gv3 present (Figure 62). Setae Jv5, 33-39 μ m in length, compared to 33 μ m in the type. Peritreme extending to the level of j1. Spermatheca as in Figures 63-65. Chelicerae with unidentate movable digit and tridentate fixed digit.

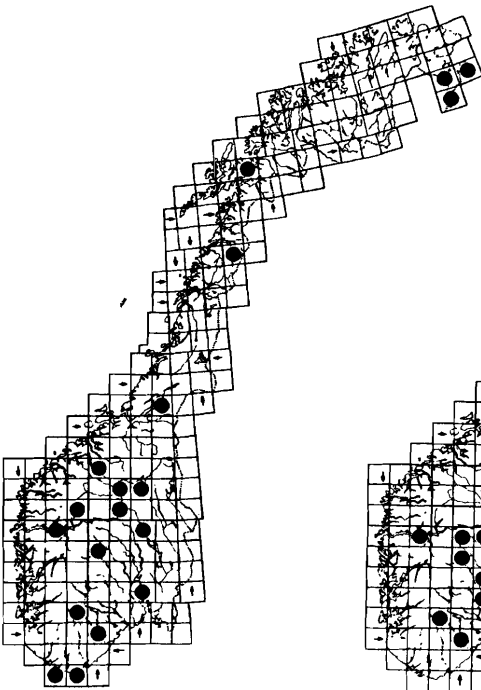
Genu II and III with 7 setae; basitarsal macroseta 23-27 μ m in length (28 μ m in the type) and terminating in a blunt point; setae adl of genu and tibia IV 15-18 μ m in length.

In the absence of males, it is not possible to be certain of the identity of this species. Of the European species of the *rhenanus*-group which have been described, it most closely resembles *A. halinae* in the lengths of the dorsal setae, Jv5 and the macroseta of basitarsus IV and we provisionally place the Norwegian material in this taxon. Our specimens differ from *A. halinae* in Z5

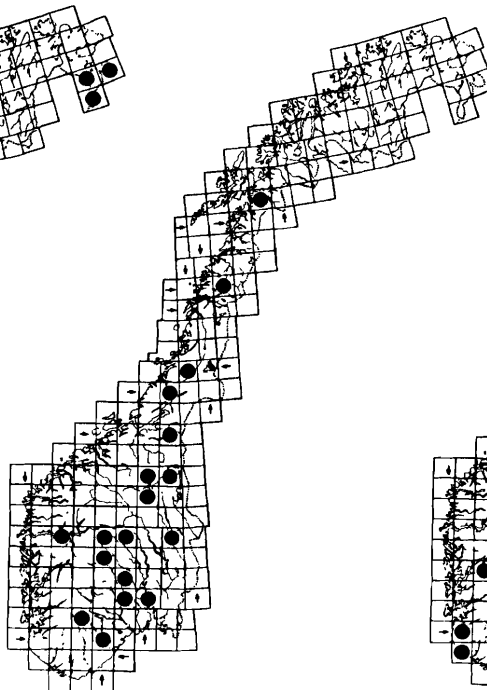
being spiculate and in the more anterior position of the embolus on the calyx-atrium of the spermatheca. The shape of the calyx-atrium varies according to its orientation, for example, Figures 63-64 are from the same specimen. Unfortunately, the number of setae on genua II and III is not given in the original description.

According to Beglyarov (1981), *A. halinae* is known from a range of plants, including *Malus*, *Crataegus* and wild *Prunus*, in the forest steppe region of the Ukraine and the Yaroslavl region.

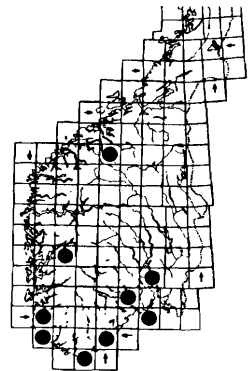
Host Plants and Localities: This species was recorded from six different plant species (Table 1) and at eight localities, all of them in the county of Finnmark. Most of the specimens occurred in eight samples collected in Pasvikdalen, Sør-Varanger (EIS 160, 168 and 169), while the northernmost specimens were found at Borssejokka, Tana at 69°58'N (EIS 175) (Map 8).



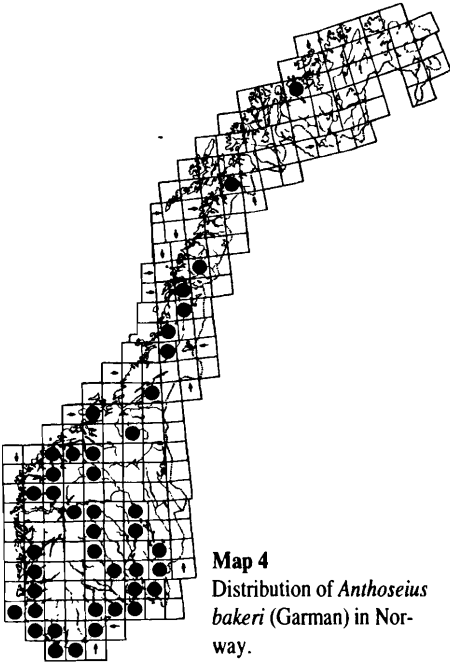
Map 1
Distribution of *Anthoseius suecicus* (Sellnick) in Norway.



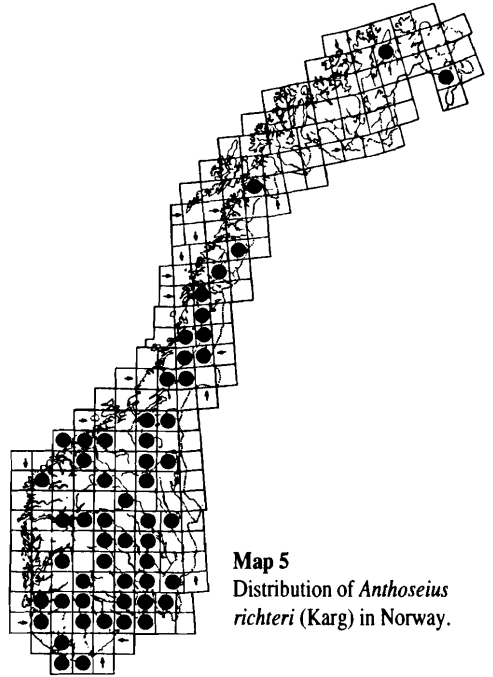
Map 2
Distribution of *Anthoseius algonquinensis* (Chant et al.) in Norway.



Map 3
Distribution of *Anthoseius foenilis* (Oudemans) in Norway.

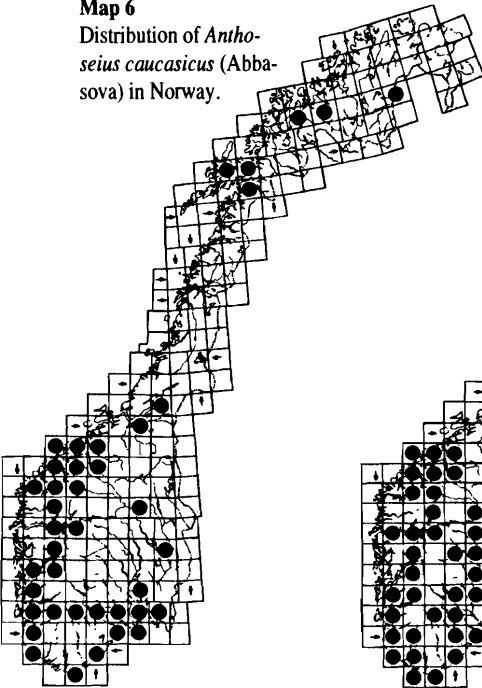


Map 4
Distribution of *Anthoseius bakeri* (Garman) in Norway.

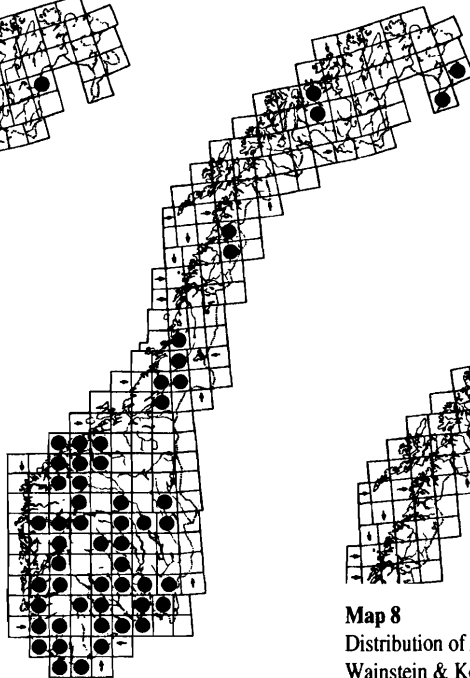


Map 5
Distribution of *Anthoseius richteri* (Karg) in Norway.

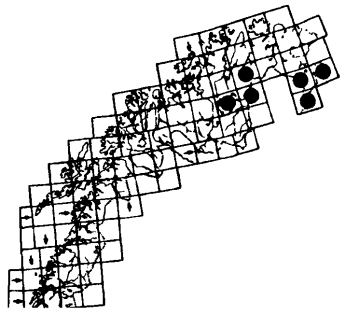
Map 6
Distribution of *Anthoseius caucasicus* (Abbasova) in Norway.

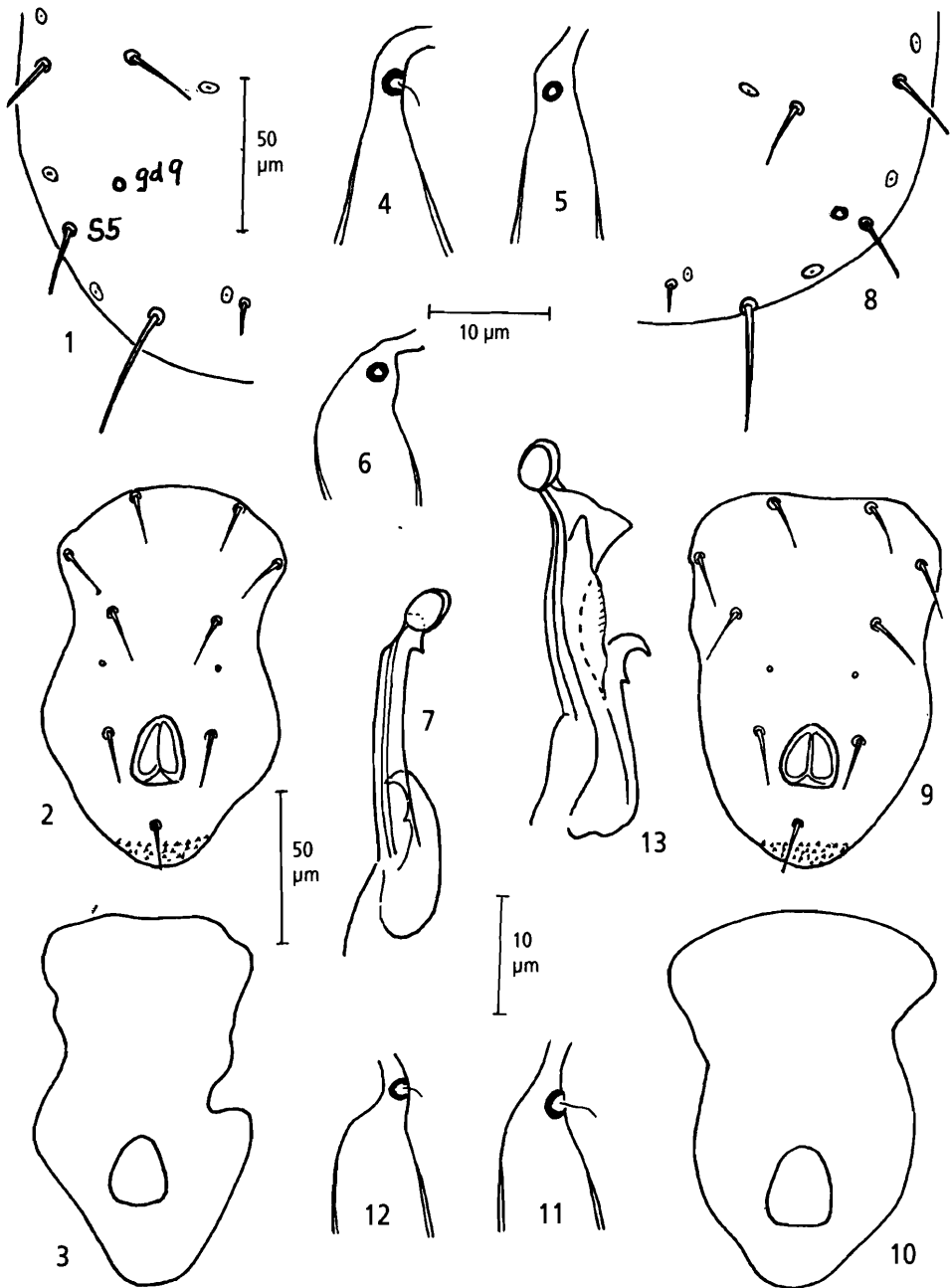


Map 7
Distribution of *Anthoseius rhenanus* (Oudemans) in Norway.



Map 8
Distribution of *Anthoseius ? halinae* Wainstein & Kolodochka in Norway.

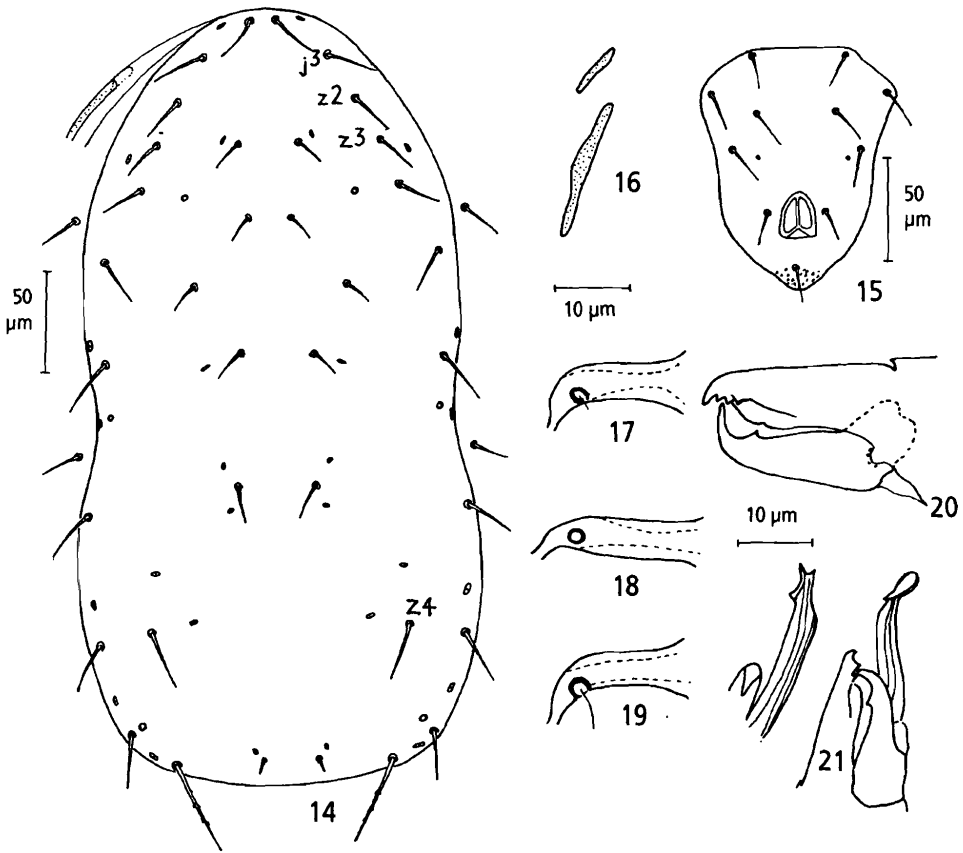


**Figures 1-7**

Anthoseius suecicus (Sellnick). Figure 1, posterior region of dorsal shield of female; Figures 2-3, ventri-anal shields of female; Figures 4-6, spermathecae; Figure 7, spermatodactyl.

Figures 8-13

Anthoseius algonquinensis (Chant et al.). Figure 8, posterior region of dorsal shield of female; Figures 9-10, ventri-anal shields of female; Figures 11-12, spermathecae; Figure 13, spermatodactyl.



Figures 14-21

Anthoseius inopinatus Wainstein. Figure 14, dorsal shield of female; Figure 15, ventri-anal shield of female; Figure 16, metapodal shields of female; Figures 17-19, spermathecae; Figure 20, chelicera of female; Figure 21, spermatodactyls.

ACKNOWLEDGEMENTS

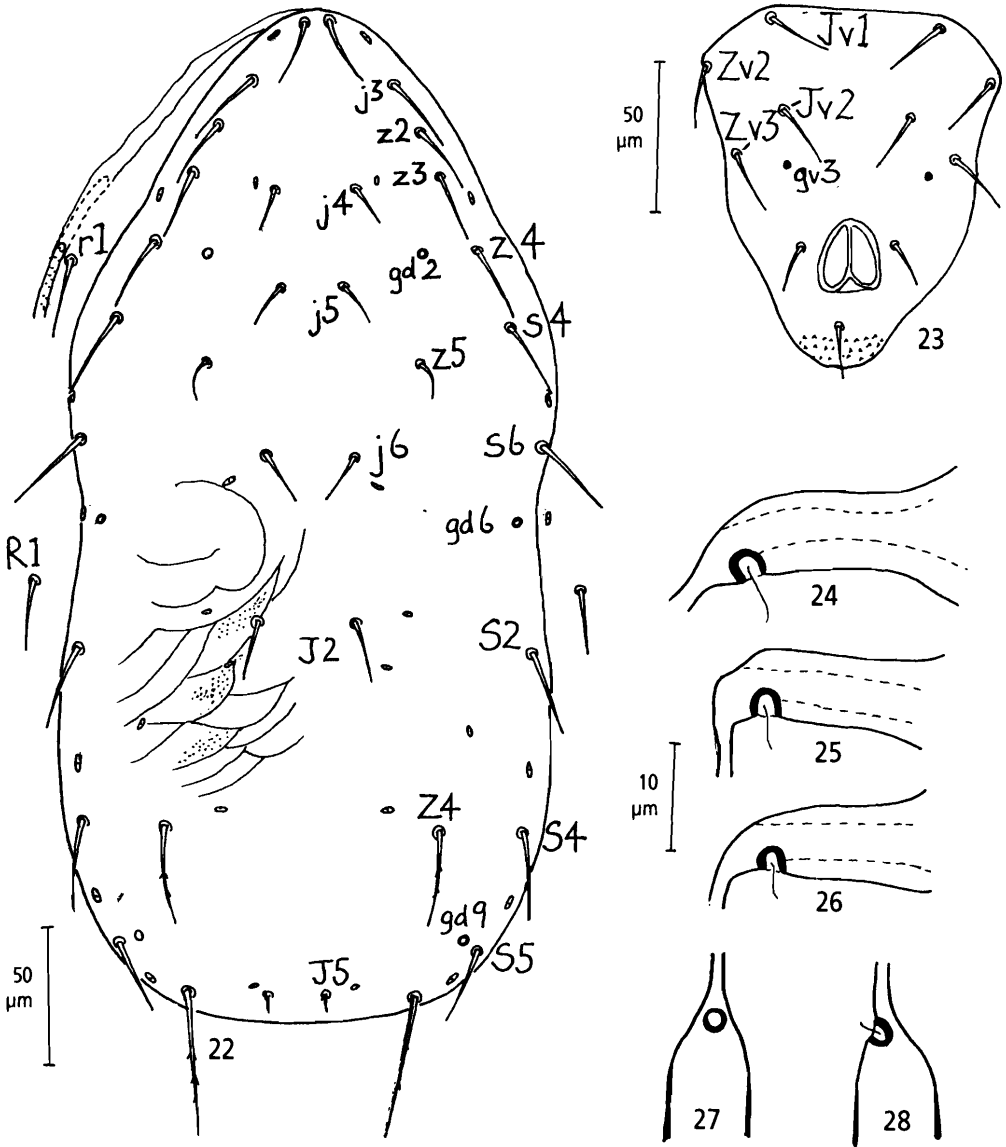
One of us (T.E.) is extremely grateful to D.A. Chant, H.A. Denmark, W. Karg, S. Ragusa and E. Yoshida-Shaul for the assistance he received with the identification of the Phytoseiidae during the early part of the study. We are also grateful to S. Ragusa (Istituto di Entomologia Agraria, University of Palermo, Italy) and B. Ohnesorge (Institut für Phytomedizin, University of Hohenheim, Germany) for the loan of specimens. Special thanks are given to the many advisers in various agricultural areas of Norway, and to the technical assistants and other collaborators at the Plant Protection Centre for their valuable help in collecting samples and in extracting and preparing the mites for study.

SAMANDRAG

Anthoseis De Leon (Acari: Mesostigmata) i Norge

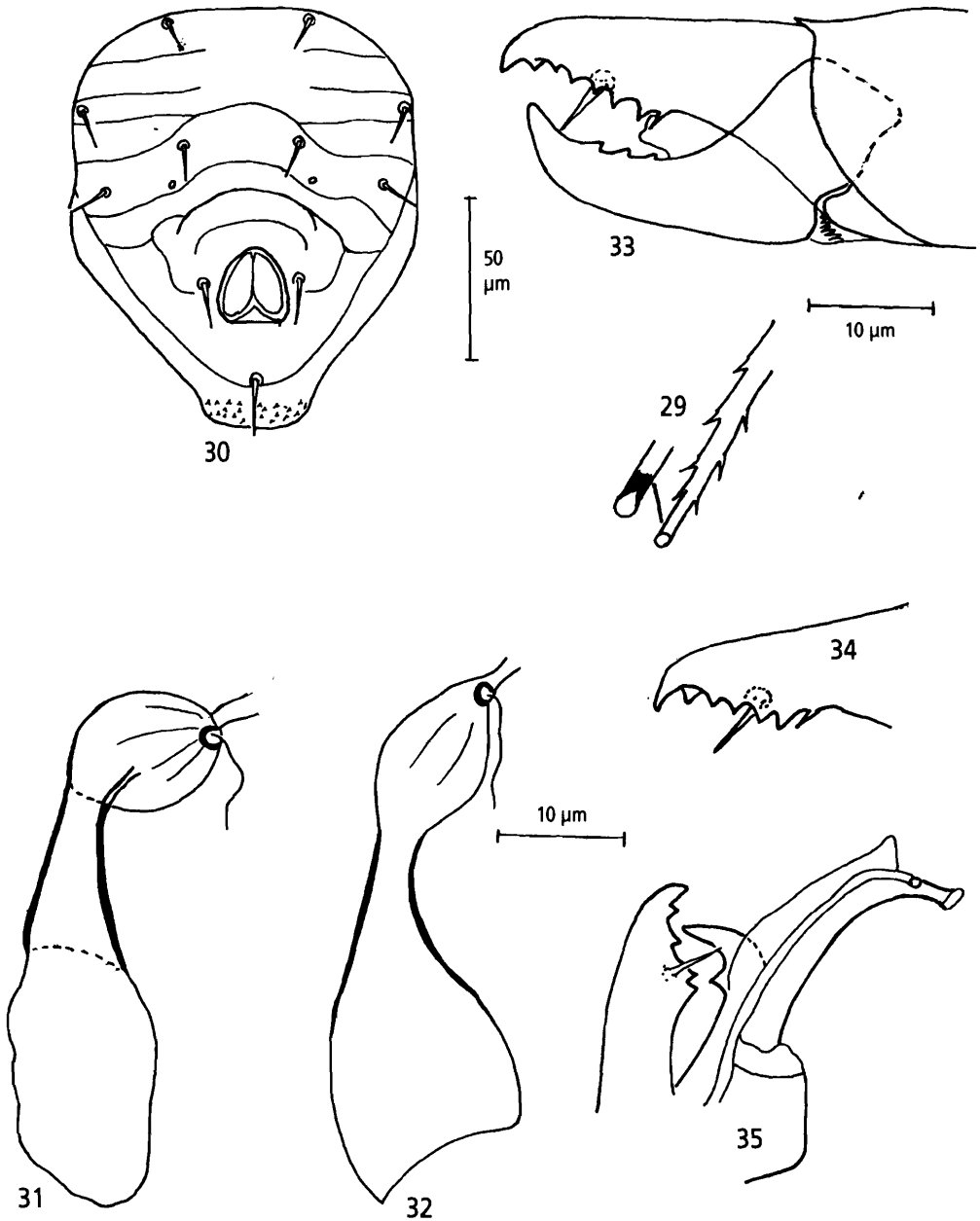
Familien middrovmidd (Phytoseiidae) har vore lite undersøkt i Norge. I ei landsomfattande gransking i åra 1984-1996, blei det registrert eit stort tal arter på i alt 1414 vertplanter frå heile landet.

Artikkelen gir ei oversikt over slekta *Anthoseius* De Leon. I ein tidlegare artikkel, om slekta *Typhlodromus* Scheuten, er det gitt opplysningar om material og metodar, og ei drøfting av taksonomi og terminologi som blir nytta (Edland & Evans 1998).



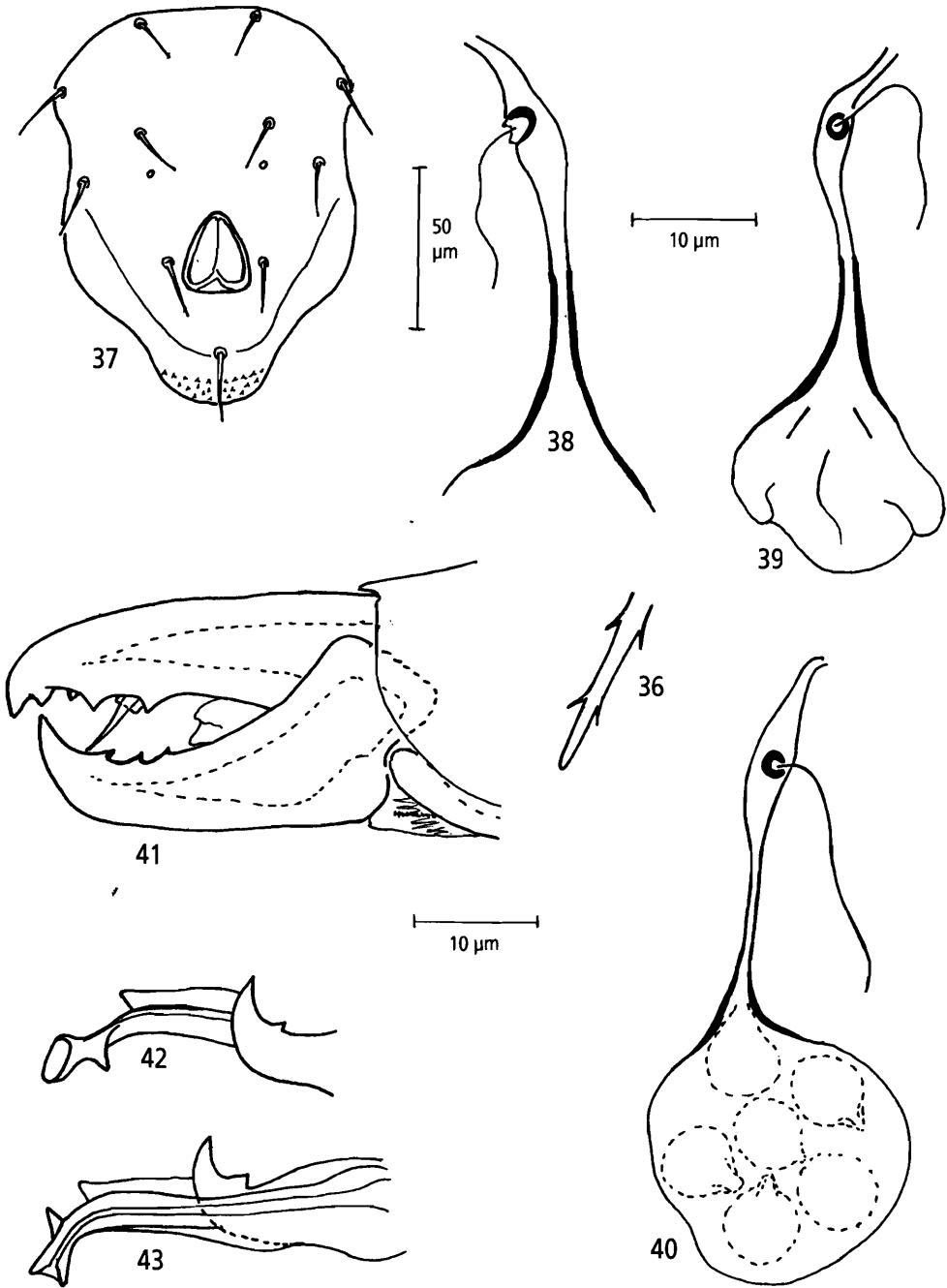
Figures 22-26

Anthoseius parinopinatus sp. n. Figure 22, dorsal shield of female; Figure 23, ventri-anal shield of female; Figures 24-26, spermathecae. Figures 27-28, spermathecae of *Anthoseius commenticus* (Livshitz & Kuznetsov). gd, dorsal gland pore; gv, ventral gland pore; j-J, dorso-central series; z-Z, medio-lateral series; s-S, lateral series; r-R, marginal series; Jv, centro-ventral series; Zv, medio-ventral series.



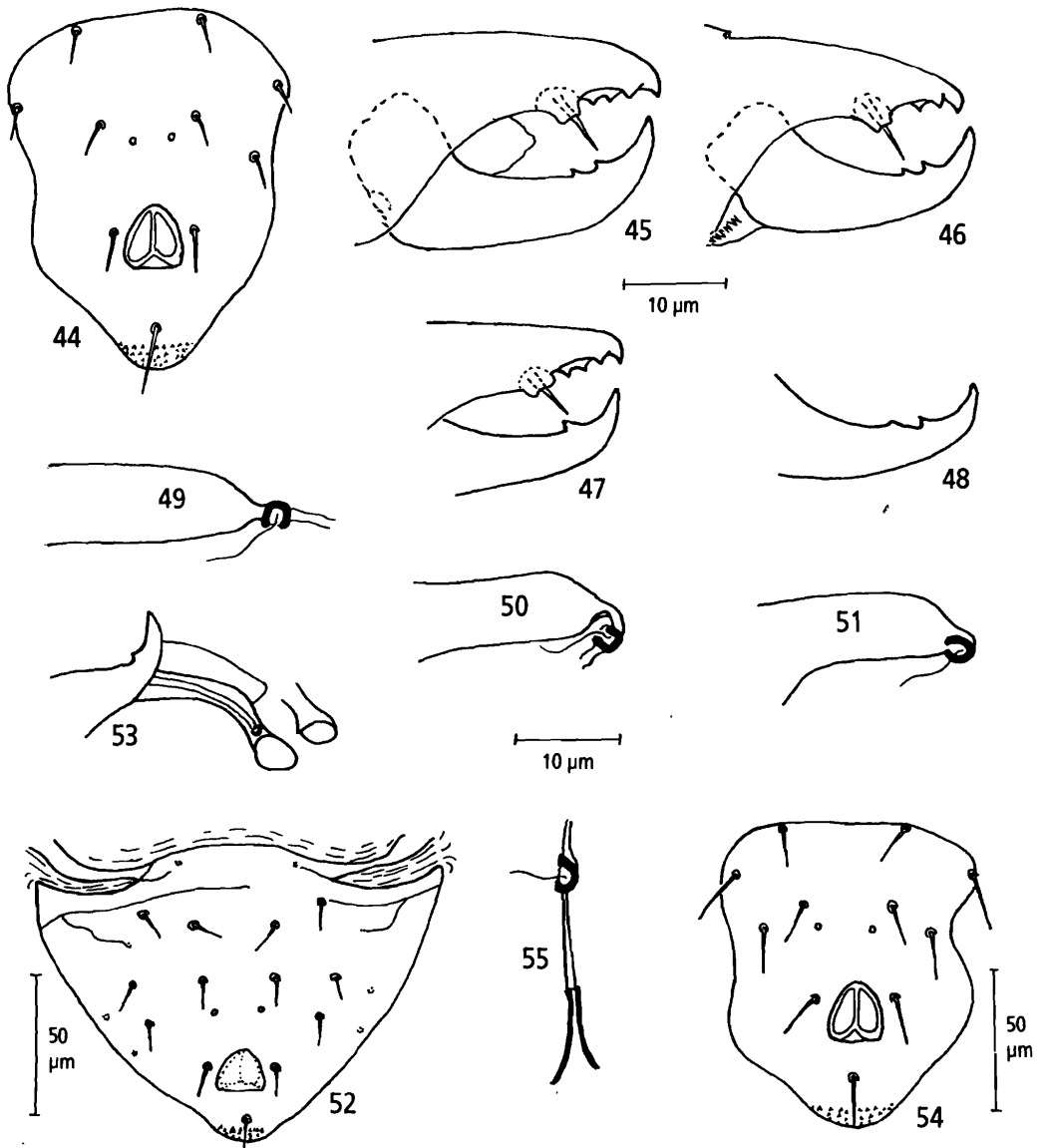
Figures 29-35

Anthoseius bakeri (Garman). Figure 29, dorsal seta Z5 of female; Figure 30 ventri-anal shield of female; Figures 31-32, spermathecae; Figures 33-34, chelicerae of female; Figure 35, chelicera of male.



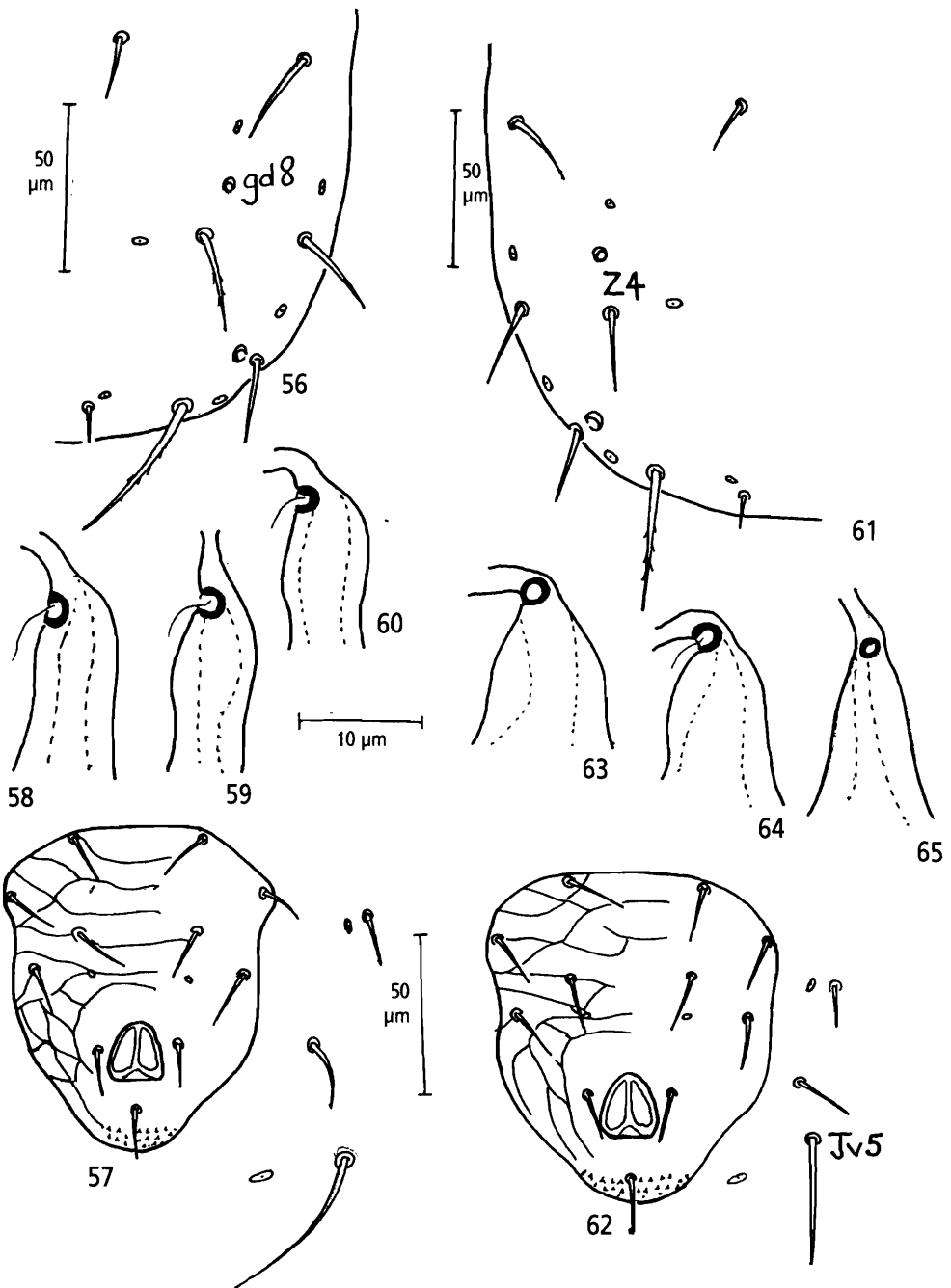
Figures 36-43

Anthoseius richieri (Karg). Figure 36, dorsal seta Z5 of female; Figure 37, ventri-anal shield of female; Figures 38-40, spermathecae; Figure 41, chelicera of female; Figures 42-43, spermatodactyls.



Figures 44-53

Anthoseius caucasicus (Abbasova). Figure 44, ventri-anal shield of female; Figures 45-48, chelicerae of female; Figures 49-51, spermathecae; Figure 52, ventri-anal shield of male; Figure 53, spermatodactyl. Figures 54-55. *Anthoseius caudiglans* (Schuster), female. Figure 54, ventri-anal shield; Figure 55, spermatheca.



Figures 56-60

Anthoseius rhenanus (Oudemans), female. Figure 56, postero-lateral region of dorsal shield; Figure 57, ventri-anal shield; Figures 58-60, spermathecae. Figures 61-65. *Anthoseius ? halinae* Wainstein & Kolodochka, female. Figure 61, postero-lateral region of dorsal shield; Figure 62, ventri-anal shield; Figures 63-65, spermathecae.

Av *Anthoseius* er det registrert 11 arter. Ei av disse, *A. parinopinatus*, funnen i Troms og Finnmark, er beskrevet som ny art. Fire arter, *A. bakeri* (Garman), *A. caucasicus* (Abbasova), *A. rhenanus* (Oudemans) og *A. richteri* (Karg) blei registrerte i alle landsdelar (17 fylke) på 44-58 forskjellige plantearter. *A. algonquinensis* (Chant, Hansell & Yoshida), *A. foenilis* (Oudemans) og *A. suecicus* (Sellnick) blei tatt i 8-13 fylke på 9-17 forskjellige vertplanter, medan *A. inopinatus* Wainstein blei registrert berre i Vestfold og Finnmark, *A. caudiglans* (Schuster) i Nord-Trøndelag, og *A. (?) halinae* Wainstein & Kolodochka i Finnmark, på 2-6 plantearter. Det er utarbeidd utbreiingskart for 8 av artene.

Tabell 1 viser planteartene som blei registrerte som vertplanter for middrovsmidd og dei forskjellige *Anthoseius*-artene. Dei fleste funn av *Anthoseius* blei gjort på bartre. 9 arter blei funne på gran (*Picea abies*) og 8 på furu (*Pinus sylvestris*).

Det er utarbeidd identifikasjonsnøkkel for alle *Anthoseius*-artene som blei registrerte i denne granskinga.

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Recent additions to the Norwegian fauna of Empidoidea (Diptera, Brachycera)

Terje Jonassen

Jonassen, T. 1998. Recent additions to the Norwegian fauna of Empidoidea (Diptera, Brachycera). - Fauna norv. Ser. B 45: 63-68.

Thirty-two species of Empidoidea (viz. Hybotidae, Empididae and Dolichopodidae) are reported from Norway probably for the first time.

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INTRODUCTION

It is estimated that there may be about 600 different species of Empidoidea (viz. Empididae, Atelestidae, Microphoridae, Hybotidae and Dolichopodidae) present in the Norwegian fauna (Ottesen 1993). The last published overview (Jonassen 1992) confirmed the presence of 465 different species.

The present paper adds thirty-two species to the Norwegian fauna, thus bringing the total number up to 497 different species. One might consequently argue that the knowledge of the Norwegian empidoidean fauna is at present fairly comprehensive. There are, however, reasonably large areas of the country that have not yet been surveyed, thus our knowledge of the distributional data of this superfamily is still insufficient.

When nothing else is mentioned, the material is deposited in the author's collection, in the Museum of Zoology, Bergen (ZMB) or at Tromsø Museum (ZMT).

The nomenclature and the sequence of species largely follow Chvála & Wagner (1989) and Negrobov (1991).

SYSTEMATIC LIST

Hybotidae

Leptodromiella crassiseta (TUOMIKOSKI, 1923)

HES, Ringsaker: Helgøya, Eikåsen, EIS54, June 1990 (Malaise trap), 1 ♀ leg. A. Bruserud (ZMB).

A rare species, previously known from a few specimens from Sweden, Finland and Russia (Chvála 1983).

Platypalpus longicornioides CHVÁLA, 1972

BV, Rollag: Vårviken, EIS35, July 1994 (Malaise trap), 1 ♂ leg. L.O.Hansen & B.A.Sagvolden.

Described on the basis of a single male from Skåne, Sweden (Chvála, 1972), making the above Norwegian record the second reported specimen of this seemingly rare species.

Platypalpus nigricoxa (MIK, 1884)

FV, Alta: Detsika, Buolamalia, EIS173, 11 June-3 July 1995 (Malaise trap), 1 ♂; Kåfjord, Møllenes, EIS173, 3 July-8 Aug. 1995 (Malaise trap), 1 ♀ Eiby, Valsetmoen, EIS173, 6 July-8 Aug. 1995 (Malaise trap), 1 ♀, all leg. L.O.Hansen & H. Rinden.

A borealpine species known from the Alps as well as from the extreme north of Europe. These specimens,

however, seem to represent the first Norwegian record of this species.

***Platypalpus ochrocera* (COLLIN, 1961)**

OS, Gausdal: Follabu, EIS54, 12 Aug. 1995, 3♂; BV, Rollag: Rollag-Veggli, EIS35, 24 July 1992 (car-net), 2♀; 29 June 1995 (car-net), 1♂, 1♀; 9 July 1995 (car-net), 1♂; 13 July 1995 (car-net), 3♀, all leg. B.A.Sagvolden; Rollag: Vårviken, EIS35, July 1994 (Malaise trap), 1♂; Rollag: Bråtåsen, EIS35, July 1994 (Malaise trap), 1♂, both leg. L.O.Hansen & B.A.Sagvolden; BØ, Drammen: Underlia, EIS28, Aug.-Sept. 1993 (Malaise trap), 1♀ leg. L.O.Hansen.

A small species of the *P. flavicornis*-group. It has previously been reported from England, Belgium, Slovakia, the Czech Republic and the NW of European Russia. Collin (1961) described this species from a single male, and since Chvála (1989) does not mention the female of this species in particular, one may be led to believe that the females have not as yet been properly recognized. The Norwegian specimens demonstrate that the third antennal segment is darkened towards the tip in the female sex, thus creating an important sexual dimorphism, since the male antennae are completely yellow. Consequently, the available keys will not work for female *ochrocera*.

***Platypalpus optivus* (COLLIN, 1926)**

AK, Asker: Bjørkås, EIS28, 4 June-2 July 1995 (Malaise trap), 17♂, 27♀; 2 July-24 Aug. 1995 (Malaise trap), numerous ♂♂ and ♀♀; 24 Aug.-10 October 1995 (Malaise trap), 5♀; all leg. L.O.Hansen & O. Hanssen.

A species found in central Europe, Great Britain and Denmark. This is the first record from the Scandinavian peninsula.

***Platypalpus zetterstedti* CHVÁLA, 1971**

STI, Oppdal: at Kaldvella, 1160 m.a.s.l., EIS 79, 9-11 July 1992 (yellow tray), 1♂, 1♀; Stropplsjødalen, 1160 m.a.s.l., EIS79, 11-14 July 1992 (yellow tray), 1♂, all leg. J. Skartveit.

According to Chvála (1975), this is a rare boreal species known from a handful of specimens, all from the north of Europe. One of the males from Oppdal has the legs and the antennal segment 1 all dark, thus indicating that the species can be more variable than what has previously been taken into account.

***Drapetis stackelbergi* KOVALEV, 1972**

BV, Rollag: Tråen saga, EIS35, July 1994 (Malaise trap), 1♂ leg. B.A. Sagvolden

A species which until now has been reported from the north-west of European Russia only.

***Chersodromia speculifera* WALKER, 1851**

VE, Nøtterøy: M.-Bojerne, EIS19, 4-26 July 1995 (Malaise trap), 1♂, 8♀ leg. A. Fjellberg & O. Hanssen; BØ, Hurum: Verksøya, EIS28, 6 June-8 July 1995 (Malaise trap), 1♀ leg. L.O.Hansen & O. Hanssen.

An uncommon coastal species which has been previously reported with certainty from Denmark, England and Ireland.

Empididae

***Hormopeza obliterata* ZETTERSTEDT, [1838]**

STI, Oppdal: Lønset, EIS79, 17 July-10 Sept. 1993 (Malaise trap), 1♂ leg. O. Hanssen.

A species with a northern distribution, first reported from Swedish and Finnish Lapland, as well as from Northern Siberia. Since then a few specimens have also been recorded in England and Belgium.

***Hilara angustifrons* STROBL, 1892**

HOY, Os: Raudli, Søfteland, EIS31, 20-27 June 1991 (Malaise trap), 1♂ (ZMB); Os: Lysekloster, EIS31, 18 June-16 July 1992 (Malaise trap), 1♀, both leg. G.A.Halvorsen.

A species which has been previously reported from Great Britain and Central Europe north towards Denmark.

***Hilara biseta* COLLIN, 1927**

BV, Rollag: Rollag-Veggli, EIS35, 24 July 1992 (Car net), 1♂; BØ, Kongsberg: Sansvær, EIS27, 26 July 1995, 1♂, 1♀, all leg. B.A.Sagvolden.

Previously reported from Great Britain and Central Europe.

***Hilara brevistyla* COLLIN, 1927**

BV, Rollag: Vårviken, EIS35, May 1994 (Malaise trap), 1♂, 2♀; June 1994 (Malaise trap), 1♂, both leg. L.O.Hansen & B.A.Sagvolden.

A spring species, in Great Britain appearing as early as April (Collin 1961). Widespread in Central Europe, but it has not been reported from Denmark.

***Hilara eviana* STRÁKA, 1976**

HES, Ringsaker: Furnes, EIS45, Aug. 1992 (Malaise trap), 9♂, 10♀ leg. J. Bakkerud (ZMB); BV, Rollag: Bråtåsen, EIS35, Aug. 1994 (Malaise trap), 1♂ leg. L.O.Hansen & B.A.Sagvolden; Rollag-Veggli, EIS35, 13 July 1995 (Car net), 4♂ leg. B.A.Sagvolden; NTI, Høylandet: Tverråa/Skiftesåa, EIS107, Aug.-Sept. 1987 (Malaise trap), numerous ♂♂ and ♀♀ leg. J.O.Solem.

Seemingly a late summer/autumn species, described from Czech specimens. It has subsequently also been reported from Poland (Niesiolowski 1996).

***Hilara hirta* STROBL, 1892**

BØ, Hurum: Verket, EIS28, 19 Aug.-1 October 1995 (Malaise trap), 1♂ leg. L.O.Hansen & O.Hanssen; BV, Rollag: Vårvikken, EIS35, Sept. 1994, 2♂, 6♀ leg. L.O.Hansen & B.A.Sagvolden.

This is also a species that appears rather late in the summer. It has previously been reported from Great Britain and Central Europe.

***Hilara thoracica* MACQUART, 1827**

HOY, Os: Lysekloster, EIS31, 13 May-18 June 1992 (Malaise trap), 1♂ leg. G.A.Halvorsen.

Easily recognized as it is the only Norwegian *Hilara* to have a yellowish colour. Known from most of Europe, but as yet not reported from Denmark or Fennoscandia.

***Hilara woodi* COLLIN, 1927**

AK, Sørum: Lørenfallet, Egner, EIS37, June 1994 (Malaise trap), 2♀; July 1992, 1♀, both leg. L.O.Hansen & O. Sørbråten; BV, Rollag: Vårvikken, EIS35, Aug. 1992 (Malaise trap), 1♀; Rollag-Veggli, EIS35, 8 July 1993 (Car net), 1♂; Veggli, EIS35, 29 June 1995 (Car net), several ♂♂ and ♀♀, all leg. B.A.Sagvolden; BØ, Kongsberg: Sansvær, EIS27, 26 July 1995, 1♂, 2♀ leg. B.A.Sagvolden; Hurum: Verksøya, EIS28, 6 June-8 July 1995 (Malaise trap), 2♀ leg. L.O.Hansen & O. Hanssen.

A species described from British specimens. It has subsequently also been reported from Poland, Slovakia and the Czech Republic.

***Empis (Coptophlebia) dasychira* MIK, 1878**

FØ, Sør-Varanger: Kirkenes, Prestøya, EIS169, 5 Aug. 1995, 1♂ leg. J. Skartveit.

Apart from the above record it has been reported only from the Austrian Alps as well as from the mountains north in the Czech Republic (Chvála, in litt.). This specimen from the extreme north of Norway therefore represents a curious find. It may prove to have a boreoalpine distribution similar to the above treated *Platypus nigricoxa*.

***Rhamphomyia (s.s.) laevipes* (FALLÉN, 1816)**

Ø, Rakkestad: Buerbakkene, EIS 20, 29 May 1993, 1♂ leg. T.J.Olsen.

A species which appears in all our neighbouring countries, so it is was expected to also occur here in Norway.

***Rhamphomyia (Megacyttarus) anomala* OLDENBERG, 1915**

STI, Oppdal: S. Knutshø, 1150 m.a.s.l., EIS79, 8-15 July 1992 (Malaise trap), 1♀; Kongsvoll, EIS79, 8-15 July 1992 (Malaise trap), 1♂; 19-28 July 1994 (Malaise trap), 1♂; 19 July-1 Aug. 1994 (Malaise trap), 1♀; 26 July 1994, 1♂; 16 June-13 July 1995 (Malaise trap), 12♂, 3♀; 13-26 July (Malaise trap), 6♀; 26 July-18 Aug. (Malaise trap), 2♂, 3♀, all leg. J. Skartveit.

Originally described from German specimens, and it has subsequently also been reported from Sweden and Finland.

***Rhamphomyia (Pararhamphomyia) angulifera* FREY, 1913**

NTI, Høylandet: Tverråa, EIS107, 16 July 1987 (Malaise trap), 1♂; Skiftesåa, EIS107, 16 July 1987 (Malaise trap), 1♀; 30 July 1987, 2♀, all leg. J.O.Solem.

This is a species that has not as yet been reported outside of Fennoscandia.

***Rhamphomyia (Pararhamphomyia) lapponica* FREY, 1955**

FØ, Sør-Varanger: Ø. Pasvik near Dagvatnet, EIS160, 2 Aug. 1996, 1♂ leg. J. Skartveit.

A seemingly boreal species previously reported from northern Sweden and Finland, as well as from the Kola Peninsula and the Ural mountains in Russia.

***Rhamphomyia (Pararhamphomyia) lucidula* ZETTERSTEDT, 1842**

OS, Gausdal: Follebu, EIS54, 12 Aug. 1995, 67♂, 12♀; BV, Rollag: Rollag, EIS35, 5 Aug. 1992 (Car net), 15♂; Rollag-Veggli, EIS35, 9 July 1995 (Car net), 12♂, 1♀; 13 July 1995 (Car net), 18♂, 2♀; BØ, Kongsberg: Sansvær, EIS27, 26 July 1995, 6♂, all leg. B.A.Sagvolden; STI, Oppdal: Lønseth, EIS79, 12 June-13 July 1992 (Malaise trap), 1♂ leg. O. Hanssen.

A species that occurs throughout all of the northernmost Palaearctic countries east towards Northern Korea.

***Chelifera subangusta* COLLIN, 1961**

RY, Finnøy: Kyrkjøy, EIS14, 14-23 July 1989 (Malaise trap), 1♂; 23-30 July 1989 (Malaise trap), 1♂; 1-10 June 1990 (Malaise trap), 2♂; 10-17 June 1990 (Malaise trap), 1♂, all leg. T. Jonassen; NTL, Høylandet: Tverråa, EIS107, 16 July 1987 (Malaise trap), 1♀; 23 July 1987 (Malaise trap), 1♂; 30 July 1987 (Malaise trap), 1♂; Skiftesåa, EIS107, 30 July 1987 (Malaise trap), 1♀, all leg. J.O.Solem.

Originally described from British specimens (Collin, 1961), but it has since then been reported also from Belgium, Poland, Germany and France (Niesiolowski 1992).

***Clinocera (Hydrodromia) nivalis* (ZETTERSTEDT, [1838])**

HOI, Ulvik: Finse, EIS42, on a snowdrift 3 Sept. 1992, 1♀ leg. J. Skartveit (ZMB).

Previously reported from Finland, Sweden, Scotland, Poland as well as across the northern areas of both European and Asian Russia.

Dolichopodidae***Sciapus basilicus* MEUFFELS & GROOTAERT 1990**

BØ, Hurum: Verket, EIS28, 28 May 1989, 1♂ leg. L.O.Hanssen; Verksøya, EIS28, 6 June-8 July 1995 (Malaise trap), 21♂, 9♀ leg. L.O.Hansen & O. Hanssen.

A recently described species which at present is known from Sweden, The Netherlands, Austria, Switzerland and Romania. When Siebke (1877) reported *Sciapus*

contristans (WIEDEMANN, 1817) from Norway he was obviously not aware that it has been a part of a rather problematic species complex that has not been fully understood before the revision by Meuffels & Grootaert (1990). It is therefore possible that Siebke's "*contristans*" may include other species, such as *S. zonatulus* (ZETTERSTEDT, 1843), *S. maritimus* BECKER, 1918 or even the above reported *S. basilicus*. However, an enquiry to the curator of Siebke's collection in Oslo did not produce any *Sciapus*, so the whereabouts of these specimens are at present unknown.

***Rhaphium glaciale* (RINGDAHL, 1920)**

STI, Oppdal: Stropsljødalen, 1100 m.a.s.l., EIS79, 1-4 July 1992 (yellow tray), 3♂, 2♀; Kongsvoll, at Sprænbekken, EIS79, 19 July-1 Aug. 1994, several♂♂ and♀♀, all leg. J. Skartveit.

A boreomontane species described from Swedish specimens, and it has until now not been found outside of Sweden.

***Rhaphium rivale* (LOEW, 1869)**

Ø, Rakkestad: Buerbakkene, EIS20, 29 May 1993, 1♂ leg. T.J.Olsen; OS, Skjåk: 4 km west of Nordberg, EIS70, 21 July 1982, 1♀ leg. K. Rognes; NSI, Grane: Trofors, EIS115, 25 July 1946, 1♂, 2♀ leg. T. Soot-Ryen (ZMT).

Widespread over much of Europe, but it does not seem to have been reported from Norway previously.

***Teuchophorus monocanthus* LOEW, 1859**

RY, Finnøy: Kyrkjøy, EIS14, 20 July 1992, 1♂, 1♀; 6 July 1994, 1♂, 1♀; 12 July 1994, 1♀, all leg. T. Jonassen.

A species found over most of Europe, frequenting rocks close to running or stagnant waters. These Norwegian specimens were captured on vertical rock faces at a brackish pool by the seaside.

***Dolichopus cinctipes* WAHLBERG, 1830**

FØ, Sør-Varanger: Vaggetem, EIS160, 1 Aug. 1996, 1♂ leg. J. Skartveit.

An uncommon boreal species, up until now known from Swedish specimens only.

***Medetera inspissata* COLLIN, 1952**

MRI, Norddal: Fjøra, EIS77, 18 July-11 Sept. 1993 (Malaise trap), 1♂ leg. O. Hanssen.

A rather delicate and uncommon *Medetera* with a scattered distribution in Europe.

***Medetera signaticornis* LOEW, 1857**

BV, Rollag: Tråen saga, EIS35, June 1994 (Malaise trap), 1♂; July 1994 (Malaise trap), 2♂, all leg. B.A.Sagvolden; BØ, Hurum: Østnestangen, EIS19, 26 May 8 July 1995, 1♂ leg. L.O.Hansen.

Rather widespread in Europe north of the Alps, although it has not as yet been reported from Great Britain.

***Medetera zinovjevi* NEGROBOV, 1967**

BV, Rollag: Tråen saga, EIS35, July 1994 (Malaise trap), 2♂ leg. B.A. Sagvolden.

A rare species reported from the Ural mountains and from the Russian Far East. This is the first time the species has been recorded from Western Europe.

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SAMMENDRAG**Trettito arter av overfamilien Empidoidea (Diptera) rapporteres som nye for norsk fauna**

Det gis her en oversikt over trettito førstefunn av norske Empidoidea (d.e. familiene Hybotidae, Empidae og Dolichopodidae). Disse er: *Leptodromiella crassiseita* (TUOMIKOSKI, 1923), *Platypalpus longicornioi-*

des CHVÁLA, 1972, *P. nigricoxa* (MIK, 1884), *P. ochrocerata* (COLLIN, 1961), *P. optivus* (COLLIN, 1926), *P. zetterstedti* CHVÁLA, 1971, *Drapetis stackelbergi* KOVALEV, 1972, *Chersodromia speculifera* WALKER, 1851 (alle Hybotidae); *Hormopeza oblitterata* ZETTERSTEDT, [1838], *Hilara angustifrons* STROBL, 1892, *H. biseta* COLLIN, 1927, *H. brevistyla* COLLIN, 1927, *H. eviana* STRÁKA, 1976, *H. hirta* STROBL, 1892, *H. thoracica* MACQUART, 1827, *H. woodi* COLLIN, 1927, *Empis* (*Coptophlebia*) *dasychira* MIK, 1878, *Rhamphomyia* (*s.s.*) *laevipes* (FALLÉN, 1816), *R. (Megacyttarus) anomala* OLDENBERG, 1915, *R. (Pararhamphomyia) angulifera* FREY, 1913, *R. (Pararhamphomyia) lapponica* FREY, 1955, *R. (Pararhamphomyia) lucidula* ZETTERSTEDT, 1842, *Chelifera subangusta* COLLIN, 1961, *Clinocera* (*Hydrodromia*) *nivalis* (ZETTERSTEDT, [1838]) (alle Empididae); *Sciapus basilicus* MEUFFELS & GROO-TAERT 1990, *Rhaphium glaciale* (RINGDAHL, 1920), *R. rivale* (LOEW, 1869), *Teuchophorus monocanthus* LOEW, 1859, *Dolichopus cinctipes* WAHLBERG, 1830, *Medetera inspissata* COLLIN, 1952, *M. signaticornis* LOEW, 1857 og *Medetera zinovjevi* NEGROBOV, 1967 (alle Dolichopodidae).

Flere av disse er også nye for Skandinavia. *Empis* (*Coptophlebia*) *dasychira* MIK, 1878 rapporteres for første gang i Nord-Europa, mens *Medetera zinovjevi* NEGROBOV, 1967 representerer det første funn fra vest-palaearktis.

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Noteworthy records of Heteroptera (Hemiptera) from the middle Oslofjord, SE Norway

Lars Ove Hansen & Carl-Cedric Coulianos

Hansen, L.O. & Coulianos, C.C. 1998. Noteworthy records of Heteroptera (Hemiptera) from the middle Oslofjord, SE Norway. - Fauna norv. Ser. B. 45: 69-76.

The present survey is based on 1606 specimens collected in the middle Oslofjord area in the period 1986-94. A total of 148 species were recorded, representing nearly 34 % of the total number of Heteroptera species known from Norway. The following seven species have previously not been recorded from Norway: *Alleotomus germanicus* E. Wagner, 1939, *Polymerus tepastus* Rinne, 1989, *Stenodema trispinosa* Reuter, 1904, *Trigonotylus caelestialium* (Kirkaldy, 1902), *Phoenicocoris modestus* (Meyer-Dür, 1843) (Miridae), *Physatocheila smreczynski* China, 1952 (Tingidae) and *Aradus truncatus* Fieber, 1861 (Aradidae). Furthermore 41 new regional records are presented. The biology and distribution for some of the most interesting species are briefly discussed.

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INTRODUCTION

The Norwegian Heteroptera fauna is still unsatisfactorily known. This applies both to the species known from the country and to the knowledge of the distribution of species within Norway. Many parts of the country are clearly undercollected, which is evident from the recent catalogue of Norwegian Heteroptera (Coulianos 1998). This present survey contributes to the fauna of the Oslofjord, which is probably the richest in Norway as this and most other insect orders concern (see Aagaard & Hågvar 1987, Andersen & Sjøli 1988). All the investigated localities are situated in and around the middle Oslofjord, and further data on each locality, together with a short description of the habitats, are given in Table 1. The localities are more fully described by Hansen & Ligaard (1992) and Hauge & Hansen (1998). Both malaise-traps (MT), light traps (LT), pit-fall traps and sweep-netting (SN) have been used in the sampling. The collecting methods and sampling periods are given in Table 2. Regional abbreviations are given in accordance with Økland (1981) and the

nomenclature follows Coulianos (1998). Other abbreviations: ZMO=Zoological Museum, University of Oslo; *=new regional records; **=new Norwegian records. The material is deposited at ZMO.

THE SPECIES

A total of 148 species (Table 3) were found among the 1606 collected specimens. Of these, 4 were recorded for the first time from Østfold (Ø), 16 for the first time from Eastern Buskerud (BØ) and 21 for the first time from Vestfold (VE). Seven species have previously not been recorded from Norway.

****Bothynosus pilosus* (Boheman, 1852) (Miridae)**

A single male was taken at Miletjern, June 1988 (LT). This boreal species is previously not recorded from Eastern Buskerud (BØ) and seems rare in SE Norway (Sagvolden & Coulianos 1984).

Table 1. Localities with EIS- and UTM (ED-50) references, and a brief description of the habitats.

Locality	Region	EIS	Municipality	UTM 32V	Habitat
Telemarkslunden, Ekeby	Ø	19	Rygge	NL9484	Deciduous forest: <i>Quercus</i> , <i>Fagus</i>
Gunnarsbybekken, Ekeby	Ø	19	Rygge	NL9484	Brook; pond; <i>Alnus</i>
Miletjern	BØ	28	Nedre-Eiker	NM5824	Euthrophic pond; <i>Alnus</i> , <i>Salix</i>
Ryghsetra	BØ	28	Nedre-Eiker	NM5822	Basiphilous meadow
Underlia	BØ	28	Drammen	NM6624	Mixed forest; dry meadows
Kinnartangen	BØ	28	Røyken	NM7520	Mixed forest; meadows; S-faced slope
Ramvikholmen	BØ	19	Hurum	NL8799	Island; mixed forest; shores
Tofteholmen	BØ	19	Hurum	NL8898	Island; mixed forest; shores
Mølen	BØ	19	Hurum	NL8595	Island; forest; <i>Ulmus</i> , <i>Tilia</i> ; shores
Langøya	VE	19	Våle	NL7896	Island; calcareous forest; dry meadows; shores
Kommersøya	VE	19	Sande	NL7499	Island; calcareous forest; dry meadows; shores

Table 2. Collecting methods and periods (² indicates 2 traps; ¹⁵ indicates 15 traps).

Locality	Malaise-trap	Sweep-net	Light-trap	Pitfall-trap
Telemarkslunden	19 V - 16 X 1992	VI-VIII 1993	None	None
Gunnarsbybekken	19 V - 16 X 1992	VI-VIII 1993	None	None
Miletjern	None	None	V-IX 1988	None
Ryghsetra	1 V-30 IX 1994 ²	None	V-IX 1994	VI-X 1987 ¹⁵
Underlia	1 V-30 IX 1992	V 1989	None	None
	1 V-30 IX 1993	VII 1990		
	1 V-30 IX 1994			
Kinnartangen	2 V-24 X 1991	V 1989	VI 1986?	None
	1 V-1 IX 1993	VII 1990		
Ramvikholmen	None	VIII 1990	None	VI-X 1987 ¹⁵
Tofteholmen	2 V-26 X 1991 ²	None	None	VI-X 1987 ¹⁵
Mølen	None	VII 1989	None	VI-X 1987 ¹⁵
		V-VII 1990		
Langøya	2 V-26 X 1991 ¹⁵	V-VIII 1990		VI-X 1987 ¹⁵
Kommersøya	2 V-26 X 1991	V 1990	None	VI-X 1987 ¹⁵

The biology of this species is poorly understood. It lives among litter in humid habitats, preferably in coniferous woods, swamps and on heaths. Both sexes appear in the summer evenings on the vegetation and can then be taken by sweeping. The males are attracted to light and have often been taken in light-traps.

*****Alleotomus germanicus* E. Wagner, 1939 (Miridae)**

A male was collected in a dry meadow at Tofteholmen, 1 Sept.-26 Oct. 1991 (MT). The trap was located in a

seashore area. Additional records are: AK, Asker: Bjørkås 2 July - 10 Oct. 1995, 2 females (MT) leg. L.O. Hansen & O. Hanssen, coll. ZMO, Nesodden: Fagerstrand 25 Aug. - 2 Sept. 1994 2 males (LT), 8 - 12 Oct. 1995 2 males (LT) leg. S. Kobro, coll. Zoological museum, University of Bergen; BØ, Hurum: Østnæstangen 19 Aug. - 1 Oct. 1995, 1 female (MF), leg. L.O. Hansen, coll. ZMO; AAY, Grimstad Oct. 1920, 1 female leg. Munster, coll. ZMO. The species lives on *Pinus* and is a predator on small arthropods.

Table 3. Hemiptera recorded from the middle Oslofjord in the period 1986–94. * indicates new regional records; ** indicates new Norwegian records.

Family/Species	Østfold (Ø)		Eastern Buskerud (BØ)					Vestfold (VE)			Σ Spm.	
	Telem.- lunden	Gunn bybk	Mile- tjern	Rygh- sætra	Under- lia	Kinnar- tangen	Ramvik- holmen	Tofte- holmen	Mølen	Lang- øya		Komm.- øya
Gerridae												
<i>Limnophorus rufoscutellatus</i>	—	2	—	—	—	—	—	—	—	—	—	2
<i>Gerris lacustris</i>	—	19	—	—	—	—	—	—	—	—	—	19
<i>Gerris odontogaster</i>	—	1	—	—	—	—	—	—	—	—	—	1
Saldidae												
<i>Saldula orthochila</i>	—	—	—	—	1	—	—	—	—	—	—	1
<i>Saldula saltatoria</i>	—	12	—	—	1	1	—	—	—	1	—	15
Miridae												
<i>Monalocoris filicis</i>	—	1	—	1	2	3	—	—	1	—	—	8
<i>Bothynosus pilosus</i>	—	—	*1	—	—	—	—	—	—	—	—	1
<i>Alloeotomus germanicus</i>	—	—	—	—	—	—	—	**1	—	—	—	1
<i>Capsus ater</i>	—	—	—	—	1	—	—	—	—	—	—	1
<i>Charagochilus gyllenhalii</i>	—	—	—	1	—	13	1	—	—	*1	—	16
<i>Polymerus tepastus</i>	—	—	—	**1	—	—	—	—	—	—	—	1
<i>Polymerus unifasciatus</i>	—	—	—	—	—	—	—	—	5	—	—	5
<i>Camptozygum aequale</i>	—	—	—	2	6	—	—	—	—	—	—	8
<i>Liocoris tripustulatus</i>	—	12	—	—	4	—	—	—	—	2	—	18
<i>Orthops basalıs</i>	7	2	—	—	—	6	—	1	1	*3	—	20
<i>Orthops cervinus</i>	—	—	—	—	—	*7	*1	*23	*1	*8	*5	45
<i>Orthops rubricatus</i>	—	—	—	—	—	—	—	1	—	—	—	1
<i>Lygus adspersus</i>	—	—	—	—	1	—	—	—	—	—	—	1
<i>Lygus pratensis</i>	1	—	—	—	—	—	—	—	—	—	—	1
<i>Lygus rugulipennis</i>	5	9	3	1	3	1	2	1	—	2	—	27
<i>Lygus wagneri</i>	—	—	—	—	2	7	—	—	—	—	—	9
<i>Lygocoris contaminatus</i>	5	1	—	*1	—	—	—	—	*1	—	—	8
<i>Lygocoris lucorum</i>	—	—	—	—	—	—	1	—	—	6	—	7
<i>Lygocoris pabulinus</i>	1	3	—	—	—	—	—	—	1	—	—	5
<i>Lygocoris viridis</i>	—	—	—	—	—	1	—	—	6	—	—	7
<i>Dichroscytus rufipennis</i>	—	1	—	—	—	—	—	1	—	—	—	2
<i>Stenotus binotatus</i>	—	—	1	—	—	—	—	—	—	—	—	1
<i>Miris striatus</i>	6	—	—	—	—	—	—	—	—	—	—	6
<i>Calocoris norvegicus</i>	1	—	—	—	—	—	—	—	2	5	—	8
<i>Calocoris striatellus</i>	4	—	—	—	—	—	—	—	—	—	—	4
<i>Adelphocoris quadripunctatus</i>	—	—	31	—	—	—	—	—	—	—	—	31
<i>Adelphocoris lineolatus</i>	—	—	—	—	—	—	—	1	—	—	—	1
<i>Adelphocoris seticornis</i>	—	—	13	—	—	—	—	—	—	—	—	13
<i>Phytocoris dimidiatus</i>	2	—	—	—	—	—	—	—	—	—	—	2
<i>Phytocoris intricatus</i>	—	—	—	—	—	1	—	—	—	—	—	1
<i>Phytocoris longipennis</i>	2	1	—	—	—	—	—	—	—	—	—	3
<i>Phytocoris populi</i>	2	—	—	—	—	1	—	—	—	—	—	3
<i>Phytocoris tiliae</i>	6	47	—	—	—	1	—	—	—	—	—	54
<i>Phytocoris varipes</i>	—	—	—	—	—	—	*1	—	—	4	—	5
<i>Pantilius tunicatus</i>	—	*1	—	—	—	—	—	—	—	—	—	1

Table 3. Cont.

Family/Species	Østfold (Ø)		Eastern Buskerud (BØ)					Vestfold (VE)			Σ Spm.	
	Telem.- lunden	Gunn bybk	Mile- tjern	Rygh- sætra	Under- lia	Kinnar- tangen	Ramvik- holmen	Tofte- holmen	Mølen	Lang- øya		Komm.- øya
<i>Stenodema calcarata</i>	—	1	—	1	—	6	—	—	—	3	—	11
<i>Stenodema holsata</i>	—	—	—	—	1	1	1	—	—	—	—	3
<i>Stenodema laevigata</i>	4	1	1	—	—	5	5	13	20	24	2	75
<i>Stenodema trispinosa</i>	—	—	—	—	—	—	—	—	—	**3	—	3
<i>Notostira elongata</i>	1	1	—	—	—	*2	—	—	—	—	—	4
<i>Trigonotylus caelestialium</i>	—	—	—	—	—	—	—	**1	—	—	—	1
<i>Trigonotylus ruficornis</i>	—	—	—	—	—	—	—	—	—	*3	—	3
<i>Leptopterna dolabrata</i>	—	—	—	1	—	1	—	—	—	—	—	2
<i>Leptopterna ferrugata</i>	—	—	—	—	—	—	—	—	3	2	—	5
<i>Pithanus maerkeli</i>	—	—	—	—	—	—	—	—	2	—	—	2
<i>Dicyphus constrictus</i>	*2	—	—	—	—	8	—	—	—	—	—	10
<i>Dicyphus errans</i>	—	—	—	—	—	—	—	—	—	*1	—	1
<i>Dicyphus globulifer</i>	7	—	—	—	—	—	—	—	—	—	—	7
<i>Dicyphus stachydis</i>	—	—	—	—	—	—	—	—	*2	—	—	2
<i>Orthocephalus coriaceus</i>	2	—	—	—	—	—	—	—	—	—	—	2
<i>Campyloneura virgula</i>	—	—	—	—	—	—	*1	*1	*1	—	—	3
<i>Halticus apterus</i>	—	—	—	—	—	2	—	—	—	—	—	2
<i>Strongylocoris leucocephalus</i>	—	—	—	—	2	—	—	—	—	—	*2	4
<i>Orthotylus bilineatus</i>	—	—	—	1	—	—	—	—	—	—	—	1
<i>Orthotylus flavosparvus</i>	—	—	—	—	—	—	—	—	—	17	1	18
<i>Orthotylus ericetorum</i>	—	—	—	1	—	3	—	—	—	—	—	4
<i>Orthotylus marginalis</i>	—	49	3	—	—	—	—	—	—	—	—	52
<i>Orthotylus viridinervis</i>	—	—	—	—	—	*1	—	—	—	—	—	1
<i>Mecomma ambulans</i>	—	—	—	—	—	1	—	—	2	—	—	3
<i>Globiceps flavomaculatus</i>	—	—	1	—	—	—	—	—	—	—	—	1
<i>Blepharidopterus angulatus</i>	2	19	1	—	—	1	—	1	—	2	—	26
<i>Cyllecoris histrionicus</i>	10	—	—	—	—	—	—	—	—	—	—	10
<i>Dryophilocoris flavoquadri- maculatus</i>	5	—	—	—	—	—	—	—	—	—	—	5
<i>Pilophorus cinnamopterus</i>	—	—	—	—	—	—	—	—	2	—	—	2
<i>Pilophorus clavatus</i>	—	—	—	—	—	4	—	—	—	—	—	4
<i>Lopus decolor</i>	—	—	—	1	—	125	—	—	—	—	—	126
<i>Placochilus seladonicus</i>	—	—	—	—	—	1	—	—	2	—	—	3
<i>Orthonotus rufifrons</i>	—	—	—	—	2	—	—	—	—	—	—	2
<i>Psallus ambiguus</i>	—	2	1	—	—	—	—	—	—	—	—	3
<i>Psallus betuleti</i>	—	—	*1	—	*1	—	—	—	—	—	—	2
<i>Psallus falleni</i>	*3	*4	*4	—	—	—	—	—	—	*1	—	12
<i>Psallus haematodes</i>	2	6	—	—	—	—	1	—	—	—	—	9
<i>Psallus lepidus</i>	—	—	—	—	—	*2	—	—	*2	—	—	4
<i>Psallus mollis</i>	53	—	—	—	—	—	—	—	—	—	—	53
<i>Psallus perrisi</i>	2	—	—	—	—	—	—	—	—	—	—	2
<i>Psallus varians</i>	12	—	—	—	—	—	—	—	—	—	—	12
<i>Compsidolon salicellus</i>	—	—	—	—	—	*1	—	—	—	—	—	1
<i>Atractotomus magnicornis</i>	2	—	—	—	—	2	—	1	—	*1	—	6
<i>Atractotomus mali</i>	—	1	—	—	2	1	—	—	—	—	—	4
<i>Plagiognathus albipennis</i>	—	—	1	—	1	—	—	—	—	103	—	105

Table 3. Cont.

Family/Species lunden	Østfold (Ø)		Eastern Buskerud (BØ)					Vestfold (VE)			Σ Spm.	
	Telem.- bybk	Gunn- tjern	Mile- sætra	Rygh- lia	Under- tangen	Kinnar- holmen	Ramvik-Tofte- holmen	Mølen- øya	Lang- øya	Komm.-		
<i>Europiella artemisiae</i>	—	2	—	—	2	10	—	—	—	7	—	21
<i>Plagiognathus chrysanthemi</i>	—	—	4	2	—	4	—	—	—	*25	—	35
<i>Chlamydaus pulicarius</i>	—	—	—	—	—	2	—	—	—	—	—	2
<i>Chlamydaus pullus</i>	—	—	—	1	25	—	—	—	—	*34	—	60
<i>Phoenicocoris modestus</i>	—	—	—	—	—	—	—	—	**3	—	—	3
<i>Phoenicocoris obscurellus</i>	—	—	—	—	—	—	—	—	3	—	—	4
Anthocoridae												
<i>Temnostethus gracilis</i>	*4	*4	—	—	—	—	—	—	—	—	—	8
<i>Anthocoris nemoralis</i>	—	—	—	—	1	1	3	1	—	*8	—	14
<i>Anthocoris nemorum</i>	9	91	—	19	2	24	11	—	28	2	—	186
<i>Acompocoris pygmaeus</i>	—	—	—	*2	*2	—	—	—	—	—	—	4
<i>Orius minutus</i>	—	—	—	1	—	1	—	—	1	—	—	3
<i>Orius niger</i>	—	—	—	—	2	—	—	—	—	—	—	2
<i>Orius vicinus</i>	—	—	—	—	—	—	—	*2	—	*2	—	4
<i>Xylocoris cursitans</i>	—	—	—	—	1	—	—	—	—	—	—	1
Microphysidae												
<i>Loricula elegantula</i>	—	—	—	—	—	—	—	—	—	—	*1	1
<i>Loricula pselaphiformis</i>	—	—	—	—	—	1	—	—	—	—	—	1
<i>Myrmedobia exilis</i>	—	—	—	—	—	—	—	3	—	—	—	3
Nabidae												
<i>Himacerus mirmicoides</i>	—	—	—	—	—	—	—	—	*9	—	—	9
<i>Nabicula flavomarginatus</i>	—	—	—	1	—	—	—	—	—	—	—	1
<i>Nabis brevis</i>	—	—	6	1	—	4	—	—	—	—	—	11
<i>Nabis ferus</i>	8	—	—	—	—	—	—	2	3	*3	—	16
<i>Nabis rugosus</i>	—	—	—	—	—	—	1	1	—	—	4	6
Tingidae												
<i>Derephysia foliacea</i>	—	—	1	3	4	—	—	2	—	—	—	10
<i>Physatocheila smreczynskii</i>	—	—	—	—	—	—	—	**9	—	—	—	9
Piesmatidae												
<i>Piesma quadratum</i>	—	—	—	—	—	—	—	2	—	—	—	2
Lygaeidae												
<i>Nithecus jacobaeae</i>	—	—	—	—	2	—	—	—	—	21	—	23
<i>Nysius helveticus</i>	—	—	—	—	—	*1	—	—	—	*2	—	3
<i>Nysius thymi</i>	—	3	—	—	2	20	1	2	5	28	—	61
<i>Ortholomus punctipennis</i>	—	—	—	—	—	—	—	1	—	*1	—	2
<i>Kleidocerys resedae</i>	—	1	—	—	—	—	—	—	—	—	—	1
<i>Cymus glandicolor</i>	—	—	—	—	—	—	—	—	—	1	—	1
<i>Drymus brunneus</i>	—	—	—	—	—	—	—	—	2	—	6	8
<i>Drymus ryei</i>	—	—	—	—	—	1	—	—	—	1	—	2
<i>Drymus sylvaticus</i>	—	—	—	—	3	—	—	—	—	—	—	3

Table 3. Cont.

Family/Species	Østfold (Ø)		Eastern Buskerud (BØ)						Vestfold (VE)			Σ Spm.
	Telem.- lunden	Gunn bybk	Mile- tjern	Rygh- sætra	Under- lia	Kinnar- tangen	Ramvik- holmen	Tofte- holmen	Mølen	Lang- øya	Komm- øya	
<i>Eremocoris abietis</i>	—	—	—	—	—	—	—	—	—	—	2	2
<i>Eremocoris plebejus</i>	—	—	—	—	—	—	2	—	1	—	—	3
<i>Scolopostethus thomsoni</i>	—	1	—	—	—	1	—	—	—	1	—	3
<i>Gastrodes abietum</i>	—	—	—	1	—	—	—	1	—	1	—	3
<i>Trapezonotus arenarius</i>	—	—	—	1	3	—	—	2	—	*3	—	9
<i>Trapezonotus desertus</i>	—	—	—	—	—	—	—	—	—	*1	—	1
<i>Sphragisticus nebulosus</i>	—	—	—	—	1	—	—	—	—	—	—	1
<i>Rhyparochromus pini</i>	—	—	—	1	4	—	—	—	—	1	—	6
<i>Ligyrocoris sylvestris</i>	—	—	—	—	—	—	—	—	—	1	—	1
Coreidae												
<i>Coreus marginatus</i>	—	—	—	—	1	1	—	—	—	—	—	2
Rhopalidae												
<i>Corizus hyoscyami</i>	—	—	—	—	—	—	—	—	—	8	—	8
<i>Rhopalus parumpunctatus</i>	—	—	—	—	—	—	—	—	—	*1	—	1
<i>Rhopalus subrufus</i>	—	—	—	—	—	1	—	—	—	8	—	9
<i>Stictopleurus crassicornis</i>	—	—	—	—	4	—	—	—	—	—	—	4
<i>Myrmus miriformis</i>	—	—	—	—	—	—	—	—	5	—	—	5
Pentatomidae												
<i>Aelia acuminata</i>	1	—	—	—	—	—	—	—	—	2	—	3
<i>Neottiglossa pusilla</i>	—	—	—	—	—	3	—	—	—	—	—	3
<i>Palomena prasina</i>	1	—	—	—	—	1	2	—	2	2	—	8
<i>Holcostethus vernalis</i>	—	—	—	—	1	—	—	—	—	1	—	2
<i>Chlorochroa juniperina</i>	—	—	—	—	1	—	—	—	—	—	—	1
<i>Dolycoris baccarum</i>	1	—	—	1	9	—	—	—	—	—	—	11
<i>Eurydema oleracea</i>	—	—	—	—	4	—	—	—	—	—	—	4
<i>Pentatoma rufipes</i>	2	—	—	—	—	—	—	—	—	—	—	2
Acanthosomatidae												
<i>Acanthosoma haemorrhoidae</i>	2	1	—	—	—	—	—	—	—	—	—	3
<i>Elasmotethus interstinctus</i>	2	—	—	1	—	2	—	—	—	—	—	5
<i>Elasmucha grisea</i>	6	—	—	—	—	1	—	—	—	—	—	7
Cydnidae												
<i>Sehirus luctuosus</i>	—	—	—	—	1	—	—	—	—	—	—	1
Aradidae												
<i>Aradus depressus</i>	—	1	—	—	2	—	—	—	—	—	—	3
<i>Aradus truncatus</i>	—	—	—	—	—	**1	—	—	—	—	—	1
Σ Spp	36	31	16	24	37	48	15	24	28	46	8	148
Σ Spm	185	300	73	47	107	289	34	74	116	358	23	1606

*****Polymerus tepastus* Rinne, 1989 (Miridae)**

A single male was taken at Ryghsetra, July 1994 (MT) in a calcareous meadow. This species has been confused with the closely related *P. microphthalmus* (E. Wagner, 1951) (see Rinne 1989). *P. tepastus* prefers *Galium boreale*, but can sometimes be found on other tall *Galium* species.

***Adelphocoris quadripunctatus* (Fabricius, 1794) (Miridae)**

A total of 31 males were collected at Miletjern, July-Aug. 1988 (LT). The species is previously recorded twice from Norway, both from Eastern Buskerud (BØ): i.e. Ringerike: Norderhov, 1 male 1845, leg. J.H.S. Siebke (ZMO) and Ringerike, 1 female 1904, leg. H. Warloe (ZMO). This species is considered rare in Sweden. It is associated with *Urtica*.

*****Stenodema trispinosa* Reuter, 1904 (Miridae)**

A single larva 3-4 July 1990 (SN), a male 2-28 May 1991 (MT) and another male 1 Sept.-26 Oct. 1991 (MT), all Langøya in a dry, calcareous meadow in a seashore area. Additional records: Ø, Rygge: Larkollen 4 June 1963, 1 specimen, Moss: Alby 14 July 1969, 2 specimens leg. G. Taksdal, coll. FED (Norwegian Forest research institute) Ås; VE, Tønsberg, Nøtterøy, Tjøme and Sem 1982 - 1983, 40 specimens leg. A. Fjeldså, coll. Zoological museum, University of Bergen. The species inhabits humid areas, particularly seashores.

*****Trigonotylus caelestialium* (Kirkaldy, 1902) (Miridae)**

A single female taken at Tofteholmen, 31 July - 1 Sept. 1991 (MT) on a shore meadow. Additional records are: AK, Ås: 8 Aug. 1969, three males leg. G. Taksdal, 22 June 1973, one female leg. T. Rygg, 15 Aug. 1973, one male leg. H. Duesund, all in coll. FED (Norwegian Forest research institute) Ås; Nesodden: Fagerstrand 6 - 7 July 1995, 1 male (LT) leg. S. Kobro coll. Zoological museum, University of Bergen; RY, Jæderen 14 Aug. 1901, 2 females leg. H. Warloe, coll. ZMO. This species has been confused with *T. ruficornis* (Geoffroy, 1785) and can sometimes be found in company with that species. It is probably not rare in southern Norway.

****Campyloneura virgula* (Herrich-Schäffer, 1836) (Miridae)**

A single female taken at Ramvikholmen, 12 Aug. 1990 (SN); a female Tofteholmen, 7-31 July 1991 (MT) in an old spruce forest; and a female Mølen, 12-14 July 1989 (SN). The species inhabits continuous deciduous forests, and all these localities comprise this kind of habitat. It is previously recorded from Ø, VE, VAY and AAY.

*****Phoenicocoris modestus* (Meyer-Dür, 1843) (Miridae)**

3 females collected at Mølen, July 1990 (SN). Furthermore, 1 male and 2 females are present in the collections of ZMO, all from Eastern Buskerud (BØ): Ringerike, 1902 leg. H. Warloe. The species is associated with pine (*Pinus silvestris*).

****Himacerus mirmicoides* (O. Costa, 1834) (Nabidae)**

7 larvae July 1989 and 2 larvae July 1990, Mølen (SN). The species is associated with warm and dry habitats. In Norway it is previously recorded from TEY, AAY and VAY.

*****Physatocheila smreczynskii* China, 1952 (Tingidae)**

1 larva 2-28 May, 5 females 28 May-7 July, 1 larva 7-31 July, 1 larva 31 July-1 Sept. and 1 larva 1 Sept.-26 Oct., Tofteholmen, 1991 (MT), in an old spruce forest (*Picea abies*) with high continuity. This species lives on *Sorbus*, in Scandinavia mostly on *S. aucuparia*.

*****Aradus truncatus* Fieber, 1861 (Aradidae)**

A single female was taken at Kinnartangen, 10 June 1986. The exact circumstances around the record can not be recalled, but it may have been taken in a light-trap. An additional record is: VE, Våle: Mulåsen 6 June - 19 Sept. 1995, a single male in a window trap, leg. L.O. Hansen & O. Hanssen, coll. ZMO. There are very few N European records of this species, and only a few records from Uppland (Up) in Sweden are present after 1950 (Coulianos 1989). This rare species develops in old aspens (*Populus tremulae*) and several huge aspens are present at the locality. The importance of large, old aspens in different degree of decay as a habitat for many insects living on fungi or decayed wood is very great. Some very interesting records of insects from such habitats have recently been made, among them the bark-bug *Mezira tramulae* (Buttner, 1822) (Fjellberg et al. 1996).

DISCUSSION

The material represents nearly 34 % of the species of Heteroptera recorded in Norway. Several of the recorded species are inhabitants of meadows and associated with herbs (e.g. *Charagochilus gyllenhalii*, *Polymerus unifaciatatus*, *Lygocoris lucorum*, *Phytocoris varipes*, *Placochilus seladonicus*, *Plagiognathus albipennis*, *P. chrysanthemi*, *Himacerus mirmicoidea*, *Corizus hyoscyami*, *Rhopalus subrufus* and *Holcostethus vernalis*). Most of these are at their northern limit of distribution in this area. Some of the recorded species are associated with deciduous forests of high continuity (e.g. *Orthops cervinus*, *Lygocoris viridis*, *Campolyneura virgula*, *Psallus lepidus* and *Antochoris nemoralis*). Most of them are considered rare. Several groundliving and arboreal species are absent in the material, probably due to the fact that malaise-trap sampling alone is certainly a less effective sampling method for this group. Even though light trapping take few species, some of the rarer species were taken by this method (i.e. *Bothynosus pilosus*, *Adelphocoris quadripunctatus* and perhaps also *Aradus truncatus*). The Heteroptera fauna in this area is from a national point of view interesting, in particular the communities associated with deciduous forests and dry meadows. Fortunately, some of the most remarkable localities in this investigation are already protected (i.e. Mølen, Tofteholmen, Langøya, Kommersøya). The protection of Tofteholmen, however, is old (i.e. 1919) and should be updated.

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SAMMENDRAG

Interessante funn av Hemiptera fra midtre Oslofjord, Sørøst Norge

Denne undersøkelsen baserer seg på 1606 innsamlede eksemplarer samlet i midtre Oslofjord i perioden 1987-

94. Følgende syv arter er tidligere ikke rapportert fra Norge: *Alleotomus germanicus* E.Wagner, 1939, *Polymerus tepastus* Rinne, 1989, *Stenodema trispinosa* Reuter, 1904, *Trigonotylus Caelestium* (Kirkaldy, 1902) *Phoenicocoris modestus* (Meyer-Dür, 1843) (Miridae), *Physatocheila smreczynski* China, 1952 (Tingidae) og *Aradus truncatus* Fieber, 1861 (Aradidae). Tilsammen 41 nye regionsfunn angis. Biologi og utbredelse til noen av de mer interessante artene er kort diskutert.

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Notes on Norwegian Coleoptera. 4

Lars Ove Hansen, Sindre Ligaard & Bjørn Sagvolden

Hansen, L.O., Ligaard, S. & Sagvolden, B. 1998. Notes on Norwegian Coleoptera. 4. - Fauna norv. Ser. B 45: 77-82.

The following 14 species of Coleoptera are recorded from Norway for the first time: *Bembidion obtusum* Audinet-Serville, 1821, *Badister sodalis* (Duftschmid, 1812), *Bradycellus verbasci* (Duftschmid, 1812) (Carabidae), *Hygrotus confluens* (Fabricius, 1787), *Hydaticus aruspex* Clark, 1864, *Graphoderes cinereus* (Linnaeus, 1758) (Dytiscidae), *Helophorus obscurus* Mulsant, 1844 (Helophoridae), *Rybaxis longicornis* (Leach, 1817) (Staphylinidae), *Aphodius paykulli* Bedel, 1908 (Scarabaeidae), *Trichoceble memnonia* (Kiesenwetter, 1861) (Melyridae), *Alphitophagus bifasciatus* (Say, 1823) (Tenebrionidae), *Donacia brevicornis* Ahrens, 1810 (Chrysomelidae), *Hypera vidua* Gene, 1837 and *Tapinotus sellatus* (Fabricius, 1794) (Curculionidae). New records of *Agonum munsteri* (Hellén, 1935), *Harpalus calceatus* (Duftschmid, 1812) (Carabidae) and *Bryaxis curtisi* (Leach, 1817) (Staphylinidae) are presented, as well as the distribution of the *Scolytus laevis* Chapuis, 1873 (Curculionidae) in Norway.

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INTRODUCTION

The present account reports 14 species of Coleoptera new to Norway, as well as some other noteworthy records. The nomenclature follows Lundberg (1995), the format for the faunistic records follows Økland (1981) and Lundberg (1995) and the European Invertebrate Survey grids (EIS) are given in accordance with Økland (1977). The nomenclature of the plant species follows Lid & Lid (1994). Species «new to Norway» are marked with an asterisk (*). The following abbreviations are used in the text: BAS=Bjørn A. Sagvolden; SLI=Sindre Ligaard; ZMO=Zoological Museum, University of Oslo; ZMB=Zoological Museum, University of Bergen.

THE RECORDS

Carabidae

**Bembidion obtusum* Audinet-Serville, 1821

On 26 August 1995 several specimens were found at Ø, Moss: Jeløy, Alby (EIS 19) (leg. & coll. SLI) in an

open sunny farmland area, together with *B. lampros* (Herbst, 1784), *B. properans* (Stephens, 1828) and *Syntomus foveatus* (Fourcroy, 1785). On 12 September 1995 a single specimen was found in a pasture field at Ø, Hvaler: Kjærkøy, Sandbrekke (EIS 12) (leg. & coll. SLI). The species is according to Lundberg (1995) found in S Sweden north to Närke (NÄ). It is also recorded from Denmark, but not Finland. *B. obtusum* prefers exposed or faintly shaded, moderately dry clay-soil, usually in agricultural areas (Lindroth 1986).

Agonum munsteri (Hellén, 1935)

On 2 July 1994 several specimens were found on a *Sphagnum*-bog together with *Pterostichus rhaeticus* Heer, 1837 (Carabidae) and *Acylophorus wagenschieberi* Kiesenwetter, 1850 (Staphylinidae) at HES, Grue: Kirkenær (EIS 47) (leg. & coll. SLI). Later found several times in the same area. The species is previously recorded from HES and NTi (Strand 1960). However, only one record could be traced, i.e. HES, Grue: leg. U. Saalas (ZMB). *A. munsteri* is according to Lundberg (1995) found in N Sweden south to Östergötland (ÖG) and Värmland (VR). It is also recorded from Finland and Denmark (Lundberg 1995, Hansen

1996). The species prefers ombrotrophic bogs, often at the border of small dystrophic lakes and ponds, usually in wet *Sphagnum* (Lindroth 1986).

****Badister sodalis* (Duftschmid, 1812)**

A few specimens were found at VE, Tjøme: Moutmarka (EIS 19) 1 July 1993 (leg. & coll. SLI) at a small stream surrounded by alder (*Alnus* spp.). Later, on 27 May 1996, one specimen was found at TEY, Kragersø: Jomfruland (EIS 11) (leg. & coll. SLI) in hazel forest on rocky ground. The species is according to Lundberg (1995) found in Sweden north to Gästrikland (GÅ). It is also recorded from Denmark, but not Finland. *B. sodalis* prefers moist, mull-rich, clayey soil, predominantly in deciduous woodland (Lindroth 1986). It is especially abundant in forest swamps and at the margin of temporary pools.

***Harpalus calceatus* (Duftschmid, 1812)**

A single specimen was found under a stone on sandy ground in a SW faced slope at AK, Vestby: Krokstrand (EIS 28) 20 August 1995 (leg. & coll. SLI). This species has not been found in Norway since W.M. Schøyen recorded it at AK, Asker: Leangbukta (EIS 28) in 1879. Unfortunately, the recorded specimen could not be traced at any of the larger Coleoptera collections in Norway. The species is in Sweden found north to Uppland (Up) (Lundberg 1995). It is also recorded from Denmark and Finland. According to Lindroth (1986), *H. calceatus* is a rare species, usually swarming by night and sometimes attracted to light. It is a xerophilous species, occurring on open, sandy ground with sparse vegetation or in agricultural areas (Lindroth 1986).

****Bradycellus verbasci* (Duftschmid, 1812)**

Several specimens were dug out from sandy soil 27 June 1990 at VAY, Lyngdal: Korshavn (EIS 1) (leg. & coll. SLI). Later, on 24 July 1993, some specimens were found in gravelly soil at a lake at VAY, Lindesnes: Vigeland (EIS 1) (leg. & coll. SLI). A single specimen was found under seaweed at VAY, Farsund: Lomsesanden (EIS 1) 22 July 1992 (leg. & coll. SLI and F. Ødegaard), and the next day three specimens were found at Mandal: Mandal (EIS 2) (leg. & coll. SLI and F. Ødegaard). A single specimen has also been recorded from VE, Tjøme: Moutmarka (EIS 19) 29 May 1993 (leg. & coll. SLI) under a stone in a grass-meadow near a small stream about 500 meters from the coast. According to Lundberg (1995) the species is found in S Sweden north

to Bohuslän (BO). It is also found in Denmark but not Finland. In Sweden it seems to spread rapidly, and is now found locally common in several places. *B. verbasci* prefers open or moderately shaded ground, usually on sandy or gravelly soil (Lindroth 1986).

Dytiscidae

****Hygrotus confluens* (Fabricius, 1787)**

A single specimen was netted under water at Ø, Fredrikstad: Borge Varde (EIS 20) 2 May 1992 (leg. T. J. Olsen, coll. BAS). Several specimens were found in a «ditch» with sparse vegetation and clayey bottom at Ø, Råde: Tasken (EIS 19) 21 June 1992 (leg. & coll. SLI). Later, on 29 August 1992, some specimens were found at AK, Vestby: Hol Gård (EIS 28) (leg. & coll. SLI) in a recently constructed garden silt pond. Several specimens were later found at Ø, Eidsberg: Sulerud (EIS 29) 21 August 1993 (leg. & coll. SLI) in a pond. *H. confluens* is fairly common in Denmark and Sweden (Nilsson & Holmen 1995). The Norwegian records agree with the biology described by Nilsson & Holmen (op. cit.), who state that *H. confluens* prefers ponds of recent origin.

****Hydaticus aruspex* (Clark, 1864)**

On 13 August 1993 several specimens were sifted at a shore with rich vegetation at Ø, Marker: Gjølsjø (EIS 21) (leg. & coll. SLI). Several specimens were found at the same locality 14 May 1994 (leg. & coll. SLI & F. Ødegaard). The locality is an eutrophic and almost overgrown lake. *H. aruspex* is only known from three localities in Denmark. It is widespread but not common in Sweden north to Norrbotten (NB) (Nilsson & Holmen 1995, Lundberg 1995). The main habitat is small, moss-ringed pools in fens or bogs. The beetles are often found hiding in the moss (Nilsson & Holmen 1995).

****Graphoderes cinereus* (Linnaeus, 1758)**

On 13 August 1993 several specimens were sifted at a shore with rich vegetation at Ø, Marker: Gjølsjø (EIS 21) (leg. & coll. SLI). This is the same locality as for *H. aruspex*. Several specimens were found at the same locality 14 May 1994 (leg. & coll. SLI & F. Ødegaard). In Sweden mainly in Skåne (SK), but records are present north to Dalarna (DR) (Lundberg 1995). It is also found in Denmark and Finland. The main habitat seems to be ponds and shallow lakes with rich vegetation (Nilsson & Holmen 1995).

Helophoridae

**Helophorus obscurus* Mulsant, 1844

Several specimens were found in a small stream with clayey bottom at VE, Tønsberg: Gullkronen (EIS 19) 11 November 1995 (leg. & coll. A. Fjellberg). The locality is park forest dominated by huge oaks (*Quercus* spp.) and beeches (*Fagus sylvatica*). The species is in Sweden found north to Västergötland (VG) (Lundberg 1995). It is also recorded from Denmark and Finland. It prefers mainly stagnant, neutral or basic water, and is found usually in shallow, eutrophic, grassy, often temporary ponds with somewhat clayey bottom (Hansen 1987). Sometimes also at the grassy edges of slower reaches of fairly, soft-bottomed streams.

Staphylinidae

Bryaxis curtisi (Leach, 1817)

A single specimen was sifted from humus under decaying logs in a shady, humid, mixed forest at TEY, Porsgrunn: Eidanger (EIS 18) 17 June 1983 (leg. & coll. SLI). The species has previously been recorded from HOY, Osterøy: Skaftå (EIS 40), where a single specimen was found 6 June 1974 (Hauge et al. 1975). The species is found in six Swedish, and all Danish districts except Northwest Zealand (Lundberg 1995, Hansen 1996). It is not recorded from Finland. *Bryaxis* spp. are usually found in leaf litter, moss, caves or sometimes deep in the soil (Besuchet 1974).

**Rybaxis longicornis* (Leach, 1817)

Several specimens were recorded at TEY, Kragerø: Valberg (EIS 11) 28 July 1991 (leg. & coll. SLI, O. Hanssen & F. Ødegaard). Furthermore, two specimens were recorded at VE, Tønsberg: Semsvannet (EIS 19) 2 May 1993 (leg. & coll. F. Ødegaard), and some weeks later a single specimen was recorded at Ø, Hvaler: Arekilen (EIS 12) 28 May 1993 (leg. & coll. F. Ødegaard). Furthermore, a single female was sifted from a tuft of grass at the shore of a small pond at VE, Tjøme: Moutmarka (EIS 19) 19 June 1993 (leg. & coll. BAS). Later, a male was sifted from leaves and litter under a small oak (*Quercus* sp.) near the same pond 29 October 1993 (leg. & coll. BAS). The location was most certainly a hibernating place for small rodents. This is a widespread species, found in nearly all Swedish districts north to Västerbotten (VB) (Lundberg 1995) and present in all the Danish districts (Hansen 1996). It is also recorded from Finland (Lundberg 1995). The species prefers swampy localities (Besuchet 1974).

Scarabaeidae

**Aphodius paykulli* Bedel, 1908

Several specimens were found under cow dungs at TEY, Kragerø: Jomfruland (EIS 11) 2 October 1993 (leg. & coll. SLI). The locality is at the NW part of the island, on a sandy grass meadow. The species is in Sweden found north to Dalarna (DR) (Lundberg 1995). It is also recorded from Denmark, but not Finland. *A. paykulli* is, like most other *Aphodius* species, usually found in dung (Machatschke 1969).

Melyridae

**Trichoceble memnonia* (Kiesenwetter, 1861)

A single specimen was found under loose bark on a huge dead pinetree in an old pine-forest at TEI, Kviteseid: Kvitsund (EIS 17) 29 July 1988 (leg. & coll. SLI). Furthermore, a few specimens were taken in window-traps in an old oak-grove at Ø, Råde: Tomb, 2-26 June 1995 leg. J.I.I. Båtvik & O. Hanssen (det. & coll. O. Hanssen), and a single specimen was recorded at BØ, Øvre-Eiker: Tryterud, July 1991 leg. J. Stokland (det. & coll. F. Ødegaard). According to Lundberg (1995), the species is in Sweden found north to Västmanland (VS). It is also recorded from Denmark, but not Finland. Species belonging to the genus *Trichoceble* are usually found in association with dry branches and old trees (Lohse 1979).

Tenebrionidae

**Alphitophagus bifasciatus* (Say, 1823)

Several specimens were sifted from humid, decaying straws mixed with feces below some rabbit-cages at TEI, Kviteseid: Kvitsund (EIS 17) 12 June 1984 (leg. & coll. SLI). A single specimen was later sifted from horse-droppings in a stable in AK, Oslo: Skøyen (EIS 28) 2 August 1986 (leg. & coll. SLI). According to Lundberg (1995) the species is in Sweden found north to Dalarna (DR). It is also recorded from Denmark and Finland. The species may be found in old decaying, deciduous trees, in rotten or mouldy vegetables, or sometimes in stables (Kaszab 1969).

Chrysomelidae

**Donacia brevicornis* Ahrens, 1810

Several specimens were picked at Ø, Spydeberg: Lyseren, at the southern shore of the lake (EIS 29), from tops of *Schoenoplectus lacustris* surrounded by *Equisetum palustre*, *Typha angustifolia*, *Nymphaea alba* and *Nuphar lutea*. First capture was 28 July 1993, and later

at the same place in June 1994 and July 1995. According to Lundberg (1995) the species is in Sweden found north to Norrbotten (NB). It is also recorded from Denmark and Finland.

Curculionidae

**Hypera vidua* Gene, 1837

A single specimen was found at Ø, Moss: Biløya (EIS 19) 28 July 1996 (leg. & coll. SLI) among sand and pebbles under roots of *Geranium sanguineum*. In August the same year another specimen was found at the same locality. These records seem to be quite remarkable, as the nearest population is located on the island of Gotland (GO) in Sweden. It is not recorded from any other Swedish district, nor from Denmark, Finland, Karelia Rossica or the Baltic countries (Lundberg 1995). A possible explanation could be if Biløya have been used as a so called «ballast island» as several other small islands in the Oslofjordarea. Ships usually carried ballast as soil or pebbles which were unloaded before entering the harbours in the area (e.g. Oslo, Drammen, Moss). Some plant species have been introduced as seeds this way, and we may believe that several insect species were introduced as egg, larva, pupa or even imago in the same way. However, Biløya is not known to be used as «ballast island». The species is associated with *Geranium* spp. (Kippenberg 1983).

**Tapinotus sellatus* Fabricius, 1794

Several specimens were netted at a huge population of *Lysimachia thyrsoiflora* at Ø, Halden: Rødvatn (EIS 20) 15 June 1996 (leg. & coll. SLI). The locality was situated at the NW part of the lake. According to Lundberg (1995) the species is in Sweden found north to Västmanland (VS). It is also recorded from Denmark and Finland. The larvae bore in the stems of *Lysimachia vulgaris* (Lohse 1983), but may in Scandinavia also accept *L. thyrsoiflora* (pers. obs.). The beetles hibernate in moss and leafage.

Scolytus laevis Chapuis, 1873

This species is the only dutch elm-disease (DED) vector of importance in Norway. Since the aggressive strain of DED arrived here around 1988, the focus on the vectors was intensified. Consequently, several new records have been made since the distribution of the species was given by Lekander et al. (1977). An extensive hatching from bolts of elms (*Ulmus glabra*) killed by DED in the Oslofjord-area in 1991-92 revealed

only *S. laevis*. The Norwegian records of *S. laevis* are listed in Table 1, and the distribution is given in Figure 1. The northernmost records are from Sunndalen (MRI), but Hansen & Sømme (1994) showed that the cold hardiness of the species may indicate a distribution even further to the north. In Norway elm is found as far north as Beiarn (NSI) at the Arctic Circle.

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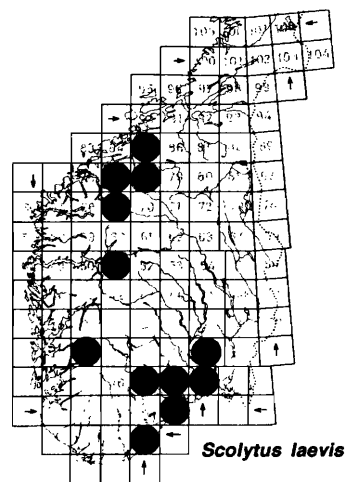


Figure 1
The distribution of *Scolytus laevis* in Norway.

Table 1. The Norwegian records of *Scolytus laevis* Chapuis, 1873. Abbreviations: ASt=Andreas Strand; BB=Bjørnar Borgeren; DED=Dutch Elm Disease; Fød=Frode Ødegaard; KEZ=Karl E. Zackariassen; LOH=Lars O. Hansen; NISK=Norwegian Forest Research Institute, Ås; OHa=Oddvar Hanssen; SOH=Stig O. Hansen, TMü=Thomas Münster; ZMB=Zoological Museum, University of Bergen; ZMO=Zoological Museum, University of Oslo; *=found dead.

Reg.	Municipality	Locality	EIS	Date	N	Leg. (coll.)	Comments
Ø	Fredrikstad	Rauøy	19			ASt (ZMB)	
Ø	Fredrikstad	Rauøy	19	9-VII-1960	1	MJY (NISK)	Leg. E. Mjølid
AK	Asker	Askengen	28	-	1	TMü (ZMB)	
AK	Asker	Asker	28	1-VIII-1918	1	TMü (ZMO)	
AK	Asker	Nesdalen	28	5-VII-1918	21	TMü (ZMO)	
AK	Asker	Skaugumåsen	28	5-VI-1921	3	TMü (ZMO)	
AK	Bærum	Ostøya	28	16-VI-1988	a few	SOH (SOH)	On bolts of elm and oak
AK	Oslo	Tøyen	28	-	4	TMü (ZMO)	
AK	Oslo	«Kristiania»	28	-	11	TMü (ZMO)	Leg. Esmark, TMü a. o.
AK	Oslo	Bygdøy	28	-	2	ASt (ZMB)	
AK	Oslo	Bygdøy	28	01-VII-1987	a few	SOH (SOH)	On elm
AK	Oslo	Bygdøy	28	13-VIII-1987	a few	SOH (SOH)	On elm
AK	Oslo	Langøyene	28	10-VI-1980	1	KEZ (KEZ)	Handpicking
AK	Oslo	Langøyene	28	13-V-1990	100+	SOH (SOH)	On windfallen elm
AK	Oslo	Røa	28	09-VI-1970	1	ASt (ZMB)	
AK	Oslo	Røa	28	21-VI-1962	1	ASt (ZMB)	
BØ	Lier	Sylling	28	15-VI-1974	1	KEZ (KEZ)	Handpicking
BØ	Lier	Sylling	28	ex l. XI-1991	549	LOH (NISK)	Hatched from elm with DED
BØ	Lier	Frogner church	28	ex l. XI-1991	33	LOH (NISK)	Hatched from elm with DED
BØ	Lier	Humleskauen	28	ex l. XI-1991	45	LOH (NISK)	
BØ	Lier	Stavsenega	28	ex l. X-1991	53	LOH (NISK)	Hatched from elm with DED
BØ	Lier	Gommerud	28	ex l. XI-1991	49	LOH (NISK)	Hatched from elm
BØ	Lier	Gifstad	28	X-1991	2*	LOH (NISK)	Under bark of elm with DED
BØ	Lier	Lyngås	28	ex l. XI-1991	29	LOH (NISK)	Hatched from elm with DED
BØ	Lier	Utengen	28	ex l. XI-1991	227	LOH (NISK)	Hatched from elm with DED
BØ	Lier	Lierstranda	28	ex l. XI-1991	1544	LOH (NISK)	Hatched from elm with DED
BØ	Lier	Lierkroa	28	24-VIII-1991	1*	LOH (NISK)	Under bark of elm with DED
BØ	Lier	Tuverud	28	24-VIII-1991	9	LOH (NISK)	Under bark of elm with DED
BØ	Lier	Gullaug	28	ex l. XI-1991	483	LOH (NISK)	Hatched from elm with DED
BØ	Drammen	Brakerøya	28	ex l. XI-1991	1626	LOH (NISK)	Hatched from elm with DED
BØ	Drammen	Bragernesåsen	28	6-IX-1991	1*	LOH (NISK)	Under bark of elm with DED
BØ	Røyken	Kinnartangen	28	25-VIII-1991	2*	LOH (NISK)	Under bark of elm with DED
VE	Larvik	Tenvik	19	10-VII-1991	1+	SOH (SOH)	On oak and elm
VE	Larvik	Tvedalen	11	21-V-1991	++	SOH (SOH)	On elm
TEY	Kragerø	Berg	11	17-VI-1991	1+	SOH (SOH)	On mixed wood, incl. elm
TEY	Porsgrunn	Oklungen	18	12-VI-1988	2	BB (BB)	On mixed wood
TEI	Seljord	Seljord	17	30-VI-1978	5	FMi (NISK)	Leg. F. Midtgaard
AAV	Froland	Hinebu	6	02-VI-1991	2	SOH (SOH)	Swarming
AAV	Risør	Laget	11	10-VI-1984	1	OHa (OHa)	Sweep-netted
AAV	Risør	Risør	11	16-VII-1907	1	HWa (ZMB)	Leg. H. Warloe
AAV	Birkenes	Birkenes	6	26-VII-1960	1	EAA (NISK)	Leg. E. Aamlid
AAV	Grimstad	Dømmesmoen	6		1	ABa (NISK)	Leg. A. Bakke
RY	Suldal	Våge	24		1	Hel (StM)	T. Helliessen, Stavanger mus.
SFI	Sogndal	Amla	51	1956	2	ABa (NISK)	Leg. A. Bakke
MRI	Norddal	Fjøra	77	1992-97	++	OHa (OHa)	Window-trap

Table 1. Cont

Reg.	Municipality	Locality	EIS	Date	N	Leg. (coll.)	Comments
MRI	Norrdal	Sakrisdammen	69	11-VI-1992		Fød (Fød)	Gallery under elm bark
MRI	Norrdal	Sakrisdammen	69	11-VI-1992		OHa (OHa)	Gallery under elm bark
MRI	Sunndal	Fahle	78	23-VI-1985	1	OHa (OHa)	
MRI	Sunndal	Hoel	78	summer 1985	1+	OHa (OHa)	Several spp. in window-trap
MRI	Sunndal	Hoelsand	78	19-V-1984	1+	OHa (OHa)	Gallery with dead beetles
MRI	Sunndal	Oppdølstranda	85	22-VI-1985	1	KEZ (KEZ)	Handpicking
MRI	Sunndal	Oppdølstranda	85	VII-VIII 1989	5	OHa (OHa)	Window-trap
MRI	Sunndal	Oppdølstranda	85	22-VI-1985	1+	OHa (OHa)	Many swarming

SAMMENDRAG

Notiser vedrørende norske biller. 4

Følgende 14 arter av Coleoptera rapporteres fra Norge for første gang: *Bembidion obtusum* Audinet-Serville, 1821, *Badister sodalis* (Duftschmid, 1812), *Bradyceclus verbasci* (Duftschmid, 1812) (Carabidae), *Hygroscopus confluentis* (Fabricius, 1787), *Hydaticus aruspex* Clark, 1864, *Graphoderes cinereus* (Linnaeus, 1758) (Dytiscidae), *Helophorus obscurus* Mulsant, 1844 (Helophoridae), *Rybaxis longicornis* (Leach, 1817) (Staphylinidae), *Aphodius paykulli* Bedel, 1908 (Scarabaeidae), *Trichoceble memnonia* (Kiesenwetter, 1861) (Melyridae), *Alphitophagus bifasciatus* (Say, 1823) (Tenebrionidae), *Donacia brevicornis* Ahrens, 1810 (Chrysomelidae), *Hypera vidua* Gene, 1837 og *Tapinotus sellatus* (Fabricius, 1794) (Curculionidae). Nye funn av *Agonum munsteri* (Hellen, 1935), *Harpalus calceatus* (Duftschmid, 1812) (Carabidae) og *Bryaxis curtisi* (Leach, 1817) (Staphylinidae) presenteres, samt utbredelsen til «almesyke-vektoren» *Scolytus laevis* Chapuis, 1873 (Curculionidae) i Norge.

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Hoverflies (Dipt., Syrphidae) in the arctic Pasvik valley, Norway

Tore R. Nielsen

Nielsen, T.R. 1998. Hoverflies (Diptera: Syrphidae) in the arctic Pasvik valley, Norway. - Fauna norv. Ser. B. 45: 83-92.

The Pasvik valley belongs to the westernmost and arctic part of the huge boreo-palaeartic taiga, stretching across Russia towards Finland and Norway. 119 hoverfly species and 31 genera have been found in the area. The fauna is dominated by species with predacious (54 %) and sapro-fagous larvae (32 %).

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INTRODUCTION

The Pasvik valley, 69°20'N, 29°30'E, runs some one hundred kilometers southwestwards from Kirkenes, bordering to Russia in the east and Finland in the west (Figure 1). It is a westernmost part of the huge boreal palaeartic taiga stretching from Kamchatka across Siberia to northern Fennoscandia.

The climate is arctic continental with summer climate that can change from warm (up to about 30 °C) to arctic with cold winds and snowfall within a few days. Such changes, accompanied by myriads of enthusiastic, high octane mosquitoes and black-flies, may be exotic and somewhat charming, but more often a real trial of patience to tourists and entomological vagabonds! The July means for the area (1961-90) are: precipitation 59 mm and temperatures 13,7 °C (for Noatun).

The valley is rather flat and open (highest peak Steinfjell 202 m) and dominated by pine forests, bogs and lakes. In the northern parts, from around Svanvik onwards, the vegetation gradually turns into birch forests and tundra. The lazy Pasvik river is the natural border to Russia in the east (Figure 2). Farms and cultivated areas (grass, potatoes and milk production) are found along the main road towards Kirkenes.

Øvre Pasvik National Park (about 63 square kms) is situated in the south of the valley.

MATERIAL AND METHODS

Very little has been known about the hoverfly fauna of the northeastern, arctic parts of Norway. Bidentkap (1900) published 61 species from arctic Norway, but only one of which (*Volucella bombylans* (L.)) was collected in the Kirkenes-Pasvik area.

The present paper is mainly based on material collected by the author and family in 1969 (10-25 July), 1977 (24 June-2 July), 1983 (6 July), 1989 (17 July-14 Aug.) and 1990 (19-26 June). Arne Fjellberg collected some material in 1974, Hans L. Schaanning assisted in operating Malaise traps 25 July-14 Aug. 1989 and 25 June-8 July 1990. Fred Midtgaard added specimens from a Malaise trap project at Mellesmo, Svanvik in 1986.

Collecting has mainly been done in the southern, wooded areas. In addition to sweeping with a net (from flowers, ground vegetation, bushes and trees) two Malaise traps and also a number of water traps were used.

The Malaise traps were loaded with Vapona strips (wrapped in soft paper to avoid the insects to come into contact with its oily fluids), or with 70 % ethanol.

The water traps were of two kinds: the one, yellow trays filled with water and added 1-2 drops of liquid soap, operated successfully and especially so in bogs and moors with only a few flowers. The other kind

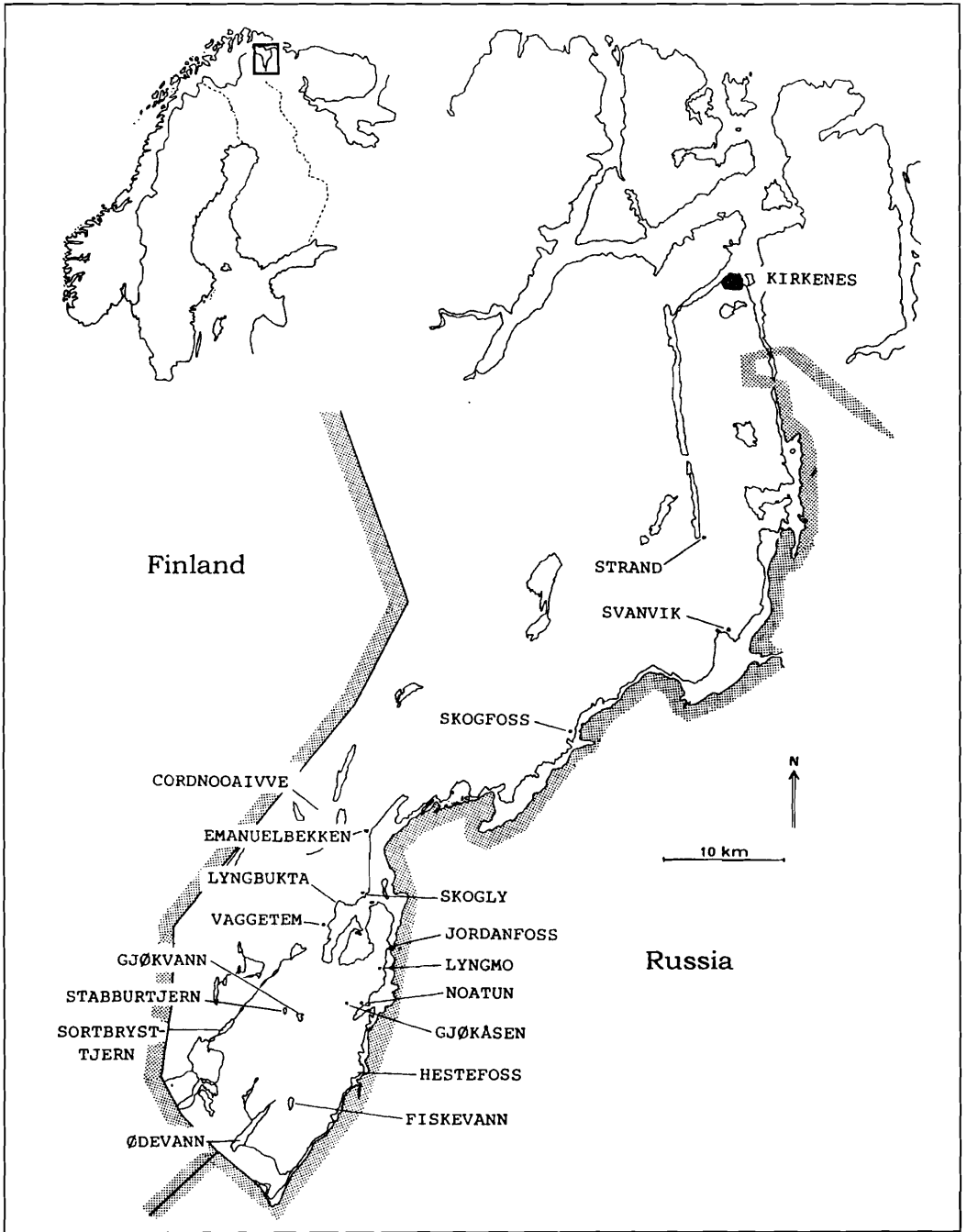


Figure 1
The Pasvik area.

Figure 2

From Noatun with the Pasvik river in the background.



were trays painted black and filled with water and cow manure (and added liquid soap, as above), thus meant to attract species with aquatic, saprophagous larvae. These traps gave a valuable supplement as concerns the fauna of bogs, with *Eristalis*, *Sericomyia* and *Anasimyia*.

Specimens collected in water traps were pinned while still wet, then washed in 70 % and 96 % ethanol and finally in ethylacetate before drying (see Vockeroth, 1966).

Abbreviations used for collectors: FJB-Arne Fjellberg, FMG-Fred Midtgaard.

119 species and 31 genera were found in the area. The material is kept in the author's collection and in parts in Zoological Museum, University of Bergen.

THE RECORDS

Genus *MELANOSTOMA* Schiner, 1860

Melanostoma dubium (Zetterstedt, 1837): widespread.

M. mellinum (Linnaeus, 1758): abundant and widespread. Variable species.

M. scalare (Fabricius, 1794): Kirkenes 6 July 1983 3 ♀ ♀.

Genus *PLATYCHEIRUS* Lepeletier & Serville, 1828

Platycheirus albimanus (Fabricius, 1781): common and widespread, collected from *Ranunculus acris*, *Stellaria media* and *Salix* catkins.

P. angustatus (Zetterstedt, 1843): Noatun 22 July-7 Aug. 1989 1 ♀ (Malaise trap).

P. clypeatus (Meigen, 1822): Noatun, Emanuelbekken, Skogly, Skogfoss, Strand, Kirkenes: 19 ♂ ♂ 7 ♀ ♀ in humid meadows and on river banks, feeding on *Carex* flowers.

P. groenlandicus Curran, 1927 syn. *P. monticolus* Nielsen, 1972 (preoccupied Jones, 1917), syn. *P. boreomontanus* Nielsen, 1981 (new name for *monticolus* Nielsen, 1971): Vaggetem 30 June 1977 1 ♀.

P. holarcticus Vockeroth, 1990: Noatun 26 June-1 July 1990 1 ♀, Gjøkåsen 18 July 1989 1 ♂ and 23 June 1990 1 ♂ on *Rubus chamaemorus* flower, Vaggetem 30 June 1977 2 ♂ ♂ 7 ♀ ♀, Emanuelbekken 28-30 June 1966 4 ♂ ♂ 6 ♀ ♀ (*Geranium sylvaticum* flowers). A boreal species also found in subalpine and alpine areas in South Norway, from about 900 m upwards.

P. hyperboreus Staeger, 1845: Lyngbukta 12 July 1969 1 ♀ (*Ranunculus acris*), Emanuelbekken 29 June 1977 1 ♀, Skogfoss 21 July 1969 1 ♀ (*R. acris*). Distribution in Norway as *holarcticus*.

P. immarginatus (Zetterstedt, 1849): Noatun 22 June 1974 1 ♂ (FJB), 22 June 1990 1 ♂.

P. kittilaensis Dušek & Láška, 1982: Sortbrysttjern 30

- June 1977 1♂. A northern and mountainous species. This species has previously been reported by me (Nielsen, 1981) from South Norway under the name of *complicatus*. It differs from *complicatus* (Central European specimens) in being slightly smaller and in the basal joints of front tarsus.
- P. lundbecki* Collin, 1931 syn. *P. fjellbergi* Nielsen, 1974: Fiskevann 17 July 1969 1♀ (Nielsen 1974), Noatun 22 June 1990 on *Carex* flower on river bank 1♂, 26 June-1 July 1990 1♀ (Malaise trap), Emanuelbekken 29 June 1977 1♀, Vaggetem 23 June 1990 2♀♀ on *Salix* catkins, 26 June 1990 1♂ 1♀ (Malaise trap on pine forest bog). Distribution in Norway as *holarcticus*.
- P. manicatus* (Meigen, 1822): Noatun 22 June 1990 1♂ on *Carex* flower on river bank, Lyngmo 22 July 1969 1♀, Skogly 18 and 21 July 1969 7♂♂ 1♀ (some on *Ranunculus acris*), Skogfoss 21 July 1969 2♀♀, Kirkenes 25 July 1969 2♀♀.
- P. nielseni* Vockeroth, 1990: Noatun 22 July-7 Aug. 1989 ♂m (Malaise trap). In South Norway found in lowland areas and in subalpine forests till about 900 m a.s.l.
- P. nigrofemoratus* Kanervo, 1934, *P. albimanus* var. *nigrofemoratus* Kanervo, 1934: Fiskevann 14 and 17 July 1969 2♀♀, Emanuelbekken 29 June 1977 1♀, Kirkenes 25 June 1969 1♀. A high boreal species known only from northern Finland, Sweden, Norway (Finnmark), Canada and Alaska.
- P. occultus* Goeldlin, Maibach & Speight, 1990: Skogly 21 July 1969 ♂m.
- P. peltatus* (Meigen, 1822): 4♂♂ 6♀♀, on *Geranium sylvaticum* and *Ranunculus acris*.
- P. perpallidus* Verrall, 1901: Jordanfoss 20 June 1974 1♀ (FJB), Noatun 22 June 1974 2♂♂ 3♀♀ (FJB), 20 and 22 June 1990 15♂♂ 2♀♀ on *Carex* flowers on river bank, Gjøkåsen 20 June 1990 1♂ on *Rubus chamaemorus* flower on pine forest bog.
- P. podagratus* (Zetterstedt, 1838): 29♂♂ 14♀♀: widespread and common in humid meadows and on river banks. Swept from flowering *Carex* and *Salix scambus* Staeger, 1843: Noatun 22 June 1990 1♂ on *Carex* on river bank, 22 July-7 Aug. 1898 2♀♀ (Malaise trap) and 26 June-1 July 1990 2♂♂ (Malaise trap).
- P. varipes* Curran, 1923 syn. *argentatus* Ringdahl, 1936, see Nielsen 1999: Emanuelbekken 28-29 June 1977 4♂♂ on *Ranunculus* spp. on cultivated meadow. Distribution in Norway as *holarcticus*.

Genus SYRPHUS Fabricius, 1775

- Syrphus attenuatus* Hine, 1922 syn. *pilisquamus* Ringdahl, 1928 Skogly 18 July 1969 1♂. In South Norway taken in subalpine birch forests.
- S. ribesii* (Linnaeus, 1758): frequent or common in the whole area.
- S. sexmaculatus* (Zetterstedt, 1838): frequent. Gjøkvann 10-12 July 1969 1♂ 1♀, Fiskevann 17 July 1969 2♂♂, Skogly 21 July 1969 1♂ 4♀♀ (*Ranunculus acris*), Ødevann 23 July 1969 1♀, Noatun 17-18 July 1989 1♂ 3♀♀ (on *Matricaria indora* flowers), 22 July-7 Aug. 6♀♀ (Malaise trap) and 7-14 Aug. 1989 (Malaise trap) 1♀, Kirkenes 6 July 1983 1♀. In southern Norway found in subalpine areas, about 650-1000 m a.s.l.
- S. torvus* Osten Sacken, 1875: 6♂♂ 6♀♀ from Fiskevann, Skogly, Noatun and Kirkenes.
- S. vitripennis* Meigen, 1822: 4♂♂ 19♀♀ from Fiskevann, Skogly, Noatun, Lyngmo, Gjøkvann, Gjøkåsen, Kirkenes.

Genus EPISTROPHE Walker, 1852

- Epistrophe melanostoma* (Zetterstedt, 1843): Lyngbukta 12 July 1969 1♀, Ødevann 14 July 1974 2♀♀ (FJB leg.)
- E. ochrostoma* (Zetterstedt, 1849): Vaggetem-Gjøkåsen 21 June 1974 2♂♂ (FJB leg.).

Genus EPISTROPHELLA Dušek & Láška, 1967

- E. euchroma* (Kowarz, 1885): Ødevann 14 June 1974 3♀♀ and Vaggetem-Gjøkåsen 21 June 1974 1♂ (FJB), Emanuelbekken 29 June 1977 1♀ on *Salix* catkins, Vaggetem 22-23 June 1990 1♂ on *Salix* catkins, Gjøkåsen 26 June 1990 1♀ (Malaise trap).

Genus EUPEODES Osten Sacken, 1877

- subg. *EUPEODES* s.s.
- Eupeodes abiskoensis* (Dušek & Láška, 1973): Emanuelbekken 29 July 1977 2♀♀, Sortbrystjern 30 July 1977 2♀♀.
- E. bucculatus* (Rondani, 1857): Fiskevann 17 July 1969 2♂♂ 2♀♀, Gjøkvann 10-12 July 1969 1♂ 4♀♀, Gjøkåsen 20 June 1990 2♂♂ (one on *Rubus chamaemorus* flower), Noatun 19 June 1990 1♂ on *Caltha palustris*, Lyngmo 22 July 1969 1♀, Skogly 18 and 21 July 1969 1♂ 1♀.

E. corollae (Fabricius, 1794): Fiskevann 17 July 1969 1 ♀, Lyngmo 22 July 1969 1 ♀, Noatun 24 Aug.-5 Sept. 1989 1 ♀, Kirkenes 6 July 1983 1 ♀.

E. curtus (Hine, 1922): Noatun 22 June 1974 2 ♂♂ (FJB) and 20 June 1990 1 ♂ on *Caltha palustris*, Vaggetem 30 June 1977 1 ♀. In South Norway found in alpine areas, about 900-1100 m.

E. latifasciatus (Macquart, 1829): 16 ♂♂ 122 ♀♀ from Noatun, Gjøkåsen, Lyngbukta, Lyngmo, Skogly, Emanuelbekken, Kirkenes. Frequent, locally abundant, especially on cultivated meadows.

E. lundbecki (Soot-Ryen, 1946): Skogfoss 21 July 1969 1 ♀, Kirkenes 6 July 1983 3 ♀♀.

E. nielsenii (Dušek & Láska, 1976): Gjøkvann 11 July 1969 2 ♀♀, Fiskevann 17 July 1969 2 ♀♀, Gjøkåsen 22 June 1990 1 ♀ on *Rubus chamaemorus* flower.

E. nitens (Zetterstedt, 1843): Ødevann 23 July 1969 1 ♂.

E. punctifer (Frey in Kanervo, 1934): Noatun 1-8 July 1990 1 ♂, Lyngmo 22 July 1969 2 ♀♀, Fiskevann 17 July 1969 1 ♂ 8 ♀♀, Skogly 18 July 1969 1 ♀. subg.

subg. *LAPPOSYRPHUS* Dušek & Láska, 1967

E. (Lapposyrphus) lapponicus (Zetterstedt, 1838): Emanuelbekken 29 June 1977 1 ♀.

Genus *DASYSYRPHUS* Enderlein, 1938

Dasysyrphus friuliensis (v.d. Goot, 1960): Ødevann, Sortbrysttjern, Fiskevann, Gjøkvann, Kirkenes 3 ♂♂ 3 ♀♀.

D. nigricornis (Verrall, 1873): syn. *obscura* Zetterstedt, 1838, as *Scaeva* (see Bičfk & Láska, 1995) syn. *obscurata* Ringdahl, 1928, as *Syrphus*: Noatun, Gjøkvann, Ødevann, Gjøkåsen, Vaggetem, Skogly and Skogfoss: 14 ♂♂ 20 ♀♀ on *Ledum palustre*, *Ranunculus acris*, *Caltha palustris*, *Taraxacum* and on *Salix* catkins: 14 June-22 July.

D. pauxillus Williston, 1887: syn. *nigricornis* auct.: Noatun, Fiskevann, Gjøkvann, Ødevann, Gjøkåsen, Lyngmo, Skogly 1 ♂ 15 ♀♀, taken on *Carex* on river bank, in *Rubus chamaemorus* flower on pine forest bog, on *Ranunculus acris* on cultivated meadows: 14 June-22 July.

D. pinastris (De Geer, 1776): syn. *lunulatus* auct., nec. Meigen, 1822: Kirkenes 6 July 1983 1 ♂ 1 ♀.

D. tricinctus (Fallén, 1817): Kirkenes 6 July 1983 1 ♀.

D. venustus (Meigen, 1822): widespread and frequent.

Genus *LEUCOZONA* Schiner, 1860

subg. *LEUCOZONA* s.s.

Leucozona lucorum (Linnaeus, 1758): Gjøkåsen 18 July 1989 1 ♀, Svanhovd 20 June-4 Aug. 1986 1 ♂ in Malaise trap (FMG), Kirkenes 25 July 1969 1 ♀.

Genus *MELANGYNA* Verrall, 1901

M. arctica (Zetterstedt, 1838): frequent, 5 ♂♂ 42 ♀♀. Collected on *Ranunculus acris* and *Stellaria media* flowers.

M. coei Nielsen, 1971: Skogly 18 and 21 July 1969 2 ♀♀, Skogfoss 21 July 1969 2 ♀♀, Kirkenes 25 July 1969 1 ♀.

Genus *MELIGRAMMA* Frey, 1946

M. guttata (Fallén, 1817): Skogly 21 July 1969 1 ♀.

M. triangulifera (Zetterstedt, 1843): Skogfoss 21 July 1969 1 ♂ (*Ranunculus acris*), Vaggetem 23 June 1990 1 ♀ (*Salix* catkins).

Genus *PARASYRPHUS* Matsumura, 1917

Parasyrphus annulatus (Zetterstedt, 1838): Lyngbukta 12 July 1969 1 ♂.

P. groenlandicus Nielsen, 1910, Figures. 3a-b: Gjøkåsen 24 June 1990 1 ♂ on flowering *Rubus chamaemorus*.

P. lineolus (Zetterstedt, 1843): Fiskevann 17 July 1969 1 ♂.

P. tarsatus (Zetterstedt, 1838): 10 ♂♂ 98 ♀♀ on *Ranunculus acris*, *Rubus chamaemorus* and *Salix* catkins. Abundant, one of the dominating syrphid species of the area.

P. vittiger (Zetterstedt, 1843): Gjøkvann 10 July 1969 1 ♂, Fiskevann 14 and 17 July 1969 1 ♂ 2 ♀♀, Noatun 8-15 July 1990 1 ♀, Gjøkåsen 18 July 1989 1 ♀ and Skogly 18 July 1969 1 ♀.

Genus *DIDEA* Macquart, 1834

Didea intermedia Loew, 1854: Gjøkåsen 18 July 1989 1 ♂ 1 ♀ (Nielsen, 1990)

Genus *SPHAEROPHORIA* Lepelletier & Serville, 1828.

Sphaerophoria abbreviata Zetterstedt, 1859: Gjøkåsen 20-22 June 1990 6 ♂♂ 1 ♀ (one pair in copula), two males on *Rubus chamaemorus* flowers, one male in yellow water trap.

S. bankskae Goeldlin, 1989: Gjøkåsen 20 July 1989 1 ♂ (*Ranunculus acris*).

- S. boreoalpina* Goeldlin, 1989: Noatun 26 June-1 July 1990 1♂ (Malaise trap)
- S. fatarum* Goeldlin, 1989: Emanuelbekken 28 June 1977 1♂, Noatun 17-18 July 1989 1♂, Gjøkåsen 21 June 1990 2♂♂ (one male on *Rubus chamaemorus* flower).
- S. menthastri* (Linnaeus, 1758): Emanuelbekken, Gjøkåsen, Lyngmo, Skogly, Kirkenes: 58♂♂, 1♀ (one pair in copula), abundant in cultivated meadows, often on *Ranunculus acris*.
- S. philantha* (Meigen, 1822): 57♂♂, common all over the area.
- S. taeniata* (Meigen, 1822): Noatun, river bank 22 June 1990 1♂ in *Carex* flower.
- S. virgata* Goeldlin, 1974: Noatun 22 July-7 Aug. 1989 1♂ and 8-15 July 1990 1♂ (both in Malaise trap).

Genus MICRODON Meigen, 1803

Microdon eggeri Mik, 1897: Gjøkåsen 24 June 1990, 1♀ in yellow water trap and 26 June 1990 1♂ in Malaise trap.

Genus HERINGIA Rondani, 1856

subg. *NEOCNEMODON* Goffe, 1944

Neocnemodon vitripennis (Meigen, 1822): Fiskevann 17 July 1969 1♂ 1♀, Gjøkvann 11 July 1969 1♀ on *Ledum palustre* flower.

Genus CHEILOSIA Meigen, 1822

subg. *CHEILOSIA* s.str.

Cheilosia angustigenis (Becker, 1894): Lyngbukta 12 July 1969 1♀ and Gjøkåsen 19 July 1969 1♀. Previously published from central South Norway (Nielsen, 1980).

C. gigantea (Zetterstedt, 1838): Lyngbukta 12 July 1969 1♂, Gjøkåsen 19 July 1969 3♀♀, Skogly 18 July 1969 1♀, Vaggetem 22 June 1990 1♀ on *Salix* catkins.

C. latifrons (Zetterstedt, 1843): Emanuelbekken 27 June 1977 1♂.

C. longula (Zetterstedt, 1838): 253♂♂ 153♀♀. The dominating *Cheilosia* species, common everywhere. Collected from flowers of *Stellaria media*, *Rubus chamaemorus*, *Trientalis europaea*, *Ranunculus acris*, *Ledum palustre*, *Salix* catkins.

C. sootryeni Nielsen, 1970: Ødevann 14 June 1974 1♀ and Vaggetem-Gjøkåsen 21 June 1974 1♂ (FJB).

C. vernalis (Fallén, 1817): 32♂♂ 35♀♀. Another dominating *Cheilosia*, but mostly so in cultivated are-

as. Collected from *Ranunculus acris*, *Carex* and *Salix* flowers and in yellow water traps.

subg. *NIGROCHEILOSIA* Shatakin, 1975

C. pubera (Zetterstedt, 1838): Gjøkåsen 9 July 1974 1♀ (FJB), Emanuelbekken 29 June 1977 1♀ (*Caltha palustris*).

C. sahlbergi (Becker, 1894): Cordnooaive 8 July 1974 1♂ (FJB).

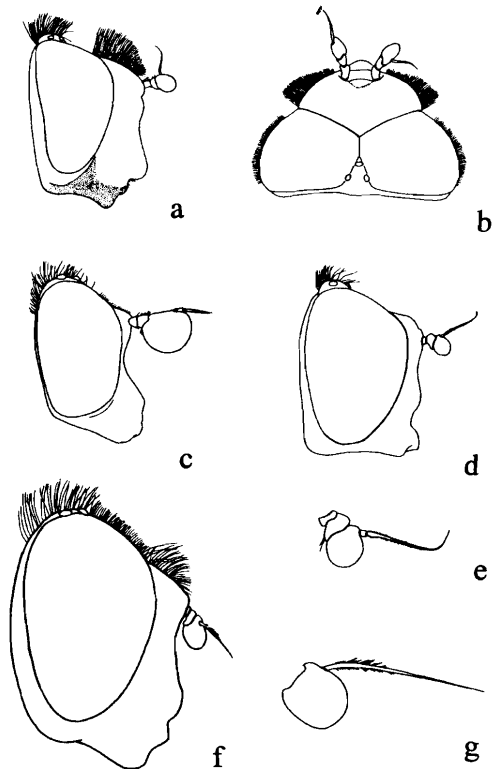


Figure 3

Heads. a-b: Male *Parasyrphus groenlandicus* in lateral and dorsal view. c: Male *Chamaesyrrhus caledonicus*, lateral view. d-e: Male *Chrysosyrphus nasuta*, head in lateral view and antenna. f-g: Male *Eristalis tundraarum* lateral view, and outer part of antenna.

Genus CHAMAESYRPHUS Mik, 1895: see Nielsen, 1990.

Chamaesyrrhus caledonicus Collin, 1940, Figure 3c.
C. scaevoides (Fallén, 1817)

Genus VOLUCELLA Geoffroy, 1762

Volucella bombylans (Linnaeus, 1758): Sortbrysttjern
21 June 1974 1♂ (FJB), Noatun (Malaisetrap) 26
June-1 July 1990 1♀.

Genus SERICOMYIA Meigen, 1803: see Nielsen, 1997.

Sericomyia arctica Schirmer, 1913
S. lappona (Linnaeus, 1758)
S. nigra Portschinsky, 1873:

Genus NEOASCIA Williston, 1886

Neoascia geniculata (Meigen, 1822): Noatun 22 June
1990 1♀ on *Carex* on river bank, Gjøkåsen 19 July
1969 1♂ 1♀ and Skogly 21 July 1969 1♀.

N. subchalybea Curran, 1925 syn. *petsamoensis* Kaner-
vo, 1934: Vaggetem-Gjøkåsen 21 June 1974 1♀
(FJB), Emanuelbekken 28 June 1977 1♀ on *Caltha*
palustris and Vaggetem 30 June 1977 1♀.

N. tenur (Harris, 1780): Fiskevann 17 July 1977 1♀,
Gjøkåsen 20 July 1989 (yellow water trap) and Vag-
getem-Gjøkåsen 21 June 1974 1♂ 2♀ ♀ (FJB).

Genus SPHEGINA Meigen, 1822

Sphegina sibirica Stackelberg, 1953: Fiskevann 14 and
17 July 1969 7♂♂ 1♀, Skogly 18 July 1969 2♂♂ on
flowering rhubarb (*Rheum undulatum*).

S. sphegina (Zetterstedt, 1838): Gjøkåsen 23 June
1990 1♀ in *Rubus chamaemorus* flower at the edge
of pine forest bog.

Genus BRACHYOPA Meigen, 1822: see Nielsen, 1992.

Brachyopa cinerea Wahlberg, 1844. Vaggetem 22-23
June 1990 1♂ on *Salix*. An early species of subalpine
and subarctic forest.

B. dorsata Zetterstedt, 1838: Gjøkåsen 19 June 1990
1♂ 1♀ in yellow water trap.

Genus HAMMERSCHMIDTIA Schummel, 1834

Hammerschmidtia ferruginea (Fallén, 1817): Skogfoss
21 July 1969 1♂ in flowering *Ranunculus acris* and
Vaggetem 23 June 1990 1♂ on *Salix* catkin (Nielsen,
1992: 42)

Genus ORTHONEVRA Macquart, 1829

Orthonevra geniculata Meigen, 1830: Fiskevann 17 July
1969 1♀ (Nielsen, 1990), Vaggetem 22-23 June 1990
11♂♂ 4♀♀ on *Salix* catkins, one pair in copulation.

Genus CHRYSOSYRPHUS Sedman, 1965

syn. *Helleniola* Stackelberg, 1965.

Chrysosyrphus nasuta (Zetterstedt, 1838), figures 3d-e:
in bogs and in open pine forests at Gjøkvann 10-12
July 1969 1♂ 9♀♀, Fiskevann 14 and 17 July 1969
6♀♀, Gjøkåsen 20-26 June 1990 4♂♂ 1♀♀f. Col-
lected on flowers of *Rubus chamaemorus* and *Ledum*
palustre and in yellow water traps.

C. niger (Zetterstedt, 1843): same biotopes as *nasuta*,
Gjøkvann 10-11 July 1969 2♂♂ 10♀♀, Fiskevann 17
July 1969 4♀♀, Gjøkåsen 21 June 1974 1♂ (FJB),
22 June 1990 (*Rubus chamaemorus*) 2♀♀ and Vag-
getem 22 June 1990 (*Salix* catkins) 1♂.

Genus HELOPHILUS Meigen, 1822: see Nielsen 1996 and 1997.

Helophilus affinis Wahlberg, 1844: Kirkenes 16 July
1989 1♀ and Skogly 18 July 1969 1♀.

H. groenlandicus (Fabricius, 1780): Fiskevann 14 and 17
July 1969 3♂♂ 5♀♀ (on *Stellaria media* flowers).

H. hybridus Loew, 1846: Gjøkvann 11 July 1969 1♀.

H. lapponicus Wahlberg, 1844: Gjøkvann 11-12 July
1969 1♂ 1♀; Fiskevann 14 and 17 July 1969 1♂
4♀♀; Gjøkåsen 20 June 1990 1♂ (on *Rubus chamae-*
morus flower), 2♀♀.

H. pendulus (Linnaeus, 1758): in all parts of the area
investigated.

Genus ANASIMYIA Schiner, 1864: see Nielsen 1996 and 1997.

Anasimyia lineata (Fabricius, 1787): Stabburtjern 7 July
1974 3♂♂ 2♀♀ (FJB), Skogly 18 July 1969 2♀♀,
Noatun 17-18 July 1989 1♂, 8-15 July 1990 1♂
(Malaise trap).

A. lunulata (Meigen, 1822): Hestefoss 9 July 1974 1♂
(FJB), Gjøkåsen 20 July 1990 1♂ in yellow water
trap, 22 July 1990 1♀ on *Rubus chamaemorus* flower.

Genus ERISTALIS Latreille, 1804: see Nielsen 1995 and 1996

Eristalis abusiva Collin, 1931: Gjøkåsen 19 July 1969
1♀, Skogly 18 July 1969 2♀♀, Kirkenes 6 July 1983
1♀, Noatun 20 July 1990 1♂.

- E. anthophorina* (Fallén, 1817) var. *lapponica* Schirmer, 1913: 20♂♂ 4♀♀; in all parts of the area, on flowers of *Ranunculus acris*, *Caltha palustris* and *Matricaria inodora* and on *Salix* catkins.
- E. arbustorum* (Linnaeus, 1758): 8♂♂ 13♀♀. In all parts of the area, but most abundantly near farms and on cultivated fields, taken on flowers of *Ranunculus acris*, *Achillea millefolium*, *Matricaria inodora* and on *Salix* catkins.
- E. cryptarum* (Fabricius, 1794): frequent and the most common *Eristalis* in the forest bogs of Pasvik. Gjøkvann, Gjøkåsen, Lyngmo, Ødevann: 5♂♂ 29♀♀. Collected on flowers of *Rubus chamaemorus*, *Vaccinium vitis-idaea*, *Ranunculus acris*, in yellow water traps and in Malaise trap with trays with cow manure.
- E. fratercula* (Zetterstedt, 1838): an arctic species and a beauty amongst the long-haired *Eristalis*. In the field recognizable by its contrasting yellowish and black pile. Skogly 18 July 1969 1♂ (*Ranunculus acris*) and Vaggetem 22 June 1990 1♀ (*Caltha palustris*) on river bank. A circumpolar species.
- E. gomojunovae* Violovitsh, 1977: Sortbrystjern, Fiskevann and Vaggetem. Another arctic but bee-like *Eristalis*. See Nielsen 1995 and 1996. A circumpolar species.
- E. interrupta* (Poda, 1776): Gjøkåsen 19 July 1969 2♀♀.
- E. intricaria* (Linnaeus, 1758): Skogly 21 July 1969 2♂♂, Vaggetem 22 June 1990 1♂ on *Salix* catkins, Kirkenes 6 July 1983 2♀♀.
- E. oestracea* (Linnaeus, 1758): Vaggetem 15 June 1974 1♀ (FJB).
- E. pertinax* (Scopoli, 1763): Vaggetem 22-23 June 1990 2♀♀ on *Salix* catkins.
- E. pseudorupium* Kanervo, 1938: Vaggetem 22 June 1990 1♀.
- E. rupium* Fabricius, 1805: Gjøkåsen 19 July 1969 2♀♀, 18 July 1989 1♀, Skogly 18 and 21 July 1969 1♂ 2♀♀, Lyngbukta 12 July 1969 1♂, Skogfoss 21 July 1969 2♀♀, Kirkenes 25 July 1969 1♀.
- E. tundrarum* Frey, 1946, Figures. 3f-g: 12♂♂ 37♀♀; the commonest *Eristalis* of the area, most numerous in cultivated fields. Flowers visited: *Ranunculus acris*, *Matricaria inodora*, *Achillea millefolium*.

Genus *TEMNOSTOMA* Lepelletier & Serville, 1828

- Temnostoma apiforme* (Fabricius, 1794): 12-22 July 1969 3♂♂ 6♀♀ on flowering *Rubus idaeus* and *Vaccinium vitis-idaea* and along wood margins. See Nielsen, 1990.

Genus *CHALCOSYRPHUS* Curran, 1925

- Chalcosyrphus nemorum* (Fabricius, 1805): Gjøkåsen 20 July 1989 1♂ 1♀ and 20 June 1990 1♂, all in yellow water traps.
- C. piger* (Fabricius, 1794): Gjøkåsen 19 July 1969 1♀ on *Ranunculus acris* flower.
- C. valgus* (Gmelin, 1790): Vaggetem 23 June 1990 1♂, sitting on *Salix* bush.

Genus *XYLOTA* Meigen, 1822

- Xylota coeruleiventris* (Zetterstedt, 1838): Gjøkåsen 22 June 1990 1♀ on *Rubus chamaemorus* flower.
- X. suecica* (Ringdahl, 1943): Skogfoss 21 July 1969 1♂, Skogly 18 and 21 July 1969 2♂♂, Lyngbukta 12 July 1969 2♂♂, Emanuelbekken 29 June 1977 2♂♂, all on *Ranunculus acris* flowers and Gjøkåsen 22 June 1990 1♀ on *Rubus chamaemorus*.
- X. tarda* (Meigen, 1822): Lyngbukta 12 July 1969 1♂ (*Ranunculus acris*), Skogly 18 July 1969 1♂.
- X. triangularis* (Zetterstedt, 1838): Lyngmo 22 July 1969 1♀, Fiskevann 14 July 1♂ 1♀ and 17 July 1969 1♂ on *Stellaria media* flowers, Gjøkåsen 22 June 1990 1♀ (*Rubus chamaemorus*).

DISCUSSION

A brief evaluation of the biotopes visited:

The pine forests and bogs (both with ground vegetation dominated by mosses, lichens, grasses, *Betula nana* and *Ericaceae*) were mostly poor in flowers and in syrphids. There were scattered specimens around water holes and on flowering *Vaccinium myrtillus* and *V. vitis-idaea* (in June), on *Ledum palustre* (late June and first half of July) and *Solidago virgaurea* (late July-August). There was a richer period on flowering *Rubus chamaemorus* in June.

The areas most rich in hoverflies were cultivated meadows with flowering *Ranunculus* spp, *Matricaria inodora*, *Achillea millefolium*, *Stellaria media*, the banks of brooks and lakes with flowering *Salix* and *Caltha palustris* (June). Worthwhile was also sweeping the net in *Carex*-vegetation for *Platycheirus* and other genera in such humid areas.

Dominating species.

In forests: *Melanostoma mellinum*, *Dasysyrphus friuli-*

ensis and *venustus*, *Melangyna arctica*, *Parasyrphus tarsatus* and *Cheilisia longula*.

In cultivated fields: *Melanostoma mellinum*, *Platycheirus albimanus*, *Eupeodes latifasciatus*, *Melangyna arctica*, *Parasyrphus tarsatus*, *Sphaerophoria menthastri*, *S. philantha*, *Cheilisia longula*, *C. vernalis* and *Eristalis tundrae*.

The same species, except for *Eristalis tundrae*, are also common in mountainous areas in South Norway.

Interesting was the rich part of arctic and boreal/boreoalpine species.

Arctic species: *Platycheirus nigrofemoratus*, *Dasyrphus nigricornis*, *Sericomyia arctica*, *Neoascia subchalybea*, *Chrysosyrphus nasuta*, *C. niger*, *Eristalis fratercula*, *E. gomojunovae* and *Xylota suecica*.

Boreal/boreoalpine species (also found in alpine zone in South Norway): *Platycheirus groenlandicus*, *P. holarcticus*, *P. hyperboreus*, *P. kittilaensis*, *P. lundbecki*, *P. varipes*, *Syrphus attenuatus*, *S. sexmaculatus*, *Eupeodes abiskoensis*, *E. curtus*, *E. punctifer*, *Parasyrphus groenlandicus*, *Sphaerophoria boreoalpina*, *Cheilisia angustigenis*, *Chamaesyrphus caledonicus*, *Brachyopa cinerea*, *Helophilus groenlandicus* and *H. lapponicus*.

Larval feeding modes for the genera and species (Rotheray 1993) found in the Pasvik area:

Myco-/phytophagous

Cheilisia 8 species

Predacious (aphids, homoptera, beetle larvae a.o.)

Dasysyrphus 6 species
Didea 1 species
Epistrophe 2 species
Epistrophella 1 species
Eupeodes 10 species
Heringia 1 species
Leucozona 1 species
Melangyna 2 species
Meligramma 2 species
Microdon 1 species
Parasyrphus 5 species
Platycheirus 18 species

Sphaerophoria 8 species
Syrphus 5 species
Volucella 1 species
 = 64 species

Saprophagous

Brachyopa 2 species
Chalcosyrphus 3 species
Eristalis 13 species
Hammerschmidtia 1 species
Helophilus 5 species
Neoascia 3 species
Orthonevra 1 species
Sericomyia 3 species
Sphegina 2 species
Temnostoma 1 species
Xylota 4 species
 = 38 species

Genera with uncertain feeding habits: *Melanostoma* (3 species), *Chamaesyrphus* (2 species), *Chrysosyrphus* (2 species) and *Anasimyia* (2 species).

From the collected material in this arctic area it is obvious that qualitatively a larger part (54 %) of the fauna has a predacious larval feeding mode, while 32 % has saprophagous larvae. Only a smaller part (nearly 7 %: genus *Cheilisia*) are phytophagous.

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Pierre Goeldlin, Lausanne gave me valuable assistance with *Sphaerophoria* specimens and *Platycheirus peltatus* group females. Christian Kassebeer, Kiel revised the *Chrysosyrphus* material and Pavel Láska, Libor Mazánek and Vitězslav Bičík, Olomouc determined and verified critical *Eupeodes* specimens.

I am also indebted to Statens Skoger, Sør-Varanger for generous help with accommodation in Pasvik, to Wilhelm Høgre, Lyngmo, Raymond and Irene Ryeng, Strand and to

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SAMMENDRAG

Blomsterfluer (Diptera: Syrphidae) i Pasvikdalen, Øst-Finnmark

Pasvikdalen hører til den nordvestligste delen av det svære taiga-(barskogs)området som strekker seg over hele det nordlige Russland, mot Finland og Norge. Furu er det dominerende treslaget. Dalen er åpen med åser og lave fjell, og med en rekke myrområder, vann og vassdrag.

Det er funnet 119 blomsterfluearter i området. En stor del av artene har en utpreget nordlig utbredelse, noen er sirkumpolare og flere er tidligere lite kjent fra Fennoskandia.

Faunabildet domineres av arter med larver som lever som rovdyr (mest bladlus) 54 %, eller som nedbrytere, 32 %.

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Faunistic notes on Heteroptera (Hemiptera) in Norway

Frode Ødegaard

Ødegaard, F. 1998. Faunistic notes on Heteroptera (Hemiptera) in Norway. - Fauna norv. Ser. B 45: 93-99.

The present work deals with new faunistic information on 54 species of Heteroptera in Norway. A total of 70 new provincial records are reported. The following six species are new to the Norwegian fauna: *Megalocera recticornis* (Geoffroy, 1785), *Orius laticollis* (Reuter, 1884), *Coriomeris denticulatus* (Scopoli, 1763), *Stictopleurus punctatonervosus* (Goeze, 1778), *Brachycarenum tigrinus* (Schilling, 1829), and *Ochthostethus opacus* (Scholz, 1847). The first verified record of *Berytinus crassipes* (Herrich-Schaeffer, 1835) in Norway are also reported. In total there are now 445 species of Heteroptera known from Norway. Comments on ecology are given for the most interesting species.

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INTRODUCTION

The present survey represents a summary of faunistic notes on the most interesting species of Heteroptera collected by the author mostly during the period from 1994 to 1998. In addition, comments are made on some specimens recently donated to the Zoological Museum of Oslo, and the Museum of Natural History and Archaeology, NTNU in Trondheim. This survey stay as a supplement to the catalogue of the Hemiptera-Heteroptera of Norway (Coulianos 1998). The specimens are mostly collected from eastern parts of Norway and provinces in the middle of Norway.

Unless anyone else is mentioned, all specimens are collected by the author, and they are deposited in the author's private collection. Abbreviations: ZMO: Zoological Museum of Oslo; MNHT: Museum of Natural History and Archaeology, NTNU in Trondheim. Provincial abbreviations follows Økland (1981). Species new to Norway are marked **. New provincial records are marked *.

THE SPECIES

This survey presents faunistic notes on 54 species of Heteroptera. A total of 70 new provincial records are given. Of these, six species are reported for the first

time in Norway. Coulianos (1998) reports 439 species of Heteroptera from Norway. This number should now be updated to 445 species. The nomenclature follows Coulianos (1998) and Coulianos & Ossiannilsson (1976) for the new species, except for *Ochthostethus opacus*, whose former name (*O. nanus*) is not valid (Lis 1989).

Saldidae

**Chartoscirta cincta* (Herrich-Schaeffer, 1841)

Recorded at STY, Agdenes: Eidemstjern 24 June 1996, and at NTI, Levanger: Rinnleiret 6 Aug. 1997. The species has once been reported north of the Dovre-mountains, in NTI and FØ (Strand 1912). However, these records are not confirmed (Coulianos 1998).

**Micracanthia marginalis* (Fallen, 1807)

One male recorded from a pitfall trap in an ombrotrophic mire at AK, Nes: Israelsmosen Aug. 1993. The species is previously only known from HEN, Stor-Elvdal: Koppang 23 July 1900 (Warloe 1925).

**Saldula c-album* (Fieber, 1859)

The species is fairly common along the river Gaula in

Sør-Trøndelag county. Recorded at STI, Midtre Gauldal: Frøsetøra 28 June 1997, and at STI, Melhus: Udduvoll 10 June 1997.

****Saldula fucicola* (J. Sahlberg, 1870)**

The species is very common along the river Gaula in Sør-Trøndelag county. Recorded at STI, Melhus: Sjøberg 28 Aug. 1994, and 2 Sept. 1994; STI, Melhus: Fornesevja 28 June 1997; STI, Midtre Gauldal: Frøsetøra 28 June 1997. Also recorded away from the river at STI, Trondheim: Brundalen 21 Aug. 1994. A new provincial record also from MRI, Rindal: Rimberg 24 April 1983 (leg. H. Olsvik, coll. MNHT).

Tingidae

****Acalypta gracilis* (Fieber, 1844)**

Large numbers of this species were caught in pitfall traps at ON, Nord-Fron: Hestekobakken from 3 June to 7 Sept. 1998. The locality is an open SW faced slope on base-rich soil. The species is previously reported only from BV (Coulianos 1998).

****Acalypta platycheila* (Fieber, 1844)**

One female caught in a pitfall trap in arable land at AK, Ås: Frydenhaug 17 to 24 June 1994 (leg. A. Andersen). The species is previously reported from HOY, TRY, and TRI (Coulianos 1998).

Miridae

****Campyloneura virgula* (Herrich-Schaeffer, 1836)**

A new provincial record from Ø, Moss: Jeløya 10 Aug. 1996. Several individuals collected from *Corylus avellana*. The species is previously reported from BØ, VE, AAY, and VAY (Coulianos 1998).

****Deraeocoris scutellaris* (Fabricius, 1794)**

A new provincial record from TEI, Notodden: Litleherad 8 July 1997. One female sweep netted in *Calluna* heath adjacent to a burned forest. The species is previously reported from AK, HES, BØ, and VE (Coulianos 1998).

****Adelphocoris quadripunctatus* (Fabricius, 1794)**

New provincial records from Ø, Hvaler: Asmaløy 10

July 1996 (one female); Ø, Moss: Jeløya 10 Aug. 1997 (one male and one female), and from AK, Oslo: Tøyen 5 July 1982 (one male, leg. H. Olsvik, coll. MNHT). The species is previously known from three localities in BØ (Hansen & Coulianos 1998).

****Calocoris alpestris* (Meyer-Dür, 1843)**

The species is common on nettles (*Urtica dioica*) in Sunndalen (MRI, Sunndal: Hoelsand 1 July 1994, and MRI, Sunndal: Fale 2 July 1994). In addition, a new provincial record is reported from AK, Bærum: Lommedalen 9 July 1997. According to Coulianos (1998), the species is previously known from BØ, TEI, HOI, SFI, and STI.

****Phytocoris dimidiatus* Kirschbaum, 1856**

Recorded from *Alnus incana* at STI, Trondheim: Brundalen 26 July 1994, and at STI, Malvik: Vikhammerløkka 9 Aug. 1997. These records represent a new northern limit of this species in Norway. Previously, the species is only known from Ø, AK, and RY (Coulianos 1998).

****Zygimus nigriceps* (Fallén, 1829)**

One male was collected from dense, tall stands of *Juniperus communis* at STI, Røros: Sølendet 24 July 1997. In Norway, the species is previously only known from OS (Torpa 24 July 1896, and Gjøvik 7 July 1896) on *Picea abies* (Warloe 1925). According to Gaun (1974), the species has a northern distribution in Scandinavia, and it prefers flat *Juniperus* stands.

****Stenodema trispinosa* Reuter, 1904**

One female was sweep netted in a dry, calcareous meadow at AK, Bærum: Fornebu 9 June 1998. The species was reported new to Norway by Hansen & Coulianos (1998) from similar habitats in VE. The species is associated with different species of grasses in humid habitats close to seashore (Wagner 1952, Gaun 1974).

*****Megalocera recticornis* (Geoffroy, 1785)**

One single male was taken at AK, Oslo: Tøyen 5 July 1982 (leg. Hans Olsvik, coll. MNHT). This is the first record of *M. recticornis* in Norway. Later, I have found two females at AK, Bærum: Fornebu 9 July 1997. These individuals were sweep netted in a dry meadow on calcareous soil. The species is associated with grasses and is collected from *Dactylis glomerata* and *Cal-*

magrostris epigeios (Gaun 1974). In Sweden, the species is found scattered in the south up to the province of Dalarna (Coulianos & Ossiannilsson 1976). Its presence in Norway is thus not surprising.

****Teratocoris paludum* J. Sahlberg, 1870**

One female was sweep netted in salt marsh vegetation at NTI, Levanger: Rinnleiret 6 Aug. 1997. Previously, the species is known from HES, VE, and VAY (Coulianos 1998).

****Labops sahlbergii* (Fallén, 1829)**

One female of this characteristic species was sweep netted in a moist meadow at STI, Røros, Småsetran 23 July 1997. The species was found new to Norway in HEN, Åmot: Østersjøen, Ilsås, and Rena 17 and 18 July 1987 (Coulianos 1998). It has a typical eastern distribution in Scandinavia, although it seems to have expanded its range towards SW during the last 20 years (Coulianos 1998).

****Orthocephalus coriaceus* (Fabricius, 1777)**

One female sweep netted in a moist meadow at STI, Trondheim: Estenstadmarka 6 Aug. 1996. This is the first record of this species north of the Dovre-mountains in Norway. A new provincial record also at OS, Sør-Fron: Hundorp 4 July 1994 (one male and one female).

****Criocoris quadrimaculatus* (Fallén, 1807)**

The first record of this species away from the eastern Norway at MRI, Sunndal: Vollan 2 July 1994. Several individuals were sweep netted in a dry meadow. A new provincial record also from TEI, Notodden: Litleherad 8 July 1997. The species is associated with *Galium* spp. (Gaun 1974).

****Oncotylus punctipes* Reuter, 1875**

This species was common at AK, Bærum: Fornebu 12 Aug. 1996, and at HES, Grue: Opakersund 9 Aug. 1996. The species is previously known only from BØ, and VE (Coulianos 1998).

****Placochilus seladonicus* (Fallén, 1807)**

One female of this species was found at ON, Nord-Fron: Hesteskobakken 7 Sept. 1998. The species was collected from *Knautia arvensis*, which is the host plant (Gaun, 1974). In Norway, *P. seladonicus* is also recorded from Ø, AK, BØ, VE, and RY (Coulianos 1998).

****Psallus lapponicus* Reuter, 1874**

Ten individuals of this extremely local species were caught in window traps in an old spruce forest at NTI, Mosvik: Kilen from 25 July to 14 Aug. 1994 (leg. Norwegian institute for nature research). The traps were run at the same locality also in 1996 and 1997, however, these years we failed to rediscover the species. Previously, *P. lapponicus* is known from NSI, Røssvatn, and Hattfjelldal (leg. E. Strand). In Sweden it is only known from the province of Dalarna and in the middle Lappland (Coulianos 1998).

Nabidae

****Himacerus mirmicoides* (O. Costa, 1834)**

The species is rather common in warm, dry slopes at TEI, Seljord: Heggeneset, I have 3 females from 30 May 1998 and one female from 6 Sept. 1998. In addition, the species was caught in pitfall traps at the same locality (one male from 8 April to 30 May 1998 and 2 females from 30 May to 25 July 1998).

****Nabis pseudoferus* Remane, 1949**

One single male recorded from OS, Vestre Toten: Raufoss 1983. Confirmed records of this species exist only from Ø and HOY (Coulianos 1998).

Anthocoricae

****Anthocoris amplicollis* Horváth, 1893**

One single male of this rare species was collected in thermophilous, deciduous woodland at BØ, Hurum: Holtnesdalen 11 Aug. 1996. There are only two previous records of this species in Norway (VE, and VAY), and in Sweden it is restricted to the extreme south (Coulianos 1998).

****Anthocoris confusus* Reuter, 1884**

New provincial records at Ø, Moss: Jeløya 10 Aug. 1996; BV, Nore og Uvdal: Rødberg 7 July 1997, and at MRI, Sunndal: Oppdølstranda 12 June 1997. The species is previously recorded in AK, OS, BØ, AAY, and RY (Coulianos 1998).

*****Orius laticollis* (Reuter, 1884)**

One single male of this species was found on flowers of

Salix at AK, Fet: Nordre Øyeren 9 Aug. 1996. The locality represent one of the largest freshwater shore vegetation systems in Norway. The size of the area is probably very important to ensure continuity in habitat types in such a system where velocity of succession is relatively fast. The Nordre Øyeren area is therefore expected to inhabit a very diverse fauna of invertebrates. *O. laticollis* has never been reported from Norway, but the nearest known localities, where these shore habitats are common, are situated in Västergötland in Sweden.

***Orius majusculus* (Reuter, 1879)**

Several individuals of this species were collected together with *O. laticollis* on *Salix*-flowers at AK, Fet: Nordre Øyeren 9 Aug. 1996. Previously confirmed records of this species exist from AK, Asker: Sem, and Ø, Tune: Glømvik (Coulianos 1998).

****Xylocoris galactinus* (Fieber, 1836)**

Several individuals were sifted from a large, warm grass compost at STI, Trondheim: Ringve Botanical Garden 25 Aug., and 27 Sept. 1997. The species is previously only known from AK, Oslo: Bygdøy (Coulianos 1998).

Reduviidae

****Empicoris culiciformis* (DeGeer, 1773)**

One female of this species was collected indoors at STI, Trondheim: Kalvskinnet 9 Sept. 1998, a new provincial record also from OS, Vestre Toten: Vestrumenga at Raufoss 4 Febr. 1984 (one male collected indoors). The species is previously known from AK, HOY, and HOI (Coulianos 1998).

Aradidae

****Aradus crenaticollis* R.F. Sahlberg, 1848**

Recorded under bark of *Picea abies* at NTI, Lierne: Eidet 15 June 1991 (one male) and at NTI, Mosvik: Kilen 11 June 1996 (one male). Previously known from HES, OS, and BØ (Coulianos 1998).

****Aneurus avenius* (Dufour, 1833)**

New provincial records from BØ, Hurum: Holtnesdalen 11 Aug. 1996; TEI, Seljord: Heggeneset 30 May

1998; MRI, Nettet: Øvre Vike 28 June 1998, and MRI, Sunndal: Vollan, window trap 29 June to 10 Aug. 1991. The species is previously known from AK, VE, TEY, AAY, VAY (Coulianos 1998). This seems to be a common species under bark of thermophilous deciduous trees in eastern Norway. The records from MRI indicate that it is well established in suitable localities also in western Norway.

Berytinidae

****Berytinus crassipes* (Herrich-Schaeffer, 1835)**

One single male of this species was caught in a pitfall trap at ON, Nord-Fron: Hesteskobakken 4 April to 3 June 1998. The locality is a dry, warm slope on base-rich soil. The host plant is preferably *Cerqstium arvense*, which is present at the locality. This is the first confirmed record of this species in Norway. Warloe (1925) mentioned *B. affinis* (Reuter) (= *crassipes* (Herrich-Schaeffer)) from HES and VAY, however, these records are not confirmed (Coulianos 1998).

****Berytinus minor* (Herrich-Schaeffer, 1835)**

Found together with *B. crassipes* (ON, Nord-Fron: Hesteskobakken 3 June to 28 July 1998 (one male), and 9 Sept. to 11 Oct. 1998 (one male and one female).

Lygaeidae

****Ortholomus punctipennis* (Herrich-Schaeffer, 1838)**

New provincial records from ON, Nord-Fron: Hesteskobakken 7 Sept. 1998; TEI, Seljord: Heggeneset 6 Sept. 1998; SFI, Luster: Ornes, malaise tent 25 June to 6 July 1994 (leg. O. Hanssen). This species is very common in dry, warm meadows.

****Plinthis pusillus* (Scholz, 1847)**

This species seems to be common in warm, dry slopes in Gudbrandsdalen. New to OS, Sør-Fron: Hundorp 3 June 1998, and ON, Nord-Fron: Hesteskobakken, pitfall traps 4 April to 28 July 1998.

****Tropistethus holosericeus* (Scholz, 1846)**

This thermophilous species was caught in pitfall traps in a warm, dry slope at TEI, Seljord: Heggeneset 30 May to 25 July 1998 (4 males and 1 female). The speci-

es is also known from AK, ON, BØ, and AAY (Coulianos 1998).

****Drymus ryeyi* Douglas & Scott, 1865**

One male sweep netted in sandy seashore at STI, Malvik: Vikhammerløkka 21 June 1998. This is the northernmost record of this species in Norway.

****Gastrodes abietum* Bergroth, 1914**

A new northern limit of this common species in spruce cones is reported from STI, Trondheim: Brundalen 28 March 1998.

****Gastrodes grossipes* (DeGeer, 1773)**

This species is now recorded in Trøndelag for the first time at STI, Trondheim: Grilstad 1997 (leg. V. Sandlund), and NTI, Stjørdal: Skatval 17 May 1998. A new provincial record also from Ø, Hvaler: Ørekroken 15 May 1988 (leg. O. Hanssen).

****Taphropeltus hamulatus* (Thomson, 1870)**

The species is caught in pitfall traps in a warm, dry slope at TEI, Seljord: Heggeneset, 8 April to 6 Sept. 1998 (13 individuals). Previously known from Ø, AK, and AAY (Coulianos 1998).

****Acompus rufipes* (Wolff, 1804)**

New provincial records from AAY, Tromøy: Lille Gjerstadvatn 22 May 1983 (leg. H. Olsvik, coll. MNHT), and from MRI, Sunndal: Hoelsand 10 June 1994.

****Peritrechus geniculatus* (Hahn, 1832)**

One female sweep netted in a warm, dry meadow on calcareous soil at AK, Bærum: Fornebu 9 July 1997. The species is previously only known from VE and AAY (Coulianos 1998).

****Megalonotus chiragrus* (Fabricius, 1794)**

The species was found in pitfall traps in a warm, dry meadow on base-rich soil at ON, Nord-Fron: Hesteskobakken 4 April to 3 June 1998 (one male), and 3 June to 28 July 1998 (one female).

****Pterotmetus staphyliniformis* (Schilling, 1829)**

The species is sweep netted in dry warm slopes at TEI, Seljord: Heggeneset 8 July 1997, and 25 July 1998. I have also seen specimens of this easily distinguished

species at SFI, Luster: Ornes 28 Sept. 1991, which is the first observation of this species in western Norway. The fauna of the inner parts of Sogn og Fjordane county has generally very much in common with that of the SE of Norway.

Coreidae

****Nemocoris falleni* R.F. Sahlberg, 1848**

Three individuals of this rare species are recorded from a warm, dry slope at TEI, Seljord: Heggeneset (one female sweep netted 30 May 1998; one female caught in a pitfall trap 30 May to 25 July 1998, and one male collected from *Trifolium arvense* 25 July 1998). The species is previously only known from one individual recorded at AAY, Risør 12 May 1911 (Warloe 1925). The species is a ground dweller associated with different species of Leguminosae, and it prefers calcareous soil (Wagner 1966).

*****Coriomeris denticulatus* (Scopoli, 1763)**

One female of this conspicuous species was sweep netted in salt marsh vegetation at Ø, Hvaler: Asmaløy 10 July 1997. The species is new to Norway. *C. denticulatus* has a typical SE distribution in Sweden, although there is one record from Västergötland and respectively Bohuslän (C.-C. Coulianos pers. comm.) The Norwegian presence of this species is thus somewhat surprising. The species is mostly found at bases of different species of Leguminosae, and it prefers dry, warm localities (Wagner 1966).

Rhopalidae

*****Stictopleurus punctatonervosus* (Goeze, 1778)**

The species is new to Norway. I have several records from TEI, Seljord: Heggeneset. (8 July 1997, two males; 30 May 1998, one female; pitfall trap 25 July to 6 Sept. 1998, one male; 6 Sept. 1998, 5 males and one female). In Sweden the species is common in the south of Norrland (Hälsingland - Västerbotten), and there are a few scattered records in the south (C.-C. Coulianos pers. comm.). The species is obviously local, however, its presence in Norway is not surprising. The species is associated with different species of Asteraceae (Wagner 1966) in Sweden especially *Artemisia vulgaris*, and *Achillea millefolium* (C.-C. Coulianos pers. comm.).

*****Brachycarenum tigrinus* (Schilling, 1829)**

One single male was sweep netted at AK, Bærum: Fornebu 9 June 1998 in disturbed, thermophilous weed vegetation dominated by Brassicaceae. The species is new to Norway and the nearest records are located in SE Sweden. The isolated Norwegian finding is surprising and could represent a relict population, like the beetle species, *Trachys scrobiculatus* (Buprestidae) and *Meligethes norvegicus* (Nitidulidae), which are found at the same locality.

Cydnidae

****Legnotus picipes* (Fallén, 1807)**

Collected at AK, Bærum: Fornebu 27 June 1995 (one individual, leg. B. A. Sagvolden, coll. ZMO), and 9 June 1998 (one female); TEY, Bamble: Langøya, pitfall trap 6 July to 15 Nov. 1995, (one individual, leg. L.O. Hansen, coll. ZMO), and at Ø, Hvaler: Asmaløy 10 July 1997 (one male). The species was reported new to Norway from Ø, Moss: Jeløy, by Hågvar & Kvamme (1977). An additional record is also reported from VE, Borre: Bastø (Coulianos 1998). I have collected the species in flowers of *Galium verum*.

*****Ochthostethus opacus* (Scholz, 1847) (*O. nanus* auct. nec. Herrich-Schaeffer 1834)**

One of the most numerous bug species in pitfall traps situated in a dry, warm slope on base-rich soil at ON, Nord-Fron: Hestekobakken 1998. The species occurred commonly throughout the season (4 April to 7 Sept.). *O. opacus* is new to Norway, and has not been recorded from the neighboring countries Sweden and Denmark. The nearest localities are in Finland (Hangö-udd, Tvärminne), St. Petersburg area, the southern Baltic coasts, and several localities in Poland (Lis 1989). Wagner (1966) reports the species also from Hamburg, however, these records need to be confirmed (C.-C. Coulianos pers. comm.). The Norwegian presence of *O. opacus* is very surprising, and it probably represents a relict population from warmer periods of postglacial time. The species lives at bases of plants in dry, warm, and sandy places (Wagner 1966). It is reported to be polyphagous, and feeding records are known from *Koeleria glauca*, *Corynephorus canescens*, and *Artemisia campestris* (Lis 1989), of which the latter is present at the Norwegian locality.

Thyreocoridae

****Thyreocoris scarabaeoides* (Linnaeus, 1758)**

I have this species from warm, dry slopes at SFI, Sogndal: Slinde 28 May 1992. This is the first record of this species from western Norway. A new provincial record also from a similar locality at TEI, Seljord: Heggeneset 30 May 1998.

Pentatomidae

****Carpocoris purpureipennis* (DeGeer, 1773)**

One male collected at TEY, Sauherad: Gvarv 2 Sept. 1989. The species is also published from BØ, Nedre Eiker: Miletjern at Mjøndalen 1988 (Hansen & Bergsmark 1990). One female from the same locality was also collected 8 July 1995 (leg. B. A. Sagvolden, coll. ZMO). Another two males were collected at BØ, Øvre Eiker: Ulleren at Hokksund 6 July 1998 (leg. L.O. Hansen, coll. ZMO). All previous records of this species is old, the last one from 1887 (Coulianos 1998). Its likely that the species has been overlooked, although it certainly has a rather scattered distribution in eastern Norway.

****Troilus luridus* (Fabricius, 1775)**

One female was sweep netted at AK, Asker: Nesøya 18 June 1993 (leg. L.O. Hansen, coll. ZMO). This is the second record of this species in Norway. The species was first recorded from AAY, Risør: Sønedeled gård 11 July 1902 (Warloe 1925).

Acanthosomatidae

***Elasmotherethus brevis* Lindberg, 1934**

One male was collected in a south faced slope on calcareous soil at AK, Asker: Bjørkås, malaise tent 2 July to 24 Aug 1995 (leg. L.O. Hansen & O. Hanssen, coll. ZMO). The species is previously reported from AK, Drøbak (leg. Warloe), and from AK, Asker: Sem (leg. E. Tunstad) (Coulianos 1998).

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I am greatly indebted to Carl-Cedric Coulianos for verifying *Psallus lapponicus*, *Stictopleurus punctatonervosus*, and *Ochethostethus opacus* and for general comments on some of the species. A great thank also to Lars Ove Hansen for providing information on specimens deposited at the Zoological Museum of Oslo, and to Oddvar Hanssen for providing me his Heteroptera collection, and for valuable comments on the manuscript.

SAMMENDRAG

Faunistiske notiser om Heteroptera (Hemiptera) i Norge

Dette arbeidet omhandler ny faunistisk informasjon om 54 arter av norske Heteroptera. Totalt 70 nye fylkesdelsfunn rapporteres. Følgende seks arter er nye for den norske faunaen: *Megalocera recticornis* (Geoffroy, 1785), *Orius laticollis* (Reuter, 1884), *Coriomeris denticulatus* (Scopoli, 1763), *Stictopleurus punctatonervosus* (Goeze, 1778), *Brachycarenum tigrinus* (Schilling, 1829) og *Ochethostethus opacus* (Scholz, 1847). Det første bekreftede funnet av *Berytinus crassipes* (Herich-Schaeffer, 1835) i Norge rapporteres. Totalt er det nå kjent 445 ulike arter av Heteroptera i Norge. Økologien til de mest interessante artene er kommentert.

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Short communications

Additional records of pseudoscorpions from Norway

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A list of additional records of pseudoscorpions from Norway is presented. The list consists of 567 specimens belonging to 14 species taken from the southern and western parts of the country.

A short discussion on the distribution and habitat preference of the following species is included: *Syarinus strandi* (Ellingsen), *Lamprochernes chyzeri* (Tömösväry), *Pselaphochernes scorpioides* (Hermann) and *Dendrochernes cyrneus* (L. Koch).

The material consists of specimens collected during several years in different parts of Norway. Although there is no species recorded as new to the country in the material, the knowledge of the Norwegian pseudoscorpion fauna is exceedingly scanty and all new information of the distribution of this group is valuable. The material consist of 567 specimens belonging to 14 species collected from different localities in the southern parts of Norway.

Several persons beside myself have contributed to the material for which I am most grateful. I have used the following abbreviations for the name of the collectors:

TA: Trond Andersen, AF: Arne Fjellberg, AFJ: Arild Fjeldså, LOH: Lars Ove Hansen, OH: O. Hanssen, SH: S. Hansen, FK: Finn Erik Klausen, SK: Sverre Kobro, ML: Marianne Langånes, FM: Fred Midtgaard, LS: Liv Sommerfeldt, KS: Kåre Syvertsen, GW: G. Walberg, HW: Henrik Waldén, ØW: Ø. Wiig.

The material is deposited as indicated at the following institutions:

Zoological Museum, University of Bergen: *Neobisium carcinooides*, *Cheiridium museorum*, *Chernes cimicooides*, *Lamprochernes chyzeri*, *L. nodosus*, *Chelifer cancrooides*.

Agder College, Department of Natural Sciences, Kristiansand: *Chthonius tetrachelatus*, *Microbisium brevifemuratum*, *Syarinus strandi*, *Dinocheirus panzeri*, *Chernes nigrimanus*, *Pselaphochernes scorpioides*, *Pselaphochernes dubius*, *Dendrochernes cyrneus*.

COLLECTED MATERIAL

Chthonius tetrachelatus (Preysslér 1790)

VE Tjøme: Mostrandå 25 July-25 Sept. 1984 barber trap in moraine deposits by the beach 5♂ 2♀ ♀, barber trap in sand-pit ♂♂, barber trap in hazel coppice 4♂♂ 1♀, barber trap in moraine deposits 4♀ ♀, 25 Sept 1984 - 25 May 1985 barber trap in oak forest 3♂♂ 1♀, barber trap in moraine deposits 3♂♂ 1♀ 3 juv., barber trap in hazel coppice 1♀. TA leg.

Neobisium carcinooides (Hermann 1804)

AK Eidskog: Mangen, S of Ovlien 8 Aug. 1969 1 tritonymph HW leg.; Aurskog Høland: Setskog by Tangen road fork 8 Aug. 1969 2♂♂ HW leg.

HES Kongsvinger: Austmarka, 2,5 km N of Masterud 9 Aug. 1969 2♀ ♀ HW leg.; Åsnes: Hof, SW of Branes 12 Aug. 1969 1♂ HW leg.; Våler: Våler, 3 km ENE of Rundberget 10 Aug. 1969 1♂ HW leg., 400 m W of Gravberget church 10 Aug. 1969 1♂ 1♀ HW leg.; Sør Odal: S of Flinkopp 11 Aug. 1969 2♂♂ HW leg.

OS Sør Aurdal: Kristianmoen NW of Begndal 27 Aug. 1969 1♂ 1♀ 1 tritonymph HW leg., Børgli NW of Bagn 27 Aug. 1969 1♀ HW leg.; Nord Aurdal: Leira 20 Aug. 1969 3♂♂ HW leg.; Etnedal: 1.3 km SE of the S end of Steinsetfjorden 20 Aug. 1969 1♂ 1♀ 1 tritonymph HW leg.

ON Vang: Tøse 25 Aug. 1969 2 tritonymphs 1 deutonymph HW leg., Øylo 25 Aug. 1969 1♂ 2♀ ♀ HW leg.; Øystre Slidre: Fullsemknatten 22 Aug. 1969 2♂♂ 2♀ ♀ HW leg., N of Mel-senn 21 Aug. 1969 1♀ HW leg., N of Rennsem 22 Aug. 1969 1♂ 4 tritonymphs 2 deutonymphs HW leg., 1.2 km WNW of Øvre Helmdalsvatn 24 Aug. 1969 2♂♂ 1♀ 3 tritonymphs HW

leg., by Skapsbekken 24 Aug.1969 1♂ HW leg., E of Øyangen 23 Aug.1969 6♂♂ 1♀ 1 tritonymph HW leg., WNW of Beitstølen 24 Aug.1969 1♂ 2♀♀ 1 tritonymph HW leg.

BØ Flesberg: Svene, Skutsvika 17 Aug.1969 1♀ HW leg., Flesberg 1 km NW of Flatstrand 17 Aug.1969 1♂ 1♀ 1 deutonymph HW leg.; Kongsberg: 1.5 km E of Tufts church 16 Aug.1969 1♂ 2♀♀ HW leg.

BV Gol: Åsgårdann SW of Berg 26 Aug.1969 1 tritonymph 2 deutonymphs HW leg., Rekkjesetkyrkja 26 Aug.1969 6♂♂ 3♀♀ 3 tritonymphs 1 deutonymph HW leg.; Hemsedal: 1 km NW of Fykene road fork 26 Aug.1969 2♂♂ 1♀ HW leg., S of Elvø 28 Aug.1969 1♀ HW leg.; Nore og Uvdal: Nore, Kravikfjord 17 Aug.1969 1 tritonymph 1 deutonymph HW leg., SE of Gregård 18 Aug.1969 1♂ 1 deutonymph HW leg., Haland 18 Aug.1969 1♂ 6♀♀ 2 tritonymphs HW leg., Tunhovdfjellet 18 Aug.1969 4♂♂ 1♀ 3 deutonymphs HW leg., Uvdal, Hagesetåsen 19 Aug.1969 2♂♂ 2♀♀ 2 deutonymphs HW leg., 23 km E of new church 18 Aug.1969 5♂♂ 3♀♀ 1 tritonymph HW leg., Brøstrud 19 Aug.1969 3♀♀ 1 tritonymph HW leg.; Rollag: Ulstad 17 Aug.1969 1♀ 1 tritonymph 2 deutonymphs HW leg.

VE Sande: Sande 15 Aug.1969 1♂ 5♀♀ 7 tritonymphs 11 deutonymphs 5 protonymphs HW leg., 2 km SSW of Sande railwaystation 15 Aug.1969 2♂♂ 5♀♀ 9 tritonymphs 6 deutonymphs HW leg.; Lardal: 1.5 km NNE of Styrvoll church 16 Aug.1969 1♂ 4 deutonymphs HW leg., Svarstad, Otterstad 15 Aug.1969 4♀♀ 7 tritonymphs 8 deutonymphs HW leg.; Hof: 1 km SE of Herstad 15 Aug.1969 1 tritonymph HW leg.

HOY Os: Bjørnåsen 18 Nov.1975 sphagnum bog with *Erica tetralix* and *Myrica gale* 3♂♂ 5♀♀ 1 tritonymph 2 deutonymphs FK leg., Hagavik 16 Oct.1973 2 tritonymphs TA leg.; Bergen: Vareggen 17 Nov.1974 sphagnum bog 1♀ FK leg.; Austevoll: Møkster 6 Dec.1975 sphagnum bog 11♂♂ 3♀♀ 1 tritonymph FK leg.

SFY Gulen: Breivik 20 Nov.1974 in the rotten kelp by the shore 2 protonymphs TA & AF leg. Rutledal 20 Nov.1974 in ground litter and moss on aspen and *Sorbus aucuparia* 3♂♂ 3♀♀ 1 tritonymph 2 deutonymphs 4 protonymphs TA & AF leg., by the Hedalsriver 20 Nov.1974 sphagnum bog with *Calluna* 3♂♂ ground litter and moss and lichen on oak 3♂♂ 9♀♀ TA & AF leg., S of Eivindvik 20 Nov.1974 heathery slopes by the sea 3♂♂ 4♀♀ 4 tritonymphs TA & AF leg., Eivindvik 20 Nov.1974 ground litter 3♂♂ 8♀♀ 2 deutonymphs TA & AF leg., Grindevann 20 Nov.1974 ground litter by the shore 1♂ TA & AF leg., Fjordsdalen 20 Nov.1974 moss-covered scree 2♂♂ 4♀♀ 3 tritonymphs 1 deutonymph TA & AF leg.

Microbisium brevifemuratum (Ellingsen 1903)

HOY Os: Bjørnåsen 18 Nov.1975 sphagnum bog with *Erica tetralix* and *Myrica gale* 14♀♀ 19 tritonymphs 14 deutonymphs FK leg.

Syarinus strandi (Ellingsen 1901)

HOI Kvinnherad: Rosendal, Murabotn 14 May 1975 from ground litter with the rotten *Alnus incana*. 3♀♀ ML & FK leg., Rosendal 32 V LM 356537 14 May 1974 1♀ LS leg., Ånesdalen 32 V LM 399630 25 May 1974 1 tritonymph FK leg.

Cheiridium museorum (Leach 1817)

HOY Os: Bjørnen 18 Nov.1975 grass field 1♀ FK leg.

Lamprochernes chyzeri (Tömösváry 1882)

Ø Fredrikstad: Torsnes, Humlekjær 5 Oct. 1980 under bark of dead aspen 1♂ 1 juv FK leg., 20 April 1982 under bark of dead aspen 1♂ FK leg., 26 April 1987 under bark of dead aspen 2♂♂ 1♀ FK leg., Skogstrand by the road to Strand 12 Aug.1986 under bark of dead aspen 2♂♂ 2♀♀ 1 tritonymph FK leg., Vikane 15 July 1987 under bark of dead aspen 3 tritonymphs FK leg., Holte 20 July 1972 under bark of dead aspen 2♂♂ 1♀ KS leg.; Våler: by the road to Sæbyvannet 16 May 1982 under bark of dead aspen 1♂ 1♀ FK leg.; Halden: Håkenby by Tistedalen 23 Aug.1981 under bark of dead aspen 1♂ 2♀♀ FK leg.

Lamprochernes nodosus (Schrank 1803)

BØ Hurum: EIS 28 Verksøya 8 July-19 Aug 1995 phoretic on *Seioptera vibrans* (Diptera) in malaisetrapp by the seashore 1♀ LOH & OH leg.

Pselaphochernes scorpioides (Hermann 1804)

Ø Fredrikstad: Gansrød 30 May 1986 ground layer in oak forest 2♀♀ FK leg.; Moss: Jeløy 28 July 1985 ground layer in deciduous forest 1♀ FK leg.; Rygge: Ekeby, Gunnarsbybekken 17 June-21 July 1992 malaise trap 1 GW & LOH leg., Ekeby, Telemarkslunden 19 May-21 July 1992 malaise trap 3♀♀ GW & LOH leg.

AK Frog: Håøya 27 June-18 Aug.1984 2♂ FM leg., 27 June-22 July 1984 malaise trap 1♀ FM leg.; Nesodden: Fagerstrand 16 Aug.1989 light trap 1♀ SK leg.

BØ Hurum: Tofte 17 June-17 July 1985 malaise trap 2♂♂ 12♀♀ FM leg., 17 July-8 Aug.1985 malaise trap 1♂ 1♀ FM leg., 8 Aug.-1 Sept.1985 malaise trap 2♀♀ FM leg.

VE Tjøme: Mostrandra 25 Sept.1984-24 May 1985 barber trap in oak forest 1♀ TA leg., 2 July 1985 ketching on oak 1♀ AFJ leg.

TEY Porsgrunn: Gravastrandra 17 Sept.1988 light trap 1♀ TA leg.

Pselaphochernes dubius (O.P.-Cambridge 1892)

VE Tjøme: Mostrandra - 28 Sept.1974 barber trap 7♀♀ TA leg., 25 July-25 Sept.1984 barber trap in hazel coppice 1♀ TA leg.

Dinocheirus panzeri (C.L.Koch 1837)

Ø Fredrikstad: Humlekjær 5 Oct.1980 under bark and in hollow

aspens 4♂♂ 4♀♀ 14 tritonymphs 5 deutonymphs FK leg.
ON Skjåk: Marlo 28 July 1978 phoretic on fly 1♀ AF leg.

***Chernes cimicoides* (Fabricius 1793)**

Ø Halden: Brekke, Fjell bru 15 Aug. 1981 pine forest 1♂ 1♀ 1 tritonymph FK leg.; Tune: Skartås 32 V PL 125827 23 July 1983 under bark of *Populus tremula* 3♂♂ 5♀♀ 1 juv FK leg.; Fredrikstad: Humlekjær 16 June 1980 under bark on dead pine 5♂♂ 3♀♀ (all with embryos) FK leg., 12 May 1985 under bark of dead oak 1♀ FK leg., 28 May 1985 under bark of dead aspen 3 tritonymphs FK leg., Torsnes by Fugleneb 2 May 1983 under bark of aspen 1♂ 1 tritonymph FK leg., Veum, Strandli 5 Aug. 1984 under bark of dead pine 2♂♂ 3♀♀ 1 tritonymph under bark of birch 2♂♂ FK leg., Skogstrand by the road to Strand 12 Aug. 1986 under bark of aspen 1♀ FK leg., Gansrød 30 May 1986 ground layer in oak forest ♂ FK leg., S. of Liane 32 V PL 104747 22 April 1984 beneath stone in *Formica* nest 1♂ 3♀♀ FK leg., Mærrapanna 17 Sept. 1978 under bark of dead aspen 2♂♂ 1♀ 1 tritonymph FK leg., Kjevlersrød 25 July 1984 under bark on *Salix caprea* 2♀♀ FK leg., Fuglevik 20 May 1983 on dead aspen 1 tritonymph 1 deutonymph FK leg., towards Randholmen 2 May 1983 under bark of alder 3♂♂ FK leg., Randholmen 7 May 1983 under bark of old apple trees 1♂ 1♀ 3 deutonymphs FK leg.; Hvaler: Vesterøy, along the road to Papper 29 May 1982 under bark of pine 1♂ 1 juv. under bark of rotten oak 2♂♂ FK leg.; Våler: by the road to Sæbyvannet 16 May 1982 in *Formica rufa* nest 1♂ 1♀ under bark on aspen 1♂ 1 tritonymph 1 deutonymph FK leg.; Rygge: Ekeby, Telemarkslunden 19 May -17 June 1992 malaisetrapp 1♂ 1♀ GW & LOH leg.

AK Frogn: Håøya 3-6 June 1984 malaisetrapp 1♂ FM leg.; Bærum: Ostøya 30 May-10 June 1984 malaisetrapp 2♂♂ 1♀ FM leg.

HE Ringsaker: by the road to Brumundal 22 June 1984 under bark of aspen 1♂ FK leg.

BØ Drammen: Spiralen 8 June 1986 1♀ LOH leg.; Røyken: Hyggen, Kinnartangen 22 June 1986 1♀ LOH leg.; Hurum: Mølen 4-6 May 1990 1♀ LOH leg., Tofteholmen 28 May-7 July 1991 1♂, 2♀♀ LOH leg.

VE Larvik: Hedrum, Øksenholt 30 June 1996 in hollow aspen 1 tritonymph AF leg., 10 July 1996 dead pine 1♀ AF leg.; Andebu: Bjørnevatin 13 July 1996 dead aspen 3♂♂ AF leg., Mannsås: 1 Sept. 1995 1♀ AF leg.

***Chernes nigrimanus* Ellingsen 1897**

Ø Fredrikstad: Slangsvold-Trøsket 23 July 1981 under bark of dead pine stumps in mixed pine and spruce forest 1♂ 2♀♀ FK leg.; Våler: by the road to Sæbyvannet 16 May 1982 under bark of pine 1♀ 1 deutonymph FK leg.

***Dendrochernes cyrneus* (L. Koch 1873)**

VE Larvik: Hedrum, Øksenholt 10 July 1996 dead pine 2♂♂ AF leg.

***Chelifer cancroides* (L. 1758)**

BØ Drammen: Åssiden, Underlia 16 May 1988 1♂ LOH leg.

HOY Bergen: Fantoft students home 22 Sept. 1978 toilet paper 1♀ ØW leg., 15 Jan. 1983 1♂ SH leg.

REMARKS ON SOME OF THE SPECIES

Syarinus strandi

The records are from the same locality as have been investigated earlier by me (Klausen 1975). The locality is characterized by slopes of pasture or meadowland close to a river with a nearby forest stand of hoary alder. Apart from Norway this species has been taken in Finland in northern Europe and Austria and Germany in Central Europe. According to Beier (1969) the species in the family Syarinidae must be considered as preglacial relics in Europe. Schawaller (1987) is discussing this species on account of its seemingly disjunct distribution in Europe. He suggests that the species has survived the low temperatures during the glacial periods by going deeper down into the soil by riverbanks and similar habitats outside the glaciers, where conditions were favourable for survival. By the end of the glaciation its geographic distribution has been kept restricted perhaps by competition from ground living species of other genera, for instance *Neobisium*.

The records of Ellingsen (1901) from Ål in Hallingdal and Breistøl in Suldal seem to contradict this pattern of distribution since these parts of the country must have been covered by a massive icecap which no living creature could have survived. However, if the species has been able to spread to new habitats during the time after the end of the last glaciation this contradiction may be just apparent. A recent record from Tirol in Austria by Schmarda (1997) confirm this view. If so, these habitats ought to be similar to those favoured by *Syarinus strandi* when the glaciation prevailed. The habitats in Hallingdal, Suldal and for that matter Rosendal, Murabotn and Ænesdalen in the western parts might have this qualities.

Lamprochernes chyzeri

This species has been reported earlier once by Ellingsen (1897) from Drøbak and Kragerø. My own records

are all from under the bark of dead aspen. This is in accordance with the observations made by Lohmander (1939) and Beier (1963). Legg and Jones (1988) on the other hand report it from "beneath the bark of old trees such as beech and birch". Lohmander (1939) notes that the species seem to have an affinity to the dead and partly rotten textrous fibres of the aspen cambium, and the species prefers the transitional area between humid and dry bark. My own observations confirm this although the material is scanty.

Pselaphochernes scorpioides

Most of the records of this species are from malaise traps or light traps. Without doubt the specimens have been brought there attached to insects captured in the trap. The phoretic behaviour of pseudoscorpions has been well documented, for instance by Beier (1948). Legg and Jones (1988) remarks that *Pselaphochernes scorpioides* "is commonly phoretic on flies". Three of the other species in the material, *Lamprochernes nodosus*, *Dinocheirus panzeri* and *Chernes cimicoides* have also been caught either phoretic or in malaise trap.

Dendrochernes cyrneus

This species has been recorded earlier once in Norway near Faulstad in the valley of Heddal by Ellingsen (1903). He reports it from under the bark of old pine-tumps. The species have a preference for ancient woodland wherever it has been found. Beier (1932) characterize it as "Ein ausgesprochenes Waldtier, welches unter der Rinde von Bäumen und in den Gängen von Bock- und Borkenkäfern lebt". It is found both in deciduous and pine forest and is widely distributed in Europe but never in great numbers. The species is probably more common in the eastern than in the western parts of Europe.

In England it has been recorded from seven sites since the turn of the century with the only known viable population at present time in the Sherwood Forest (Jones 1980).

As ancient woodland is becoming more scarce in Europe, especially in the western parts due to increasing urbanisation and deforestation, the species must be considered as threatened. This applies to Norway too, where modern forest management give little room for those habitats preferred by *Dendrochernes cyrneus*. Nevertheless, if loo-

ked for in the right habitats as for instance southbent slopes in old decaying pine forest, more locations for this interesting species ought to emerge.

SAMMENDRAG

Flere funn av pseudoscorpioner i Norge

Pseudoskorpionfaunaen i Norge er dårlig kjent. Artikkelen omfatter 14 av de 16 artene som hittil er kjent for landet. Alle funn er gjort på Østlandet og Vestlandet. En kort omtale av utbredelse og habitatvalg er tatt med for artene *Syarinus strandi*, *Lamprochernes chyzeri*, *Pselaphochernes scorpioides* og *Dendrochernes cyrneus*.

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Allomengea vidua (L.Koch, 1879) (Araneae, Linyphiidae) in Norway

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Collected in a wet river delta in southeast Norway the linyphiid spider *Allomengea vidua* (L.Koch) is reported for the first time in the country. A brief discussion of the distribution is given.

Lake Øyeren, situated approximately 20 km east of Oslo in Akershus county southeast Norway. In the north deposits brought by the river from the wide agricultural areas of Romerike further north. This has resulted in a lush area with meadows, temporarily flooded every spring, river banks and areas with bushes (*Salix* spp. and *Alnus incana* dominating) as well as more dense *Alno-Prunetum* associations and stands of *Betula pubescens/verrucosa*. For more detailed description, see Syvertsen (1983). The delta was declared a nature conservation area in 1975.

In September and October 1985 pitfall traps were operated in the area (at Årnestangen, Rælingen).

Traps set in open areas contained the rare *Allomengea vidua* (L. Koch): 1 male + 1 female 7-14 September, 1 male 14-29 September and 1 female October-3 November. These are the first records of the species in Norway.

A.vidua is obviously a rather stenoecious species restricted to wet and marshy areas, a psychrophilous species (Ruzicka 1987), hygrobiont (Casimir 1962, Platen & al.1991), see also Braun (1976). It has been found in bogs and mires (southern Sweden) (Holm 1977, Kronestedt 1983, Almquist 1984), often in simi-

lar situations as *A.scopigera* (Grube, 1859) (see Wiehle 1956), which also prefers wet habitats, according to Blick & Scheidler (1992). Both species were strongly dominant on a shore habitat of an Åland lake (an alder thicket merging into a dense *Phragmittetum*), *A.vidua* here obviously the one preferring «the immediate neighbourhood of the shore line» (Lehtinen & al. 1979).

A.vidua is, according to Heimer & Nentwig (1991) distributed in middle and western Europe (but rare). On continental Europe this means at least south to France (Bonnet 1955), Germany (Wiehle 1956), Holland and Böhmen in former Czechoslovakia (Braun 1976), Poland (Proszynski & Starega 1971), Estonia (Vilbaste 1964), and eastwards to Siberia (Holm 1973). It is absent from the list of Switzerland (Maurer 1978), rare but widespread on the British Isles north to central Scotland (Locket & Millidge 1953, Locket & al. 1974). In northern Europe it seems to be locally abundant (Palmgren 1972, Lehtinen & al. op.cit.), obviously widespread in southern coastal and other humid habitats of Finland up to about 62°N (Palmgren 1975). There also is a record from a mire at Kuusamo (about 66° N) (Koponen 1978). In Sweden it is known north to Västerbotten county (Kronestedt 1983).

A.scopigera has a somewhat wider distribution:

Recorded from Swedish and Finnish Lapland (Palmgren 1975, Kronestedt 1983), as well as from northern Troms and Finnmark (Hauge 1971, 1989). In north-western areas the species has reached northernmost Scotland (Locket & al. 1974), it is locally common on Shetland (Ashmole 1979), widespread in Iceland (Brandegaard 1958), as well as being reported from western Norway (Strand 1902, Andersen & al. 1980, Hauge & al. 1991). Eastwards the species is distributed to Siberia (Wiehle 1956) and Kamtchatka (Bonnet 1955). In middle Europe (Heimer & Nentwig 1991) it is at least recorded south to France and Italy (Bonnet 1955). Bonnet here includes Switzerland within its range; it is, however, absent there according to Maurer (1978).

SAMMENDRAG

Allomengea vidua (Araneae, Linyphiidae) i Norge

Tilsammen 2 hanner og 2 hunner av *Allomengea vidua* (L. Koch, 1879) er rapportert for første gang i Norge, fra de fredete våtmarks-områdene ved Nordre Øyeren, Årnestangen, Rælingen, Akershus. Den relativt skjeldne arten, knyttet til fuktige habitats hvor den lokalt kan være relativt tallrik, er vidt utbredt i Storbritannia (til Skottland) og det kontinentale mellom-Europa sør til Frankrike og øst til Sibir. I våre naboland er den kjent ganske langt nord, til Västerbotten (Sverige) og Kuusamo ved omtrent 66° N i Finland. Dens nære slektning *A.scopigera* ligner den både med hensyn til økologiske preferanser og generell utbredelse, men viser en noe mer nordlig utbredelse i de nordiske landene, pluss at den også er rapportert på de nord-atlantiske øyene, Shetland og Island, så vel som fra Vestlandet i Norge, i alle områdene åpenbart både vidtspredt og lokalt abundant.

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Semblis phalaenoides (Linnaeus, 1758) recorded in Norway (Trichoptera: Phryganeidae)

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A male and female *Semblis phalaenoides* (Linnaeus, 1758) were collected at Mørkelva, Våler in Østfold, southeastern Norway 19 June 1996. The species is new to Norway.

MATERIAL

A mating couple of the phryganid caddisfly *Semblis phalaenoides* (Linnaeus, 1758) were collected at the stream banks of Mørkelva, near Bjerke, north of lake Vannsjø in Våler, Østfold 19 June 1996, EIS 20, UTM 32V PL090954, leg. H. Olsvik.

Brekke (1946) discussed the statement by Wallengren that this species was represented in Norway. However, he (Brekke 1946, p. 157) stressed that the early record needs confirmation. Due to lack of records the species was considered absent in Norway (Solem & Andersen 1996; Solem & Gullefors 1996).

Mørkelva is 3-8 m wide, mostly deeper than 0.5 m and has a slow current at the sampling locality. The bottom substrate is mostly mud and fine sand, but also gravel and rocks were present. The color of the water was clear brownish, although the locality is situated at 25 to 30 m. a.s.l. and well below the sea-level during the early post-glacial period. The stream banks are covered by different grass species, some bushes and small trees (*Salix* spp., *Alnus* sp., *Betula* sp.). The stream runs through mixed deciduous and coniferous forest and agricultural fields.

The genus *Semblis* is a small group including only five species restricted to the boreal northern temperate part of the Palearctic region. The distribution data of *S. atrata* and *S. phalaenoides* indicate that their range

form a broad, more or less continuous band from Scandinavia to Japan (Gullefors 1988; Kuwayama 1967; Ivanov pers. comm.). The range of *S. phalaenoides* is indicated in Figure 1. and represents nearly the total range of the genus *Semblis*.

The species within *Semblis* are characteristic in having yellowish-white fore wing ground colour and large, dark spots scattered on the wing surface (Figure 2). The hind wings of most species, including *S. phalaenoides* have a broad, dark posteromarginal band. The band in *S. atrata* fades quickly basad. With fore wing length 29 mm in the male and 32 mm in the female, *S. phalaenoides* is among the largest Norwegian caddisflies.

STATUS AND DISTRIBUTION

In Sweden the species was considered as one out of two threatened caddisfly species, and considered as vulnerable (IUCN:V) (Andersson et al. 1987). It's status was changed to rare (IUCN:R) out of a total of twelve threatened caddisflies by Ehnröström et al. (1993). The species is probably one of the most rare species also in Norway. This represents the westernmost record of this species (Figure 2). In Sweden it is recorded from the northeastern part (Gullefors 1988). In Finland it is widely distributed and recorded from most provinces except AI, Sb, Om, Le and Lps (Nybom 1960).

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SAMMENDRAG

Semblis phalaenoides (Trichoptera) i Norge

En hann og en hunn av vårfluen *Semblis phalaenoides* (Phryganidae) er for første gang dokumentert fra Norge. Arten ble tatt langs Mørkelva, nær Bjerke og nord for Vannsjø i Våler, Østfold. Funnet er fra 19 Juni 1996, EIS 20, UTM 32V PL090954, leg. H. Olsvik.

Figure 1.
The approximate range of
Semblis phalaenoides (Linnaeus, 1758).

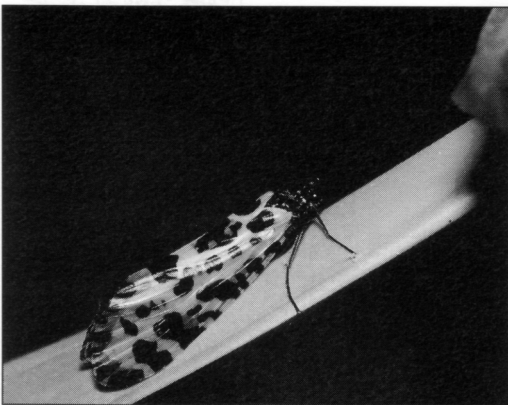
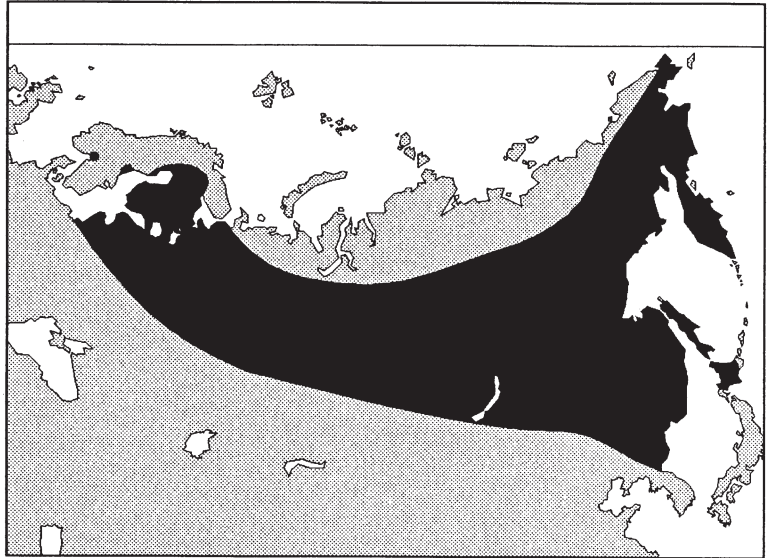


Figure 2.
Male *Semblis phalaenoides* (Linnaeus, 1758), habitus, lateral view.

Arten er av de sjeldneste som er kjent fra Norge, men har en vid utbredelse lenger øst. Den er kjent fra tre områder i nordøst Sverige, fra store deler av Finland, og øst til Japan. Dette funnet representerer det vestligste for arten.

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The Norwegian records of *Opomyza lineatopunctata* von Roser, 1840 (Diptera, Opomyzidae)

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Recent collections have shown that the Opomyzid *Opomyza lineatopunctata* von Roser, 1840 (Opomyzidae) has a restricted area of distribution in south Norway, along the coast from outer AustAgder province (AAY) to Hordaland province, outer and inner parts (HOY & HOI). The distribution is mapped based on a material of 79 specimens from 14 localities.

The family Opomyzidae, genus *Opomyza*, was surveyed in Norway by Greve (1981). The species *Opomyza lineatopunctata* von Roser, 1840 (Diptera, Opomyzidae) was considered rare, recorded only from two widely separated localities in southern Norway: AAY Landvik: Skiftenes and HOY Bergen: Helleneset. Greve and Hauge (1989) published a third record from HOY Stord: Iglatjødn, Malaise trap.

More than thousand specimens of Opomyzidae have since 1981 been collected with different traps/nets from all over the country to accumulate enough material for a survey of the genus *Geomyza*, and thus new material of the genus *Opomyza* including *O. lineatopunctata* has also been collected:

New material: 13♂♂ 62♀♀:

VAY Flekkefjord: Gyland MT 14-28 Aug.1982 1♀, Hidra, Dragøy MT 28 Aug.-10 Sept.1983 1♂; Mandal: Malmø, Eskelandsmyra MT 11-28.Aug.1982 2♀♀; Mamardal: Laudal, Sveindal MT 22 July-6 Aug.1982 2♀♀. RY Karmøy: Slettevatnet 29 Sept.1986 1♀. RI Forsand: Songesand 1♀ 10.Aug.1983, 1♀ 7 Sept.1984 (This female is deposited in the private collection of Terje Jonassen), from Helmikstøl towards Håheller 26-27 July 1984 1♀. HOY Bergen: Garpetjern 4 Sept.1984 2♂♂ 3♀♀, Helleneset 28 July 1980 2♂♂ 1♀, Kyrkjetangen at Nordåsvannet 13 Aug.1980 2♀♀, Munkeboten 18 Aug.1985

5♂♂ 16♀♀; Samnanger: Ådland MT 13 Aug.-4 Sept.1982 1♂ 1♀. HOI Kvam: "Svevatn area" EIS 31 Barber trap Square 04 28 July-27 Aug.1997 1♀, Barber trap Square 16 23 Sept-21 Nov.1997 3♀♀, Barber trap Square 23 22 Sept.-21 Nov. 1997 1♀, Barbertrap Square 43 31 July-22 Aug.1997 1♀, Barber trap Square 64 22 Sept.-21 Nov.1997 3♀♀ ♀, 21 Nov.1997-21 April 1998 1♂ (=Loc. 64 8 BF), Barber trap Square 93 28 July-27 Aug.1997 4♀♀, Barbertrap Square 112 28 July-27 Aug. 1997 1♀, Barbertrap Square 122 28 July-27 Aug. 1997 1♂ 3♀♀ ♀, Barbertrap Square 122 27 Sept.-22 Nov. 1997 4♀♀ ♀, Barbertrap Square 129 28 July-27 Aug. 1997 1♀, Barbertrap Square 132 28 July-27 Aug. 1997 7♀♀ ♀, Barbertrap 135 28 July-27 Aug. 1997 1♀ (2♂ 30♀♀ from 12 sites).

All records of *O. lineatopunctata* are mapped on Figure 1, based on the total material from Norway: 15♂♂ 64♀♀ from 15 localities.

The mapped distribution, Figure 1, shows a restricted distributional area in South Norway, from Aust-Agder

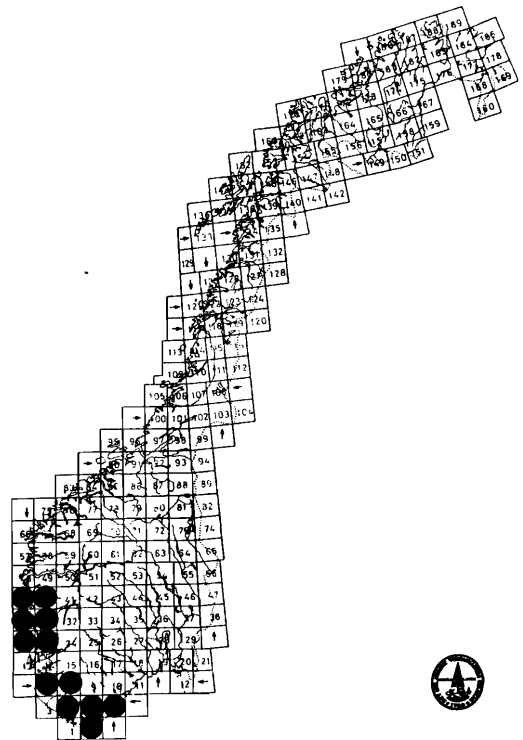


Figure 1
The distribution of *Opomyza lineatopunctata* von Roser in Norway.

province along the coast to the Bergen area, Hordaland province. It should be noted here that collection done east and north of this area has produced no material. The localities are all near the coast or when not, fairly close to fjords in western Norway. Based on the number of specimens and localities *O.lineatopunctata* can not be considered a very rare fly in the area of distribution hitherto known.

One hostplant suggested for *O.lineatopunctata* in Scandinavia by Hedström (1995) is *Molinia caerulea* (L.). This grass-species is widely distributed north to Troms province in North Norway, more scarce in Finnmark province and also recorded from alpine areas. Thus the distribution of this eventual hostplant should mean no obstacle for *O.lineatopunctata* outside the recorded distributional area. The records from HOI Kvam all originate from pine forest. Various types of deciduous forest were also sampled in the same survey, but no specimens of *O.lineatopunctata* were found in these. *Molinia caerulea* grew in abundance at these sites, usually being the dominant grass species.

The flight period for *O.lineatopunctata* in SW Norway is autumn, from late July until November possible December - as one male was collected from a Barbertrap run from 21 Nov 1997-April 1998. A majority of the specimens which have been collected by hand has been from in August. However in the Svevatnet area there are 1♂ 11♀ collected from late part of Sept. until Nov, the single male possibly later.

Several localities in Sweden are wet, bogs, mires etc. (Hedström 1995) which fits well with some of the Norwegian localities, see Greve & Hauge (1989).

O.lineatopunctata is distributed outside Norway in middle and northern Europe including Great Britain, Denmark, Sweden and Finland (Soós 1984). Hackman (1980) does not include *O.lineatopunctata* in his list of Finnish Diptera, however. Hackman (1959) has a single record from the vicinity of the Lake Ladoga (Karelia ladogensis), today in Russia. Hedström (1995) records the following provinces from Sweden: Småland, Öland, Gotland and Uppland. These are all provinces in E and SE Sweden. Thus *O. lineatopunctata* according to Hedström has a restricted distributional area in Sweden.

The Scandinavian distribution of this fly is thus an interesting picture of two widely separated but restricted, distributional areas, in the east and west parts parts in the south of the peninsula. Populations of *O.lineatopunctata* could have followed different routes invading Scandinavian peninsula after the glaciation, and this might be a possible explanation for two widely separated areas of distribution today.

ACKNOWLEDGEMENTS

We are grateful to Terje Jonassen, Sjernarøy and Alf-Jacob Nilsen, Hidra who collected parts of the material.

SAMMENDRAG

Opomyza lineatopunctata von Roser i Norge

Artikkelen omtaler og viser på kart utbredelsen, basert på 79 individer fra 16 lokaliteter, av gressfluen *Opomyza lineatopunctata* i Norge. Utbredelsesområdet er begrenset til kyst- og fjordområder i Sør/Sørvest Norge, utenfor dette området har arten vært ettersøkt, men er ikke funnet. *O.lineatopunctata* har to avgrensede utbredelsesområder på den skandinaviske halvøy, det andre området utgjøres av Sørøst Sverige. Kanskje er forklaringen at *O.lineatopunctata* kan ha hatt to separate innvandringsruter etter istiden.

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Three species of Lauxaniidae (Diptera) new to Norway and a note on the distribution of *Pachycerina seticornis* (Fallèn, 1820) (Diptera, Lauxaniidae)

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Three species of Lauxaniidae (Diptera): *Calliopum elisae* (Meigen, 1826), *Calliopum simillimum* (Collin, 1933) and *Tricholauxania praeusta* (Fallèn, 1820) are reported new to Norway. *Calliopum elisae* is recorded from six different localities in Østfold (Ø), Akershus (AK), Vestfold (VE) and Buskerud (BV) provinces in South-East Norway. *C. simillimum* (Collin, 1933) is recorded from two localities in Ø and AK. *Tricholauxania praeusta* (Fallèn, 1820) is recorded from four different localities in the provinces Rogaland (RY & RI) and Hordaland (HOI) in West Norway. *Pachycerina seticornis* (Fallèn, 1820), earlier once recorded from Norway, is here listed from eleven additional localities in southern and central Norway.

The fly-family Lauxaniidae probably has from 40 to 50 species in Norway, some of which are very common. The family occurs on all continents except Antarctica, still the present state of knowledge is inadequate (McAlpine 1987). The lauxaniids are small to medium sized flies, mostly blackish-brown or bright yellow in body-colour. For a more fully description of family characters see Papp, L. (In Soós 1984).

Few dipterists have worked with species of this family in Norway. The latest survey for Norway is still the one by Siebke (1877) who listed 22 species. Short notes on some species new to Norway have been presented by Rognes (1995) and Greve (1997). Hackman

(1980) lists 45 species of Lauxaniidae from Finland, and at least 42 species are known from Sweden (H. Andersson pers. comm.).

The material mentioned in this article is deposited in Zoological Museum, University of Bergen unless otherwise stated. The Norwegian localities are presented according to the system of Økland (1981). MT=Malaise trap. LT=Light trap.

Genus *Calliopum* STRAND, 1928

The genus *Calliopum* are small metallic blue-black or green-black flies. The face is concave in upper part, slightly concave in lower part. The first flagellomere is longer than scapus and pedicel combined. The arista is black.

C. aeneum (Fallèn, 1820) is the only *Calliopum* species hitherto recorded from Norway (Siebke 1877). Two other species *C. elisae* (Meigen, 1826) and *C. simillimum* (Collin, 1933) have been recorded from Fennoscandia and Denmark. All three are widely distributed in Middle-Europe.

Calliopum elisae (Meigen, 1826)

New records: Ø Onsøy: Rauer EIS 19 28 July 1989 1 ♀. AK Oslo: Hengsengen EIS 28 1 June 1984 1 ♀; Lamberisetser EIS 28 6 Aug. 1983 1 ♀; Ås: Vassum EIS 28 9 Aug. 1966 1 ♀. VE Sem: Robergmyra EIS 19 7 July 1983 4♂♂ 1 ♀. BV Rollag: Rollag EIS 35 30 Aug. 1987 1 ♀.

C. elisae (Meigen, 1826) has been recorded from Finland (Hackman 1980) and Sweden (Andersson pers. comm). *C. elisae* is further recorded from Ireland and in Great Britain where it is known from Wales, east Anglia, and from Scotland (Speight, Blackith & de Courcy Williams 1992). It is widely distributed in Europe and has also been recorded from the Nearctic (Soós 1984). It is found in herbage (Bährmann 1985).

Calliopum simillimum (Collin, 1933)

Syn.: *Lauxania (Halidayella) simillima* Collin, 1933
New record: Ø Rygge: Gunnarsbybekken EIS 19 19

Aug. 1993 1♂ 1♀. AK Enebakk: Nordre Bøler EIS 29 MT July 1996 1♀, Aug. 1996 1♂.

C. simillimum is recorded from Denmark and Sweden (Andersson pers.comm.), as well as from middle-Europe (Martinek 1984). *C. simillimum* is according to Papp (1993) known from deciduous forests. It can also occur in semi-open habitats (Reddersen, 1994).

Genus *Tricholauxania* HENDEL, 1925

A light yellow coloured, monotypic genus, similar in general habitus to many species in the genera *Lyciella* and *Sapromyza*. However, the genus *Tricholauxania* differs from these genera by having R 2+3 with bristles along the whole length on ventral surface of wing. The wingtip is slightly clouded in the distal ends of R 2+3 and R4+5 in most of the Norwegian specimens.

Tricholauxania praeusta (Fallén, 1820)

New records: RY Tysvær: Kårstø near Sandvikgardene EIS 14, deciduous forest 14 July 1981 2♂♂ 1♀. RI Forsand: Forsand EIS 8 July 1946 1♀ det. L.Lyneborg. HOI Kvinherad: Rosendal EIS 31 13 June 1965 1♂ det. L.Lyneborg; Kvam: Bergsberget EIS 31 2 July 1971 1♀, 20 July 1971 1♂, 21 July 1971 1♀.

T. praeusta is known from Sweden (H.Andersson pers.comm.) and from Finland (Hackman 1980). It is recorded from Europe south to Italy (Papp In Soós 1984). *T.praeusta* is often collected among grasses (Bährmann 1985, Reddersen 1994). Three of the localities represent cultural landscapes with some rich deciduous forest. *T.praeusta* is according to Papp (1993) a very common and abundant West Palaearctic species.

Genus *Pachycerina* MACQUART, 1835

Pachycerina seticornis (Fallén, 1820)

Synonym: *Lauxania seticornis* Fabr.(Fabricius) (Siebke, 1877)

P.seticornis has a strongly protruding face which differs markedly from other Lauxaniidae. The face is light brown in colour with two prominent blackish-brown spots below the antennal sockets. The arista is black and covered with dense, black hairs.

Published record: AK Oslo: Frogner 5 July 1849 2♂♂ leg.Siebke (Siebke 1877).

New records: Ø Halden: Prestbakke EIS 12 MT 6 May-9 June 1986 3♂♂, 9-30 June 1986 2♂♂ 2♀♀. AK Nesodden: Fagerstrand EIS 28 LT 19-20 Aug.1993 1♂, 6-7 Oct. 1993 1♂ 1♀; Enebakk: Vangen EIS 29 (Site 24) Window trap End of April-28 May 1991 1♀, (Site 25) Window trap 28 May-25 June 1991 1♀,(Site 48) End of May-24 June 1991 1♀; Lørenskog: Losby EIS 29 (Site 14) Window trap 25 June-1 Aug.1991 1♂, Østby EIS 29 (Site 62) Window trap End of May-19 June 1991 1♂; Rælingen:Losby EIS 29 (Site 3) Window trap End of May-24 June 1991 1♂,(Site 10) 25 June-30 July 1991 1♂. HES Ringsaker: Helgøya, Hovindsholm EIS 45 MT 29 June - 27 July 1991 MT 3♂♂ 1♀. BV Gol: Engene EIS 44 MT 18 June-5 July 1982 1♂. VE Tjøme: Eidene Eis 19, on snow 7 Febr. 1965 1♂. HOI Granvin: Granvin EIS 41 MT 13-24 April 1982 3 exx., 30 April-15 May 1982 1♂. NTI Høylandet: Skiftesåa EIS 107 MT 10-17 July 1988 1♂.

P.seticornis has earlier been recorded from: AK Oslo: Frogner «In Frogner ad Christianiam 5 Juli 1849 observata» (Siebke 1877). Siebke collected two males, both are present in the collections of Zoological Museum, University of Oslo today, one male lacks part of the antennae, the other male have no head. The locality «Frogner» is today part of a suburb of Oslo city and probably destroyed as a habitat for most insects. The Frogner record of *P.seticornis* is not included by Papp (In Soós 1984).

P.seticornis seems to have a fairly large distributional area in southern and central Norway judged from the records included here. The records in EIS 29 represent a project of 840 window traps at approximately 70 sites. A check of the material from around 70 traps for a period of one month, however, yielded few specimens only. Thus *P.seticornis* is not a very common species. Some records seem to indicate a flight period in spring and early summer, but there is also one record from early October. *P.seticornis* is the only member of the genus recorded from Fennoscandia and Denmark.

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We would like to thank Hugo Andersson, Lund, for information on distribution of Lauxaniidae in Sweden. We are grateful to H. Breilid, Bergen, A.Bruserud, Hamar, Arne Fjellberg, Tjøme, L.-O. Hansen, Oslo, T.Jonassen, Sjernerøy, F.Midtgaard, Ås, T.Randulff Nielsen, Sandnes, A.-J.Nilsen, Hidra, B.A.Sagvolden, Rollag, H.Solberg, Enebakk, J.O.Solem, Trondheim, and B.Økland, Ås for material. The material from AK Enebakk: Vangen; Lørenskog: Losby and Østby and Rælingen: Losby is from the research programme "Forest ecology and multiple use".

SAMMENDRAG

Tre nye Krattfluer i Norge

Tre nye Krattfluer, *Calliopum elisae* (Meigen, 1826), *C.simillimum* (Collin, 1933) og *Tricholauxania praeusta* (Fallén, 1820)(Lauxaniidae, Diptera) nye for Norge, samt nye funn av arten *Pachycerina seticornis* (Fallén, 1820)

Krattfluer, Fam.Lauxaniidae (Diptera), er svært vanlige fluer i norsk fauna. Familien har likevel vært lite omtalt og undersøkt her i landet. Tre arter rapporteres fra Norge for første gang:*Calliopum elisae* (Meigen, 1826) er funnet på seks lokaliteter i Ø, AK, VE og BV. *C.simillimum* (Collin, 1933) er funnet i Ø og AK. *Tricholauxania praeusta* (Fallén, 1820) er funnet på fire lokaliteter i RI, RY og HOI. Disse tre artene er rapportert fra Sverige, og er i følge litteraturen vanlige lengere sør i Europa. *Pachycerina seticornis* (Fallén, 1820) er funnet på elleve nye lokaliteter nord til NTI. Arten er hittil bare kjent fra en lokalitet: AK Oslo: Frogner. Dette funnet er ikke tatt med i nyere oversikter som Papp (I Soós 1984), og lokaliteten sentralt i Oslo kan være ødelagt i dag.

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Sigara longipalis (J. Sahlberg, 1878) (Hemiptera, Corixidae) new to Norway

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On an excursion with students from Østfold College on 30 Sept. 1997, the water bug *Sigara longipalis* was found in a pond at Halden in Østfold county, South-eastern Norway. A total of 11 specimens were caught: 6 males and 5 females (coll. IS, det. DD).

The pond ("Festningsdammen") is artificial, and situated 88 m a.s.l in a park which is part of the Fredriksten Fortress area (UTM: 32V PL 374558). The pond is divided into two parts by a road and a bridge. It has an area of 1.5 daa, the depth is 1.5 m, and the vegetation is sparse (*Equisetum fluviatile*, *Iris pseudacorus*, *Lysi-*

machia vulgaris, *Menyanthes trifoliata*, *Carex rostrata* and *Juncus effusus*). Some domesticated ducks were present in the pond, which has also a population of crucian carp *Carassius carassius*. The measured hydrographic parameters (pH 7.4, conductivity 12,1 mS/m, total hardness 1.9 °dH, Ca²⁺ 11.7 mg/L, alkalinity 250 µekv/L) and the helophyte flora indicate mesotrophic conditions.

Other corixides recorded in the pond were: *Corixa dentipes*, *C. punctata*, *Sigara distincta* and *S. semistriata*.

S. longipalis has also been discovered in a collection of corixides collected by Reidar Heimholt and Jan Henrik Simonsen on 8. Sept. 1979. This record was made in some ponds, rich in lime, a few m a.s.l. on Akerøya Island in Hvaler municipality, Østfold (UTM: 32V PL 083464). The specimens, 3 males, were at that time mistaken for *S. fallenoidea* (Hungerford). The distance between the two localities (Fredriksten and Akerøya) is approximately 30 km.

Sigara longipalis has a scattered distribution from Central Europe to Fennoscandia, in the Volga Basin Area and Western Siberia (Jansson 1986). In Fennoscandia the species has earlier been recorded only in a

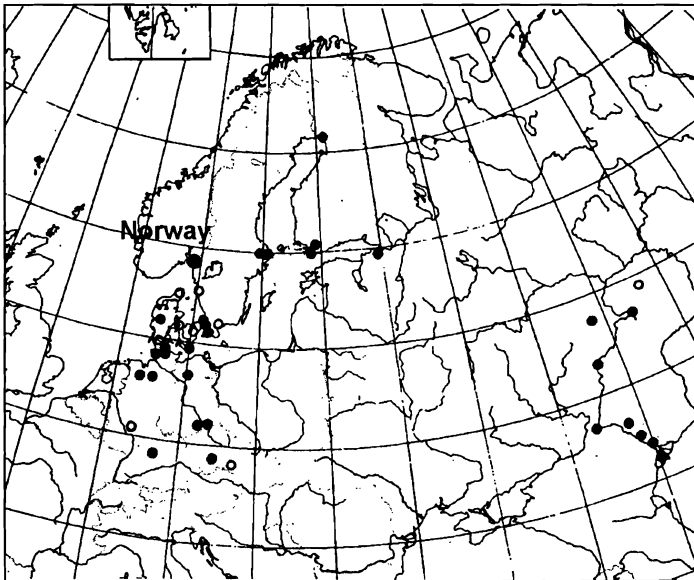


Figure 1

The distribution of *Sigara longipalis* in Europe (after Jansson 1986). The Norwegian localities are indicated with a big dot.

few places, mainly along the coast of South Sweden and Finland, and the closest locality to the Halden/Hvaler localities is situated some 150 km to the south, near Gothenburg, southwestern Sweden (Figure 1).

The material from this investigation is deposited at the NTNU University Museum in Trondheim, at Østfold College in Halden and in the collection of J.H. Simonson.

SAMMENDRAG

Sigara longipalis i (J. Sahlberg 1878) (Hemiptera, Corixidae) påvist i Norge

Sigara longipalis (Hemiptera, Corixidae) er rapportert ny for Norge. Arten er blitt funnet i en mesotrof dam ved Fredriksten festning i Halden og i noen kalkrike dammer på Akerøya, Hvaler; begge lokaliteter i Østfold fylke. Nærmeste kjente funn ligger ved Göteborg i Sverige. Arten er sjelden i Europa.

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Orthetrum cancellatum (L.) (Odonata) rediscovered in Norway

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INTRODUCTION

According to Olsvik & Dolmen (1992) the dragonfly *Orthetrum cancellatum* (L.) has earlier been recorded two times in Norway. The first record was made at the lake Bjørkelangen in Aurskog-Høland (Akershus) in 1920: on 21 July two specimens were found by Olstad (1922). Another record was made by N. Knagen at the lake Litjern near Laget, Tvedestrand (Aust-Agder) also before 1930 (Sømme 1937, Olsvik et al. 1990). Both localities are fairly eutrophic lakes on agricultural land, situated 124 and 51 m above sea level, respectively. Despite thorough investigations, especially during the latest 20 years or so, no further records have been made, and the species has been reckoned as extinct in Norway (IUCN: Ex) (Olsvik & Dolmen 1992, Dolmen 1996).

THE RECORDS

During investigations of a brackish-water lake, Langangsvatnet (UTM: 32V MK 9288) in Arendal, on 8 July 1997, several *O. cancellatum* larvae were found among gravel on shallow water on the northern side of the lake. On 9 July, the place was revisited in sunshine, and about 10 imagines of *O. cancellatum*, all males, were observed. Specimens were especially often seen sitting on a floating pier or on the nearby road. Two of them, and also two larvae, were collected, and preserved at NTNU the Museum in Trondheim. Other odonates recorded were: *Enallagma cyathigerum* (imagines), *Ischnura elegans* (imagines and larvae) and *Sympetrum* sp. (larvae).

THE HABITAT

Langangsvatnet is a semi-enclosed brackish-water lake situated 4 m a.s.l. It is connected to the sea through a 3 1/2 km long, deep canal/stream where sea-water can enter the lake, which thereby becomes (partially) meromictic. Every few years the stagnant bottom-water, rich in H₂S, mix with the upper water layers, resulting in mass death of fish in the lake (Jan Henrik Simonsen, pers. comm.). Some water quality parameters were measured at 10 cm depth on 9 July: pH 7.3, conductivity (K₂₅) 3150 µS/cm and water colour 25 mg Pt/L. The conductivity corresponds to a salinity of approximately 1.5 o/oo.

O. cancellatum is distributed in most of Europe (Askew 1988). For Sweden, Sahlén (1985) states that it inhabits lakes of different kinds, and brackish water along the Baltic coast. The species occurs also commonly along the beaches of the Finnish south-coast (my own observations July/Aug.1974). It is therefore not surprising that the Norwegian record was made in connection with brackish water.

Langangsvatnet is situated 17-18 km away from Liltjern at Tvedestrand, the lake at which a specimen was caught more than 68 years ago. This is no distance to fly for such a strong migrant. There exist other eutrophic and brackish-water lakes in the area as well, which have not been investigated. The probability is therefore large that more localities for *O. cancellatum* will be discovered during the years to come, if such lakes are studied.

SAMMENDRAG

Orthetrum cancellatum (L.) (Odonata)

Øyestikkeren *Orthetrum cancellatum*, som ikke har vært registrert i Norge sia 1920-tallet, og som derfor har vært reknet som utdødd, er gjenfunnet på Sørlandet. Flere larver og omkring 10 imagines ble registrert ved Langangsvatnet i Arendal 8-9 juli 1997. To hanner ble innfanget og konserveret sammen med to larver. Langangsvatnet er en brakkevannssjø; på ca. 10 cm dyp hadde vannet en saltgehalt på omlag 1.5 o/oo. Dette er et ikke utypisk habitat for *O. cancellatum* ellers i Euro-

pa, og nye funn kan antakelig forventes i Norge dersom slike sjøer blir grundigere undersøkt.

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Diacheila polita (Faldermann, 1835) (Col., Carabidae) new to Norway.

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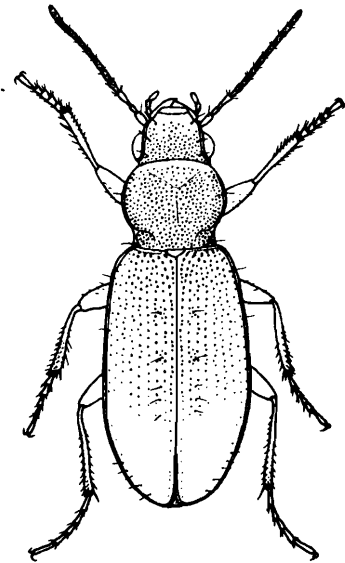
The carabid beetle *Diacheila polita* is reported new to Norway. It was found in Barvikmyra and at Domen, both localities in Vardø municipality, Finnmark county. Barvikmyra is part of a larger nature reserve. The species lives on tundra habitats and the nearest records are on the eastern part of the Kola Peninsula.

In September 1995, the carabid beetle *Diacheila polita* (Faldermann, 1835) was found at two localities in Vardø municipality in the northern part of Finnmark county (FN), Norway (EIS 185). At the great bog area called Barvikmyra (UTM-blue 36W VD233118), three males were collected in a pitfall trap in a rich, sloping fen about 50 m a.s.l. This trap was operated by one of us (PO) from 7 June to 29 Sept. 1995, but the specimens of *D. polita*, and one male of *Diacheila arctica*, were caught between 31 Aug. and 29 Sept. Both species were found at the same locality also in 1997 (Stig Otto Hansen, pers. comm.) and 1998 (Palle Jørum & Viggo Mahler pers. comm.). In a crowberry heath at the hill Domen (UTM-blue 36W VD256020), 90 m a.s.l., one female was caught in a pitfall trap between 31 Aug. and 4 Oct. 1995.

Vardø municipality is situated at the eastern part of the Varanger Peninsula in northeast Finnmark county, an area that belongs to the arctic region. Vardø Meteorological Station, 4-5 km from Barvikmyra, has a July mean temperature of 9,2 °C and an annual mean temperature of 1,3 °C (Aune 1993). The annual precipitation is 563 mm (Førland 1993).

D. polita (Figure 1) is known to be a tundra species, inhabiting peaty soil or *Carex* vegetation near pools.

The habitat is usually much drier than that of the hygrophilous species *D. arctica* (Lindroth 1945a, 1985). At Domen, the soil (podzol) is well drained and dry, and the vegetation is dominated by *Empetrum hermaphroditum*. The vegetation at the trap site in Barvikmyra includes *Sphagnum*-mosses, species of *Eriophorum*, *Juncus* and *Carex* (Vorren 1979). The humidity at the trap site in Barvikmyra varied greatly during the collecting period, which resulted in a total sample comprising both hygrophilous and less hygrophilous species. Other species of Coleoptera found in the traps at Barvikmyra (B) and Domen (D), were *Notiophilus aquaticus* (Linnaeus) B,D; *Miscodera arctica* (Paykull) D; *Patrobus septentrionis* Dejean B; *P. assimilis* (Chaudoir) B, D; *Amarra alpina* (Paykull) D; *Helophorus sibiricus* (Motschulsky) B; *Quedius fellmani* (Zetterstedt) B; *Olophrum boreale* (Paykull) B; *O. rotundicollis* (Sahlberg) B; *Mannerheimia arctica* (Erichson) D; *Eucnecosum brachypterum* (Gravenhorst) D; *E. tenue* (Le Conte) B, D; *Acidota quadrata* (Zetterstedt) B; *Boreaphilus henningianus* Sahlberg B, D; *Mycetoporus monticola* Fowler D; *Oxypoda procerula* Mannerheim B; *Liogluta alpestris* (Heer) B; *Philhygra arctica* (Thomson) B, D; *A. graminicola* (Gravenhorst) D; *A. (Boreophila) islandica*



Figur 1
Diacheila polita (6,7-8,7 mm)

(Kraatz) D; *Byrrhus fasciatus* Forster B; *Otiorhynchus nodosus* (Müller) D.

D. polita is distributed in northwestern North America and Eurasia. The nearest records are six localities in the eastern part of the Kola Peninsula (Russia) (Figure 2). *D. polita* and other arctic or subarctic species had a wider distribution both in North and Western Europe and in North America during the Pleistocene glaciation (Andersen 1993, Coope 1968a,b, 1969, 1979, Coope & Brophy 1972, Lindroth 1949, 1985).

As the species is short winged, the population in Vardø is obviously not a result of an anemochore dispersal. An anthropocore origin is also implausible, as the habitat is scarcely used by man. It is most likely that this finding represents an old population. It could be an isolated population, but the species most probably occurs in suitable habitats between this area and the known localities at eastern Kola. The intervening area has probably not been investigated by entomologists because of its inaccessibility. The area is not habited by man and has been under military control for a long

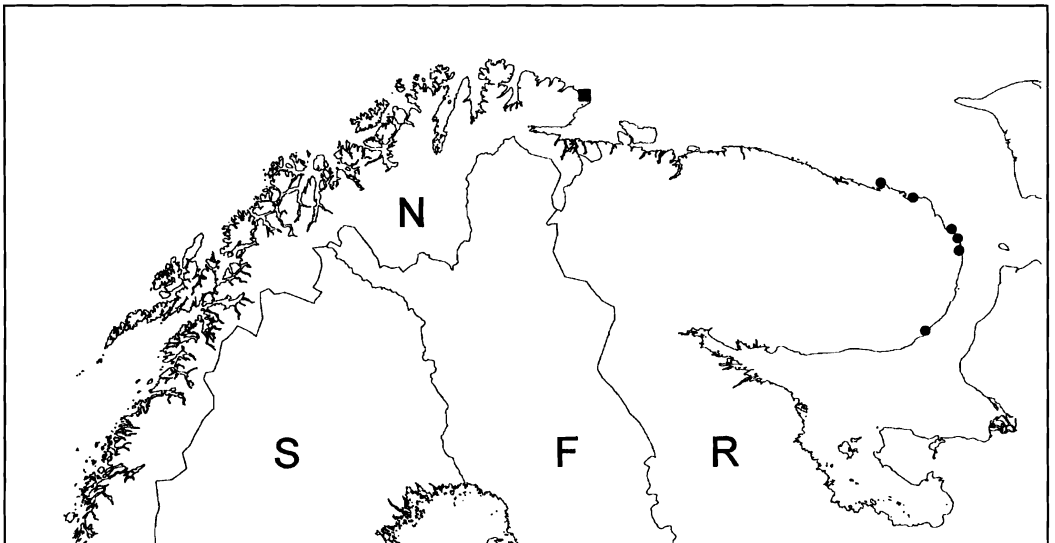
time. The low insect sampling activity in this area is illustrated by Lindroth (1949, map p. 421).

At Eastern Kola the imagines of *D. polita* were found in July and August (Lindroth 1945a), and at Vardø mostly in September. This correspond with observations from North America, where Lindroth (1961) found an immature beetle in the later half of August, which implies that the species hibernates in the imaginal stage.

Barvikmyra is part of the 26 500 m² «Barvikmyran and Blodskytodden nature reserve». It was established in 1983 because of its interesting geology (DN 1995). The finding of *D. polita* here must be considered an important contribution to the arguments for maintenance of the protected status.

ACKNOWLEDGEMENTS

Thanks to Dr. Johan Andersen, University of Tromsø, for valuable comments.



Figur 2

The known localities of *Diacheila polita* in Northern Fennoscandia. Square: Barvikmyra and Domen, Norway. Filled circles: The localities at Kola Peninsula; after Lindroth 1945b. N=Norway, S=Sweden, F=Finland, R=Russia.

SAMMENDRAG

Diacheila polita (Faldermann, 1835)(Col., Carabidae)
ny for Norge.

Løpebillen *Diacheila polita* ble i september 1995 funnet på to lokaliteter i FN, Vardø: Barvikmyra og Domen. I en fallfelle på hver av de to lokalitetene ble det fanget henholdsvis 3 hanner og en hunn av denne arten. Arten ble også påvist her i løpet av 1997 og 1998. Funnstedet på Barvikmyra ligger ca 50 m o.h. og er en rik bakkemyr. Funnstedet ved Domen ligger ca. 90 m o.h. og er en tørr kreklinghei. Lokalitetene ligger langt øst på Varangerhalvøya og tilhører den arktiske region. Vardø meteorologiske stasjon, som ligger 4-5 km fra Barvikmyra har en Juli-middeltemperatur på 9,2 °C og en årsmiddeltemperatur på 1,3 °C (Aune 1993). Årsnedbøren er 563 mm (Førland 1993).

D. polita er kjent for å være en typisk tundra-art, som ofte finnes på torvbunn eller i starr-vegetasjon nær dammer. Habitatet er imidlertid mye tørrere enn hos den nærstående *Diacheila arctica* (Lindroth 1945a, 1985). Vegetasjonen omkring funnstedet på Barvikmyra besto av bl.a. torvmoser, myrull-, siv- og starr-arter. Jordbunnfuktigheten vekslet gjennom fangstsesongen, og totalfangsten i fallfellen består derfor av både fuktighetselskende arter og mer typiske tørrbunnarter. Funnstedet på Domen ligger på tørr og veldrenert grunn med krekling som den dominerende planteart.

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Ledra aurita (Linnaeus, 1758) (Hem., Cicadellidae) rediscovered in Norway

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The remarkable leafhopper *Ledra aurita* (Linnaeus, 1758) has been rediscovered in Norway. Three specimens were captured at light at Ø, Hvaler: Asmaløy (EIS 12) in July-Aug. 1995. An unpublished record from AK, Frogn: Drøbak (EIS 28) from August 1949 is also presented. In Norway the species has previously only been recorded from Ø, Hvaler: Kirkøyen (EIS 20) in last century and again in 1915. Biology and distribution are briefly discussed. Due to the sparse and local distribution in Norway, the species should, until further notice, be included in the national red list, most probably with the category endangered (E).

INTRODUCTION

The homopteran is a poorly investigated group in Norway, and very few contributions have been made in the latest decades. The perhaps most remarkable representative of this order in the Norwegian fauna is *Ledra aurita*, the only representative of the subfamily Ledrinae in Norway (Ossiannilsson 1981). The imagines are easily recognized by two huge earshaped processes on the dorsal side of thorax, from which the species has got its Norwegian vernacular name: «øresikade». The present account deals with new Norwegian records of this species. Localities and EIS-grid numbers presented in the text are given in accordance with Økland (1977, 1981).

THE NORWEGIAN RECORDS

L. aurita was first recorded by T. Helliesen when he as a youth spent the summers at Hvaler in Østfold (Ø) (Warloe 1922, Holgersen 1944, 1945). A single specimen is present in the collections of Stavanger Museum and labeled «Hvaler, Helliesen» and probably collected around 1860-70. T. Münster collected a single juvenil on *Quercus* 26 April 1915 and later two imagines 21 Aug. 1915 at Ø, Hvaler: Kirkøyen. According to Warloe (1922) Münster collected the specimens by beating them down from oaks at Prestegaardslien at Kirkøyen. All specimens are kept in the collections at the Zoological Museum in Oslo, together with a single specimen from AK, Frogn: Drøbak (EIS 28) collected 7 Aug. 1949 by B. Christiansen.

A single specimen of *L. aurita* was captured at light at Ø, Hvaler: Asmaløy, Huser (EIS 12), 28 July 1995, by O. Sørlibråten. Between 1-31 Aug. the same year two more specimens were collected at light on the same locality by the junior author. This locality is partly covered with deciduous forest including stands of oak (*Quercus* sp.), but lime (*Tilia cordata*), aspen (*Populus tremulae*) and alder (*Alnus glutinosa*) are also abundant in the area, together with a smaller pine-forest (*Pinus sylvestris*) on sandy ground. Bushes and well developed pasture fields with a variety of herbs are present in the open and more exposed areas.

All the hitherto known Norwegian records including EIS- and UTM-coordinates are given in Table 1.

BIOLOGY AND DISTRIBUTION

L. aurita is associated with deciduous trees, preferably oak (*Quercus* sp.) and hazel (*Corylus avellana*) (Ehnström & Walden 1986), but may also be found on (*Alnus glutinosa*) and poplar (*Populus* spp.) (Holgersen 1944, Ossiannilsson 1981). The distribution covers most of Central and Southern Europe and reaches eastwards into China (Ossiannilsson 1981, Ehnström & Walden 1986). The species is recorded from Denmark, but not from Finland. In Sweden it is recorded from Skåne (Sk), Blekinge (Bl), Öland (Öl), Gotland (Gtl), Västergötland (Vs) and Östergötland (Ös) (Ossiannils-

son 1981, Ehnström & Waldén 1986). It has, however, not been recorded from Västergötland since 1829, and from Östergötland since 1948. In Sweden the species is considered vulnerable and is present in the National Swedish red list with category 2, i.e. vulnerable (Ehnström et al. 1993). The main threats are supposed to be thinning and removal of cutting debris, together with forestation of fields and meadows. In Norway the picture is probably more acute due to the more restricted distribution and the fact that the species is only recorded from one single locality the last 50 years. The species should therefore be given category endangered (E) until further notice.

ACKNOWLEDGEMENTS

We are indebted to Mai-Lis Karlsen and Reidun Vikør for loan of electricity for the light-traps during the investigation, to Geir E., E. Söli and Claudia Torner Mora for comments on the manuscript, to Ove Sørli-bråten for information about his record of the species and to Kolbjørn Skipnes for information about the specimen in the collections at Stavanger Museum.

SAMMENDRAG

Ledra aurita (Linnaeus, 1758) (Hem., Cicadellidae) gjenfunnet i Norge

Den karakteristiske øresikaden *Ledra aurita* (Linnaeus, 1758) er gjenfunnet i Norge. Tre eksemplarer ble fanget på lys på Ø, Hvaler: Asmaløy (EIS 12), juli-

august 1995. Samtidig angis også et upublisert funn fra AK, Frogn: Drøbak (EIS 28), august 1949. Arten er tidligere kun funnet på Ø, Hvaler: Kirkøen (EIS 12) i forrige århundre og igjen i 1915. Biologi og utbredelse er kort kommentert. Grunnet artens sterkt begrensede utbredelse i Norge foreslås den inntil videre inkludert i den nasjonale rødlisten høyst sannsynlig med kategorien truet (E).

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Table 1. Localities with EIS- and UTM (ED-50)-coordinates where *Ledra aurita* (Linnaeus, 1758) has been recorded in Norway. The following abbreviations have been used: StMu=Stavanger Museum, ZMO=Zoological Museum of Oslo.

Locality	Reg.	EIS	Municipality	UTM 32V	Date	N	Leg.: (ex coll.)
«Kirkøen, Hvaler»	Ø	?12	Hvaler	PL??	?1860-70	1	T. Helliens (StMu)
Prestegaardslien, Kirkøen	Ø	+12	Hvaler	PL1645	26 April 1915	juv.	T. Münster (ZMO)
Prestegaardslien, Kirkøen	Ø	12	Hvaler	PL1645	21 Aug. 1915	2	T. Münster (ZMO)
Huser, Asmaløy	Ø	12	Hvaler	PL1148	28 July 1995	1	O. Sørli-bråten (priv.)
Huser, Asmaløy	Ø	12	Hvaler	PL1148	1-31 Aug. 1995	2	B.M. Fjellstad (ZMO)
Drøbak	AK	28	Frogn	NM9215	7 Aug. 1949	1	B. Christiansen (ZMO)

A review of species and new rearing habitats of the family Milichiidae (Diptera) in Norway

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A short survey shows a lack of continuity in research on the dipteran family Milichiidae in Norway. One common species has several records from the last century, while little else is found before recent time and the new material presented in this article. The number of Norwegian species in Milichiidae is hereby raised to five, and in addition one possible new species. Comparisons with species numbers in neighbouring countries give an indication that undescribed species new to Norway still may be found. Rearing habitats for *Neophyllomyza acyglossa* (Villeneuve, 1920) and the possible new species *Leptometopa* sp. are presented for the first time.

INTRODUCTION

Milichiidae is a moderately large family, found in all major zoogeographical regions. The number of Milichiidae species throughout the world is about 245 (Smith 1989), however less than ten species has been found in each of the Nordic countries (Hackman 1980, Soós & Papp 1984). The members of this family are small to very small, usually dark flies. The costal vein is broken just proximally to the end of vein R_1 , and also broken or strongly constricted distally of the humeral vein. Milichiidae is close to Carnidae, and some authors have treated these families together (Hennig 1937). The larvae of Milichiidae are saprophagous in organic matter in a variety of niches (Ferrar 1987), however, the biology of many species is still unknown.

The family Milichiidae has been poorly studied in Norway. The only published records of Milichiidae from Norway includes one species, *Madiza glabra* Fallén, 1820 which was recorded by H. Siebke, E. Strand and

J.W. Zetterstedt in the period 1845-1903 (Siebke 1877, Hennig 1937). The present article gives a survey of Milichiidae species found in Norway, including a presentation of new rearing habitats for two of the species.

METHODS

The survey is based on examination of literature, material in private and museum collections, and own rearing material presented for the first time in this publication. It includes old literature, such as Siebke (1877), Hennig (1937), Soot-Ryen (1943), Krogerus (1960), as well as modern literature (Soós & Papp 1984). Museum collections were contacted in Oslo (ZMO), Bergen (ZMB), Trondheim (VSM), Tromsø (TRMU) and Mo i Rana. (RAMU).

Own material comprised rearing records by eclector traps in several forest localities within three places: (1) Vestfold (VE) Larvik: Middagskollen 6 May-20 Aug. 1997, (2) Akershus (AK) Ås: Syverud 15 May-27 Aug. 1997, and (3) AK Ås: Danemark 13 May-26 Aug. 1997. Each eclector trap enclosed a section of dead wood or other substrates by means of a black cotton cloth. Space between the substrate and the textile was formed by arches of 3 mm wire inserted into the substrate surface. The ends of the cotton cylinder were closed by thin wire. Two glass collecting vials were attached to the lower part of each trap. Ethylene-glycol with a small amount of detergent was used as preservative in all trap models. A photo of the trap model is found as Figure 1C in Økland (1996).

RESULTS

The survey gave altogether five species of Milichiidae in Norway, and in addition a possible new species which will need further examination. Previous records of three species in old literature were excluded because they have been moved to other families or could not be recognized as valid species in modern catalogues. Only one of the species in old literature, *Madiza glabra* Fallén, was kept as a valid species within Milichiidae. Four species are reported as new to the Norwegian fauna herein, eventually five if the possible new species of *Leptometopa* is included.

List of species with information on distribution and ecology:

Subfamily Milichiinae:

Milichia ludens (Wahlberg, 1847): **Distribution in Norway:** This species is reported as a new species for the Norwegian fauna. AK Ås: Danmark 13 V-26 VIII 1997, 6 females. **Distribution outside Norway:** This species has been collected in several countries in Northern and Continental Europe, including the neighbouring countries Sweden and Finland. **Ecology:** The present records from Ås were made by rearing from a soil-filled cavity of a big oak (*Quercus robur*) inhabited by *Lasius fuliginosus*. *M. ludens* is previously known to be a scavenger in nests of the ant *Lasius fuliginosus* (Donistorphe 1927, O'Toole 1978).

Subfamily Madizinae:

Madiza glabra Fallén, 1820: **Distribution in Norway:** *M. glabra* is apparently a common species found in northern as well as southern parts of Norway. This species is mentioned by Siebke (1877) from Christiania (former name of Oslo), Åsnes in Solør (Hedmark county) and Bjørkvik (north of Narvik in Nordland county). Hennig (1937) also mentioned the record from Bjørkvik (as a record made by Zetterstedt) and another record from Ål (Buskerud county) made by E. Strand in 1903. In the Zoological museum of Oslo (ZMO), Siebke has left seven specimens of *M. glabra* from Tøyen in Oslo collected in the period 1845-51, and one specimen from Hoff in Åsnes (Hedmark county). Furthermore, this museum has six specimens labelled "NORWAY (EIS 37) AK Sørum: Lørenfallet, May 1994. leg. L. O. Hansen & O. Sørlibråten (malaise trap)". In the zoological museum of Bergen (ZMB), there are 25-30 specimens of *M. glabra*, most of them from western Norway, Nordland county, and the eastern part of Finnmark county. **Distribution outside Norway:** Hennig (1937) mentioned southern Sweden (Skåne, Western Götland) as "Terra typica" for *M. glabra*. However, this species is widely distributed in most parts of the Palaearctic region from Europe to the Far East, and also in Africa and North America (Hennig 1937, Soós & Papp 1984). **Ecology:** *M. glabra* has been reared or collected from various types of decaying material (Ferrari 1987). Another species in that genus, *M. britannica* Hennig, 1937, has been reared from wood debris (Hennig 1937).

Neophyllomyza acyglossa (Villeneuve, 1920): **Distribution in Norway:** *N. acyglossa* is a new species to Norway, collected in VE Larvik: Middagskollen 6 V-20 VIII 1997, 15 ♂♂, 16 ♀♀. **Distribution outside Norway:** *N. acyglossa* has a wide distribution within the Palaearctic region, found in several countries in Europe and in Mongolia. In northern Europe it has previously been found in Finland (Hennig 1937, Soós & Papp 1984). **Ecology:** Even though *N. acyglossa* appears to be a common species, information about larval habitat has not been found in the literature. The present new records were made by rearing from a bark-free log and a cavity of a wind-broken tree of *Populus tremula*.

Leptometopa sp: A female specimen of *Leptometopa* could not be identified to an existing species and may belong to a new species (Irina Brake pers.com.). The specimen was reared from dead wood of beech (*Fagus sylvatica*) infected by *Hypoxylon multiforme*. Label data: AK Ås: Syverud 15 V-27 VIII 1997, 1 ♀.

Phyllomyza equitans (Hendel, 1919): **Distribution in Norway:** *P. equitans* is a new species to Norway. The label data are AK Ås: Danmark 13 V-26 VIII 1997, 10 ♂♂ 11 ♀♀, VE Larvik: Middagskollen Middagskollen 6 V-20 VIII 1997, 3 ♂. **Distribution outside Norway:** This species has previously been found in various parts of Europe, but not in Fennoscandia. According to the Catalogue of Palaearctic Diptera (Soós & Papp 1984), the presence of *P. equitans* in the eastern part of the Palaearctic region is more uncertain. **Ecology:** The present specimens from Ås were reared from dead wood and a soil-filled cavity of big oak (*Quercus robur*) inhabited by *Lasius fuliginosus*, while at Middagskollen one specimen was reared from a log without bark and two specimens from a wind-broken tree of *Populus tremula*. It has previously been found in debris of beech (*Fagus sylvatica*) and also in nests of *Lasius fuliginosus* (Hennig 1937, O'Toole 1978).

Phylomyza securicornis Fallén, 1823: **Distribution in Norway:** Apparently, *P. securicornis* is published for the first time from Norway in the present article, based on one specimen in the collection of the zoological museum in Bergen (ZMO). **Distribution outside Norway:** It is recognized as a widely distributed species, found in Sweden, Finland, most parts of Europe, Far East and North America (Soós & Papp 1984) **Ecology:**

P. securicornis has been collected from ants nests of *Formica rufa* L. (Donisthorpe 1927).

Previous not valid records of Milichiidae from Norway: Siebke (1877) mentioned three species with genera names within Milichiidae: *Milichia ornata* Zett., *Madiza oscinina* Fall. and *Madiza palposa* Fall. *Milichia ornata* Zett. has been excluded since it is not found in the Catalogue of Palaearctic Diptera (Soós & Papp 1984) or in Die Fliegen der Paläarktischen Region (Hennig 1937). The other two species are refound under other genera and family names. *Madiza oscinina* Fall. is today a synonym of *Siphonella oscinina* (Fallén, 1820), and *Madiza palposa* Fall. is a synonym of *Fibrigella palposa* (Fallén, 1820), both in the family Chloropidae (Soós & Papp 1984).

DISCUSSION

The lack of research on Milichiidae in Norway can easily be seen from the present results. The literature and material surveyed show a small material and a time gap between several record in the last century and more recent records. A short survey raised the number of Milichiidae species in Norway from one to five (ev. six).

Probably, there is still a potential for finding some new species of this family in Norway. Milichiidae species uses a large variety of niches as larval habitat, and creativity in choice of collecting method may yield new findings. A fairly good potential may also be indicated by a higher number of species in our neighbouring countries. The catalogued number of Milichiidae species in Sweden is seven, and in Finland eight. Also, international effort on taxonomy in this group may change status of the species numbers.

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SAMMENDRAG

En oversikt over arter og nye klekkehabitater for familien Milichiidae (Diptera) i Norge

En kort oversikt viser et brudd i kontinuiteten av forskning på tovingefamilien Milichiidae i Norge. En vanlig art er registrert flere ganger i forrige århundre, mens lite ellers er funnet før i de senere år og i det nye materialet presentert i denne artikkelen. Antallet norske arter av Milichiidae er herved økt til fem, og i tillegg en mulig ny art. Sammenligning med artsantall i naboland indikerer at det er fortsatt mulig å finne nye arter for Norge. Klekkehabitat for *Neophyllomyza acyglossa* (Villeneuve, 1920) og en mulig ny art *Leptometa sp.* er presentert for første gang.

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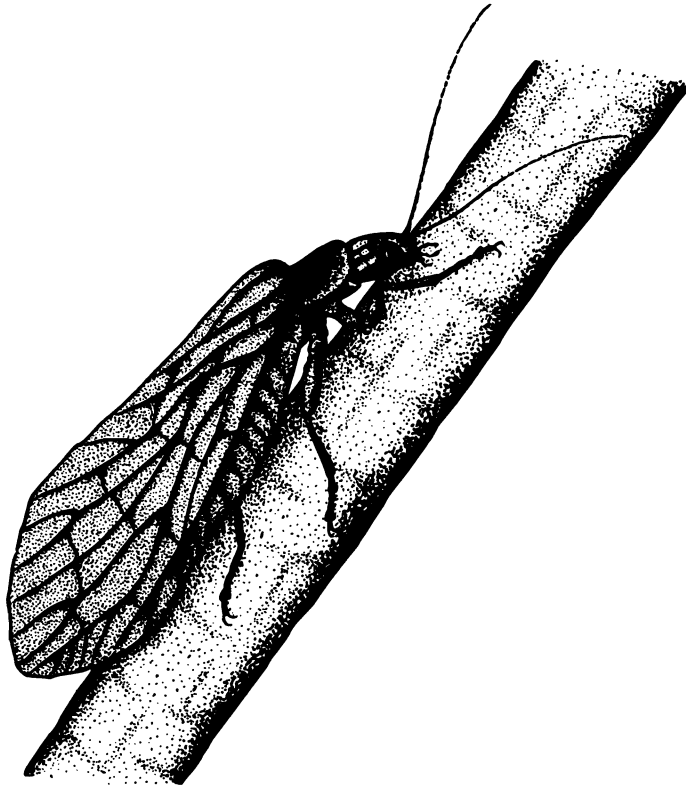
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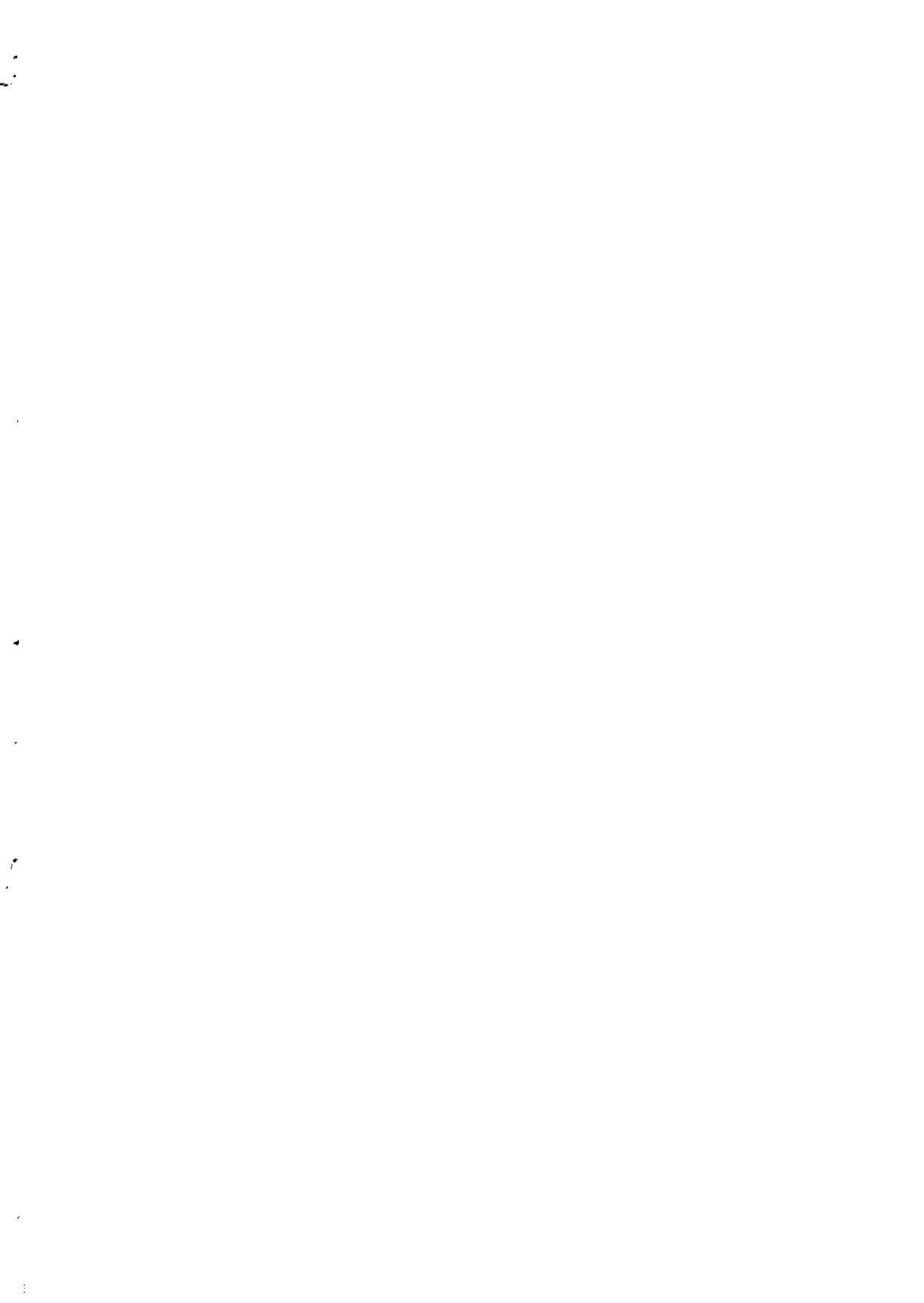
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