

## Parasitism of *Dolichovespula norwegica* by *D. adulterina* (Hymenoptera: Vespidae)

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### Abstract

The author presents all documented cases of parasitism on the social wasp *Dolichovespula norwegica* (Fabricius, 1781) by the social parasite *D. adulterina* (du Buysson, 1904). Some indirect evidence such as the sympatric occurrence of these two species without the presence of the previously-documented social host of *D. adulterina* (*D. saxonica* (Fabricius, 1793)) from extreme northern Europe and Kyrgyzstan are mentioned. Altogether four colonies of *D. norwegica* that were parasitized by *D. adulterina* were recorded from Germany, Poland and the Czech Republic.

*Key words:* social wasp, parasitism, inquiline, Palearctic

### INTRODUCTION

*Dolichovespula adulterina* (du Buysson, 1904) is an inquiline or social parasite whose obligate host in the Palearctic has been documented as *D. saxonica* (Fabricius, 1793) (e.g. KEMPER & DÖHRING 1967, GUIGLIA 1972, EDWARDS 1980, ARCHER 2006). Some authors (e.g. SCHREMMER 1962, EDWARDS 1980, ECK 1984) previously mentioned parasitism of *D. norwegica* (Fabricius, 1781) too, but direct observations have been very sporadic and only published since these papers.

This paper summarises all known information about parasitism of *D. norwegica* by *D. adulterina*.

### RESULTS AND DISCUSSION

#### Mistakes in older publications

Although *D. adulterina* was mentioned as a possible parasite of *D. norwegica* by several authors (SCHREMMER 1962, TOBIAS 1978, EDWARDS 1980, ECK 1984), these reports were not based on actual observations by the respective authors but rather on the mistakes of earlier authors. GUIGLIA (1972) explained the source of potential errors: “The majority of the authors do not recognise a distinction between *D. norwegica* and *D. saxonica* and say that *D. adulterina* is a parasite of *D. norwegica*. Only WEYRAUCH (1937) specified that *D. adulterina* lives as a parasite in the nest of *Dolichovespula norwegica* var. *saxonica*; Weyrauch’s cohabitation was also confirmed by BEAUMONT (1944). Knowing that *D. adulterina* lives preferably in the mountainous zones where *D. norwegica* commonly occurs, one can also infer cohabitation with this species. The specimens of *D. adulterina* found by LØKEN (1964) were found

with *D. norwegica*.”

MANDERY (2001) cites SCHREMMER (1962) whose paper is not very informative and Schremmer's information is probably based on a mistake. On page 10, he states *D. adulterina* to be the parasite of *D. norwegica*, without giving any observations and without any mention of *D. saxonica*. On pages 80–81 in the chapter about social parasitism, Schremmer only considers *D. saxonica* to be the host of *D. adulterina* and does not even mention *D. norwegica*. Since there are other mistakes in the first part (such as incorrect figure legends), the statement on page 10 is probably based on a mistake by Schremmer.

### Indirect evidence

There are some papers from different parts of the Palaearctic region that strongly suggest possible parasitism on *D. norwegica* by *D. adulterina*. LØKEN (1964) noted the sympatric distribution of *D. norwegica* and *D. adulterina* in northern Norway outside the range of *D. saxonica*. PEKKARINEN & HULDÉN (1995) wrote: “Several records (of *D. adulterina*) in northern Lapland outside the range of *D. saxonica* indicate that *D. norwegica* is another host.” Similarly DUBATOLOV & MILKO (2004) support this idea: “In Kyrgyzstan, *D. saxonica* has never been found, while *D. norwegica* certainly occurs sympatrically with *D. adulterina* ... such sympatric occurrences of these species strongly suggest this combination of social parasitism.”

These problems (and publications) are known to many vespidologists, but ARCHER (2006) mentioned *D. saxonica* as the only Palaearctic host species of *D. adulterina*. On the other hand two papers published in lesser-known regional journals gave precise data regarding that *D. norwegica* is the other host of *D. adulterina*.

### Published data

Probably the first reliable accounts of parasitism of *D. norwegica* by *D. adulterina* were published by TREIBER (1988) from Germany. On 9 July 1986, R. Treiber found a dead female of *D. adulterina* under the entrance of a *D. norwegica* nest which was situated at the base of a house about 10 cm above the ground. Additionally, TREIBER (1988) observed a *D. norwegica* colony that was transferred to a terrarium on or about 28 June 1986. It was built under a window ledge to the north of the house. The *D. norwegica* nest had been destroyed by the owner of the house earlier in the season and had been rebuilt by *D. norwegica*. When it was collected, the nest consisted of 3 combs with small cells only and contained 8 workers of *D. norwegica* and a queen of *D. adulterina*.

The third record comes from Poland. ECK & DYLEWSKA (1998) found altogether 46 queens and 24 males of *D. adulterina* in the nest of *D. norwegica* on 9 August 1990, in Ornak, the Tatra Mts., SE Poland.

### New data

The most recent data are from the Czech Republic by the author (Locality: Czech Republic, SW Bohemia, the Bohemian Forest (=Šumava Mts.), Stožec, attic of a house W of a village, 15 December 2006, L. Dvořák leg). A very small nest was taken from the garret and contained a single comb with ca. 80 cells. It is quite surprising that mature cells were present in the nest. Two unemerged males of *D. norwegica* and one unemerged male of *D. adulterina* were obtained from the nest. This observation is the fourth known case of parasitism of *D. norwegica* by *D. adulterina*.

## CONCLUSIONS

Although the usual host of the social parasite *D. adulterina* is *D. saxonica* in the Palaearctic, several scattered observations confirm that *D. norwegica* is a second host species of the mentioned parasite.

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