

Distribution of *Boreus westwoodi* Hagen, 1866 and *Boreus hyemalis* (L., 1767) (Mecoptera) in Norway

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An extensive material collected during nearly fifty years adds new detailed information on the distribution of the winter active insects *Boreus westwoodi* Hagen, 1866 and *B. hyemalis* (L., 1767) in Norway. Since females are difficult to identify, the new data rely on males. Based on the revised Strand-system, the following geographical regions are new to *B. westwoodi*: Ø, BØ, VAY, ON, TEI, TEY, MRI, MRY, and TRY. For *B. hyemalis*, AK, BØ, TEI, RY, SFI, and NTI are new regions. While *B. westwoodi* is widespread in Norway, including the three northernmost counties, *B. hyemalis* seems to be restricted to the south, with the northernmost record in NTI. In Sweden, the situation is similar: *B. westwoodi* is widespread, while *B. hyemalis* has been recorded as far north as Västerbotten, at a latitude corresponding to the northernmost record in Norway. The known distribution of both species in Norway is presented on EIS-grid map.

Key words: *Boreus hyemalis*, *Boreus westwoodi*, Mecoptera, distribution, Norway.

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Introduction

The cold tolerant and wingless species of the genus *Boreus* Latreille (Fig. 1) are famous for their activity on snow. The genus has a Holarctic distribution (Svensson 1972) with two Norwegian species: *Boreus westwoodi* Hagen, 1866 (Figs. 1 & 4) and *Boreus hyemalis* (L., 1767). Their cold tolerance was studied by Sømme & Østbye (1969), and migration behaviour on snow and phenology of egg-laying by Hågvar (2001). A Fennoscandian review on their ecology was given in Hågvar (2010). However, few entomologists collect winter active insects, and the knowledge on the distribution of the two *Boreus* species in Norway has been limited.

Tjeder (1940, 1945) presented a few records of *B. westwoodi* from both Southern and Northern Norway. A mass occurrence on snow in Buskerud

county was described by Greve (1966). *B. hyemalis* was not recorded from Norway until Greve (1965) documented the species from an alpine habitat near Finse. Later, Fjellberg & Greve (1968) and Greve (1975, 1976) published numerous new localities for both species. The synopsis of described *Boreus* species published by Svensson (1972) did not contain new information of their distribution in Norway. The material presented here will shed a more complete light on the distribution of the two species.

Material and methods

The present material was collected during a period of nearly fifty years, to a large degree by the two authors, but also by a number of other persons. Practically all specimens were taken on the snow