

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

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The study of the collection of the family Encyrtidae at the Natural History Museum of Oslo continues. Eighteen species are reported for the first time from Norway in this revision, bringing the total number of Norwegian encyrtids up to 105. 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 provide a complete list of the Norwegian species.

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

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Introduction

The chalcid family Encyrtidae represents one of the most important agents in biological control of insects occurring as plant pests. 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, 2014). 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 fifth paper on Norwegian Encyrtidae based on the collections at the Natural History Museum of Oslo. The previous papers are Hansen *et al.* (2012), Japoshvili *et al.* (2013), Japoshvili & Hansen (2013) and Hansen & Japoshvili (2013).

The aim of these contributions is to highlight the distribution of the family Encyrtidae in Norway, 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 sorted and dried using ethanol and hexamethyldisilazane (HMDS), then card mounted, or, if necessary, slide mounted, following the guidelines of Noyes (2014). For identification, the general key for Palaearctic encyrtids was used (i.e. Trjapitzin 1989), 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**.