

The myrmecophilous fly *Microdon myrmicae* Schönrogge et al., 2002 (Diptera, Syrphidae) in Norway

Øivind Gammelmo & Leif Aarvik

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The hoverfly *Microdon myrmicae* Schönrogge et al., 2002 is reported for the first time from Norway. *M. myrmicae* is a parasite on *Myrmica scabrinodis* Nylander, 1846 (Formicidae). Comments on its biology and locality are given.

Keywords: *Microdon myrmicae*, Syrphidae, Diptera, myrmecophily, new record, Norway.

Øivind Gammelmo & Leif Aarvik, Natural History Museum, University of Oslo, P.O.Box 1172 Blindern, NO-0318 Oslo, Norway. E-mail: oivind.gammelmo@nhm.uio.no

INTRODUCTION

Most species of the hoverfly genus *Microdon* Meigen, 1803 are associated with ants (Formicidae) while a few have been reported to live among other wasps (Hymenoptera) and termites (Isoptera). Species of *Microdon* occur in forests, dry grasslands and bogs. The larvae live in ant nests, where they feed on the eggs and larvae. Adults emerge in spring or early summer from puparia situated near the surface of the ant nests (Akre et al. 1990). The genus consists of approximately 400 species worldwide (Stankiewicz 2003). In Northwest Europe five species of *Microdon* are present; *M. analis* (Macquart, 1842), *M. devius* (Linnaeus, 1761), *M. miki* Doczkal & Schmid, 1999, *M. mutabilis* (Linnaeus, 1758) and *M. myrmicae* Schönrogge et al., 2002 (van Veen 2004, Speight 2004). The cryptic species *Microdon myrmicae* was described in 2002 mainly based on characters of the puparium (Schönrogge et al. 2002a, 2002b, Speight 2002a). Three species of *Microdon* have so far been reported from Norway; *M. analis*, *M. miki* and *M. mutabilis* (Nielsen 1999).

MATERIAL & METHODS

List of material (*M. myrmicae*):

VE Horten: Adalstjernet (EIS 19, UTM WGS84 32V NL 816820) 15.VI.2005, 1 ♂ 2 ♀♀, leg. L. Aarvik, coll. NHMO; 12.V.2006, 1 ♂ 2 ♀♀, leg. Ø. Gammelmo & L. Aarvik, coll. NHMO. **VAY** Kristiansand: Nedre Timenes (EIS 2, UTM WGS84 32V MK 470 475) 18.VI.2005, 1 ♂, leg. K. Berggren, coll. S. Svendsen.

In 2005 the second author captured three specimens of *Microdon* flying low over the *Sphagnum* at Adalstjernet in Vestfold County (Figure 1). The behaviour of these specimens and the locality strongly suggested that it was *M. myrmicae* which is a parasite on *Myrmica scabrinodis* Nylander, 1846 (Formicidae). In 2006 the authors searched for larvae and puparia in order to establish the identity of the material. The nests of *M. scabrinodes* were located by digging into the bog where the *Sphagnum* formed slight heaps. The nests are invisible on the surface of the bog. Seven puparia and six larvae of *M. myrmicae* were found, together with remains of empty



Figure 1. *Microdon myrmicae* locality at Adalstjernet in Vestfold County. (Photo: Authors)

puparia, presumably from last year. The larvae and puparia collected at Adalstjernet were taken into laboratory. Photographs were taken of larva, puparium and adult (Figures 2-5). Three adults emerged from the larvae and puparia collected in 2006. Several records *M. mutabilis* are known from Norway, but there are no references to their nests and hosts. *Formica* spp. or *Lasius* spp. are often mentioned as the host ants (van Veen 2004, Stubbs & Falk 2002, Torp 1994). The specimen from Kristiansand was captured over *Sphagnum* in a bog situated far from suitable habitats for *M. mutabilis*. Thus the authors are satisfied that the identification of this specimen is correct.

DISCUSSION

Identification

The larvae of *M. myrmicae* (Figure 2) are somewhat smaller compared to larvae of *M. mutabilis*. *M. mutabilis* has a more developed reticulation structure (Schönrogge et al. 2002a). Speight (2002a) separates *M. mutabilis* from *M. myrmicae* on the antero-dorsal edge of larval mouth hooks. In *M. mutabilis* they have a small but distinct bulge, whereas in *M. myrmicae* these hooks are smoothly curved (see Speight 2002a for figures).

Puparia (Figure 3) are dome-shaped, brownish with a network of setae papillae around the lower part of the dorsal valvula. Anterior respiratory organs (Figure 4) are slightly curved and about 1.5 times



Figure 2. Larva of *Microdon myrmicae* (Photo: K. Sund).

longer than its diameter (Stankiewicz 2003). This is different from *M. mutabilis* where the anterior respiratory organs are as long as wide (Doczkal & Schmid 1999) or even shorter (Schönrogge et al. 2002a). Additionally, *M. myrmicae* has small papillae scattered around the tips of respiratory horns, while the entire anterior respiratory organs of *M. mutabilis* are covered with papillae (Stankiewicz 2003).

Adults of *M. myrmicae* (Figure 5) are very similar to *M. mutabilis*, but they are generally smaller. However, there are no definitive characters to separate adults of *M. mutabilis* and *M. myrmicae*.

Distribution

M. myrmicae has a north-west European distribution, with confirmed occurrence in Great Britain (Schönrogge et al. 2002a, 2002b), Ireland (Speight 2002b, 2003), Poland (Stankiewicz 2003), Germany (Schmid 2004), the Netherlands (Beuker 2004), and Norway (this paper).

Remarks

Traditionally host ants of *Microdon*-species are not mentioned on specimens in Norwegian collections. Consequently it has not been possible to separate *M. myrmicae* from *M. mutabilis* in existing collections.



Figure 3. Puparium of *Microdon myrmicae* (Photo: K. Sund).

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Figure 4. Anterior respiratory organs on puparium of *Microdon myrmicae* (Photo: K. Sund).



Figure 5. Adult of *Microdon myrmicae* (Photo: K. Sund).

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