

New records of Encyrtidae (Hymenoptera, Chalcidoidea) from Norway III

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The collection of the family Encyrtidae at the Natural History Museum of Oslo is revised, and this study focuses on the ethanol-preserved material in particular. Sixteen species are reported for the first time from Norway, bringing the total number of Norwegian encyrtids up to 87. Comments on the biology and distribution for these species are given. The aim of this study is to highlight the distribution of the family in Norway and to produce a complete list of the Norwegian Encyrtidae.

Key words: Hymenoptera, Chalcidoidea, Encyrtidae, new records, Norway.

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Introduction

One of the most important agents in biological control of insects harmful to plants is the chalcid family Encyrtidae. They are, together with the family Aphelinidae, successfully used against many pest-species, especially scale insects (Hemiptera, Coccoidea) (Noyes 1985, Nikolskaya & Yasnosh 1966). More than 400 species have been used worldwide as biological control agents of insect pests (Greathead 1986, Neueschwander *et al.* 1990, Noyes 1985, 2013). Parasitoids like encyrtids are the major component of many terrestrial ecosystems and may constitute up to 20% of all insect species (LaSalle & Gauld 1991, Godfray 1994, Memmot *et al.* 1994).

This is the fourth paper on Norwegian Encyrtidae based on the collections at the Natural History Museum in Oslo. The previous were Hansen *et al.* (2012), Japoshvili *et al.* (2013) and Japoshvili & Hansen (2013). The aim of these

contributions is to highlight the distribution of the family Encyrtidae in Norway, to produce a complete list of the Norwegian species, and finally provide a catalogue of Norwegian Chalcidoidea.

Material and Methods

This contribution focuses on ethanol-preserved material of Encyrtidae in the collections at the Natural History Museum in Oslo. The material was dried using ethanol and hexamethyldisilazane (HMDZ), then card mounted, or, if necessary, slide mounted following the guidelines of Noyes (2013). For identification the general key for Palaearctic encyrtids (Trjapitzin 1989) was used, in addition to other related publications on lower taxa (e.g. Gibson *et al.* 1997, Guerrieri & Noyes 2009, Graham 1991).

The faunistic divisions within Norway follows Økland (1981), and are given in **bold**.