

Distribution of the Genus *Wesmaelius* Krüger in Norway

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Abstract

Eight species of *Wesmaelius* have been found in Norway: *Wesmaelius balticus* (TJEDER 1931); *W. concinnus* (STEPHENS, 1836); *W. malladai* (NAVAS, 1925); *W. mortoni* (MCLACHLAN, 1899); *W. nervosus* (FABRICIUS, 1793); *W. quadrifasciatus* (REUTER, 1894); *W. ravus* (WITHYCOMBE, 1923) and *W. subnebulosus* (STEPHENS, 1836).

No other species are known from Fenno-Scandia. *W. balticus* has only been found at one locality in southern Norway, two other species *W. mortoni* and *W. ravus* must also be considered very rare, *W. ravus* found in southern Norway only, *W. mortoni* found both in southern and northern Norway. The distribution of the other species might be climatically conditioned with the exception of *W. quadrifasciatus* which shows an association to spruce (*Picea abies* L.)

The most recent survey of Norwegian Neuroptera Planipennia viz. the genus *Wesmaelius* was made by TJEDER (1945). The present revision includes the material examined by Tjeder. An additional, larger part has been collected by the author in the last decade. New material in the Museum of Zoology, Oslo, the Museum of Zoology, Bergen, Tromsø Museum, Tromsø, Rana Museum, Mo i Rana and Royal Norwegian Society of Sciences, Trondheim, is also included.

There are no records of other species of *Wesmaelius* from either Denmark, Finland and Sweden beside the eight species listed below. The species are mentioned in alphabetically order. Total number of specimens in the survey are 1372.

Wesmaelius balticus (TJEDER, B., 1931)

Material: 1 ♀.

W. balticus is known from one locality in Rogaland county at Reve, Jaeren. The record dates back to 25. May 1936. The locality has been revisited several times, but no additional specimens have been found. The locality is a sandy beach with *Ammophila maritima*. This landscape type is found only scattered along the Norwegian coast.

Wesmaelius concinnus (STEPHENS, J. F., 1836)

Material: 61 ♂♂ 61 ♀♀ 1 specimen.

W. concinnus has hitherto been found scattered in southern Norway, mostly near the coast. *W. concinnus* is in northern Norway known from one locality in Troms county. The species, however, is well known from both northern Sweden and northern Finland (MEINANDER, M., 1963; TJEDER, B., 1979). *W. concinnus* has been found associated with both spruce (*Picea abies* L.) and pine (*Pinus silvestris* L.). *W. concinnus* thus does not show an outstanding preference for pine in this area as mentioned in ASPÖCK, H., ASPÖCK, U. and H. HÖLZEL (1980). Wind-drifted specimens found at higher altitudes, often several hundred meters above the tree border line, constitute about 50 % of the total material.

Wesmaelius malladai (NAVAS, L., 1925)

Material: 65 ♂♂ 55 ♀♀ 1 specimen

W. malladai has been found scattered over the whole area. *W. malladai* is fairly common in northern Norway compared to the other *Wesmaelius* species. The number of localities is nearly as high as for *W. nervosus* (see below). *W. malladai* in southern Norway seems to be

uncommon in the area around the Oslofjord. The Oslofjord area has varied geology and a favourable climate for a very rich flora. The area probably has the most varied insectlife in Norway. *W. malladai* has been found on a long list of different trees, bushes and herbs, and shows no clear preference for either deciduous or coniferous trees or other plants.

***Wesmaelius mortoni* (MCLACHLAN, F. R. S., 1899)**

Material: 7 ♂♂ 8 ♀♀.

W. mortoni is a very rare species in the area although it has been found both in southern and northern Norway. *W. mortoni* is known from few, but scattered localities in Finland and Sweden (MEINANDER, M., 1962; TJEDER, B., 1953). 7 ♂♂ and 3 ♀♀ of the material represent wind-drifted material from two localities at the Hardangervidda mountain plateau situated far above the tree border line (GREVE, L., 1969). One specimen was netted on planted pine at Alta, Finnmark county, the rest of the material has been caught in light-traps. At least one light-trap was situated close to conifers.

***Wesmaelius nervosus* (FABRICIUS, J. C., 1793)**

Material: 284 ♂♂ 645 ♀♀ 5 specimens.

W. nervosus is by far the most common species in the area as clearly indicated by number of specimens which are more than twice the number of specimens of the seven other *Wesmaelius* species. *W. nervosus* is the only *Wesmaelius* species commonly found in the lower part of regio alpina.

***Wesmaelius quadrifasciatus* (REUTER, O. M., 1894)**

Material: 27 ♂♂ 22 ♀♀ 1 specimen.

W. quadrifasciatus has been found scattered in southern Norway north to Nordland county see Map. 1. *W. quadrifasciatus* has, with some exceptions, listed below, been taken only on spruce. Exceptions are one specimen from the top of oak (*Quercus* sp.), another specimen was netted from deciduous bushes one meter from a spruce plantation, and some records represent wind-drifted material (GREVE, L., 1969). Most authors from areas further south in Europe like ASPÖCK, H., ASPÖCK, U. and H. HÖLZEL (1980) refer to *W. quadrifasciatus* as preferring European larch (*Larix decidua* MILL.) among conifers. The European larch is, however, not a native tree in Norway although the species has been planted to some extent and in places is naturalized. Most of the larch planted in the last decades is a Japanese species (*Larix leptolepis* GORD.).

No specimens have been found associated with pine. Even in western Norway where pine is the dominating native conifer, *W. quadrifasciatus* has only been taken on planted spruce. The winddrifted material on the Hardangervidda is probably from areas with spruce near the Hardangerefjord.

***Wesmaelius ravus* (WITHYCOMBE, C. L., 1923)**

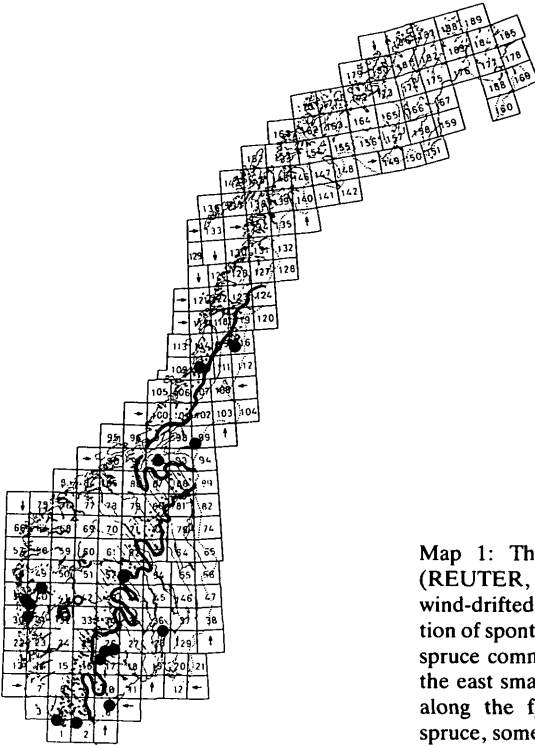
Material: 3 ♂♂ 3 ♀♀.

W. ravus is a very rare species found in two localities in the lowlands of southern Norway. A wind-drifted material of 3 ♂♂ 1 ♀ is known from two localities at the Hardangervidda (GREVE, 1969). In Finland *W. ravus* is known only from the Helsingfors area (MEINANDER, 1963). Otherwhere in Scandinavia unknown. Local and mostly rare in Europe (ASPÖCK, H., ASPÖCK, U. and H. HÖLZEL, 1980).

***Wesmaelius subnebulosus* (STEPHENS, J. F., 1836)**

Material: 46 ♂♂ 73 ♀♀ 3 specimens.

W. subnebulosus has only been found in southern Norway. The locality in Nord-Trøndelag county at app. 64°N represents the northernmost in Europe. *W. subnebulosus* has been found at localities near the coast or along the fjords. The only deviation is a locality at Røros near



Map 1: The localities of *Wesmaelius quadrifasciatus* (REUTER, 1894) in Norway. Open circles represent wind-drifted material. Solid line shows the main distribution of spontaneous spruce in Norway. Hatched area shows spruce common, but not dominating pine. Small dots in the east small spontaneous spruce plantations. Small dots along the fjords in western Norway, mostly planted spruce, some spontaneous.

the Swedish border representing a continental climate type with very cold winters. *W. subnebulosus* has often been found in suburbs or in the cities, and from gardens or orchards as reported from other parts in Europe (GEPP, 1975).

Discussion

Most specimens collected by the author have been caught by a common insect net. A considerable amount of specimens in this survey has been caught in light-traps, situated mainly in southern Norway. It is therefore correct to object that additional methods c f. suction-traps operated in higher strata of the vegetation might add valuable information. However, years work in the field in most part of southern Norway and parts of northern Norway both in the lowlands and the mountains should give a good outline of the distributional patterns of the different species in the area.

Norway does not offer ideal climatic conditions for most lacewings, however, many Hemerobiidae seem to adapt to different types of habitats. Large numbers of specimens indicating dense populations have not been found anywhere.

Three species, *W. balticus*, *W. ravus* and *W. subnebulosus* are known only from southern Norway. *W. subnebulosus* which has been found continuously along the coast to Northern Trøndelag county shows the same southern distribution in Sweden and Finland. Southern Scandinavia is clearly the northern borderline for this species. The species might be anthropochor in some extent. The small material of *W. balticus* and *W. ravus* can only give reason for

speculations, not conclusions. The habitat for the *W. balticus* was a sandy beach which is typical for the species. *W. ravus* has been found on two habitats with a continental climate. The surprising high number of wind -drifted specimens of this rare species supports the theory of the species preferring the top parts of the coniferous trees.

Four species, *W. concinnus*, *W. malladai*, *W. nervosus* and *W. mortoni* have been found both in southern and northern Norway. *W. concinnus* only once in the north, but is more common in northern Sweden and Finland. *W. malladai* and *W. nervosus* are both fairly common in the northern Norway, the number of localities of the two species are about the same. This is a marked difference from conditions in the south where *W. nervosus* is very common in the most parts, *W. malladai* is not. *W. mortoni* is a rare species, but found scattered all over Scandinavia.

W. quadrifasciatus takes an intermedian position found relatively far north to Nordland county. The most interesting trait of the distribution records for *W. quadrifasciatus* is that they are situated mostly inside the distribution of spontaneous spruce in Norway. See Map 1.

There are some deviation like wind-drifted material and a single specimen from oak, see above. In western Norway specimens have only been found on planted spruce. The distribution of spruce in Norway has been mapped by FAEGRI (1950) and it is clear from his major work and more recent work (MOE 1970), that spruce is a late invader in the area after the last glaciation. The pollen diagrams show a sharpe rise for spruce pollen first at 500 B. C. *W. quadrifasciatus* probably entered Norway together with spruce.

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