

# The social parasite bumblebee *Bombus hyperboreus* Schönherr, 1809 usurp nest of *Bombus balteatus* Dahlbom, 1832 (Hymenoptera, Apidae) in Norway

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This paper presents the first documented case of nest parasitism (usurpation) of the bumblebee *Bombus balteatus* Dahlbom, 1832 by the social parasite bumblebee *Bombus hyperboreus* Schönherr, 1809. One nest of *B. balteatus* was found and excavated in Hessdalen in Sør-Trøndelag, Norway in July 2003. The nest contained sexuals of *Bombus hyperboreus* together with workers of *B. balteatus*.

Key words: bumblebees, *Bombus hyperboreus*, *Bombus balteatus*, social parasitism, usurpation

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## Introduction

Social parasitism is well known in bumblebees. Late emerging queens sometimes take over (usurps) an established nest of others of their own species or related species. The usurper attacks and kill the queen, and enslaves the killed queens daughters (Alford 1975). Usurpation is said to occur only within species of the same subgenus (Hobbs 1965). Thus for example *Bombus terrestris* (Linnaeus, 1758) will often attempt to usurp its sister species, *B. lucorum* (Linnaeus, 1761), which tends to emerge slightly earlier (Goulson 2003). Bergwall (1970) described that a colony of *B. jonellus* (Kirby, 1802) in Swedish Lapland was invaded by *B. hyperboreus*, an example on usurpation of a species of another subgenus (*Pyrobombus* Dalla Torre, 1880). Socially parasitic bumblebees (subgenus *Psithyrus* Lepeletier, 1832) were for many years placed in a separate genus to the social bumblebees, but are now included in the genus *Bombus* Latreille, 1802. They do not have pollen baskets and are unable to produce wax, and so they now have an obligate dependency on social bumblebees

(Goulson 2003). *Bombus hyperboreus* (subgenus *Alpinobombus* Skorikov, 1914) resembles the *Psithyrus* bumblebees in having an obligate dependency on social bumblebees, but differs from them in having pollen baskets and in doing pollen collecting.

From arctic North America, *B. hyperboreus* frequently usurps *B. polaris* Curtis, 1835 (= *B. arcticus* Kirby, 1821) (Milliron & Oliver 1966, Richards 1973). *Bombus polaris* has also been shown to have been usurped by *B. hyperboreus* on Greenland (Friese 1935, Løken 1973, Pape 1983). Stenström & Bergman (1998) claimed that *B. alpinus* (Linnaeus, 1758) is the potential host of *B. hyperboreus* in northern Sweden, where these two were the most abundant bumblebee species. But they did not describe any case of nest parasitism between these two species.

In this paper the first documented case of usurpation of *B. balteatus* by *B. hyperboreus* is given.