

## Abstract\*

## On the trophobiotic interaction of ants (Hymenoptera: Formicidae) with sawfly larvae of Blasticotomidae (Hymenoptera)

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Myrmecol. News 10: 101

Ants have been considered so far to maintain mutualistic inter-relations with insects of three orders: Homoptera, Lepidoptera and Heteroptera. Mutualistic relations of ants with the sawfly larvae of *Blasticotoma filiceti* KLUG, 1834 (Hymenoptera: Blasticotomidae) were recently discovered in the Altai Republic (BIRYUKOVA & al. 2006) and Moscow Region (SHCHERBAKOV 2006). The study was conducted in coniferous forests in North-Eastern Altai (North terminal Teletskoe Lake) in September 2005 and from June to September 2006.

Blasticotomidae larvae inhabit the inside of fern fronds (*Athyrium filix-femina* (L.) ROTH, 1799) and are likely to feed on plant sap. The larva makes a hole in a frond to breathe and to excrete. Sawfly larvae have been found to have three types of secretions: liquid, solid and frothy. The ants either collect the liquid secretion when excreting or scrape the dried drops from the plant. Ants contact the sawfly larvae near holes in the fern fronds. 100 of 221 larvae collected in the territory under study interacted with ants. These relations were observed from the middle of July to the beginning of September. Trophobiotic relations with sawfly larvae have been found in the following ant species: *Myrmica rubra* (LINNAEUS, 1758), *M. ruginodis* NYLANDER, 1846, *Formica truncorum* FABRICIUS, 1804, *F. polyctena* FÖRSTER, 1850, *F. rufa* LINNAEUS, 1761, *F. lugubris* ZETTERSTEDT, 1838, *F. aquilonia* YARROW, 1955, *F. fusca* LINNAEUS, 1758, *F. exsecta* NYLANDER, 1846, *Camponotus saxatilis* RUZSKY, 1895, *C. herculeanus* (LINNAEUS, 1758), *Lasius niger* (LINNAEUS, 1758) and *L. platythorax* SEIFERT, 1991.

Similarly as with aphid tending in ants, sawfly larvae are attended by relatively constant groups of ants, and members of different species usually visit different fronds. *Formica fusca* behave as scroungers towards *Myrmica*, *Formica* and *Lasius*: they collect larval secretion when other ants are at some distance from the larvae.

The ant-sawfly interactions are determined by the sawfly larvae's life style. All contacts occur near apertures. Ants run from one larva to another in expectation of their secretion. At this time, they can scrape off the remains of sweet liquid from the fronds. The moment of excretion is noticed when the liquid appears in an aperture (it seems that all burrows are filled with liquid). At this moment, ants aggregate around an aperture containing liquid.

The study was funded by the RFBR (N° 05-04-48104 and N° 06-04-48288).

### References

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- SHCHERBAKOV, D.E. 2006: Fern sawfly larvae *Blasticotoma filiceti* KLUG, 1834 (Hymenoptera: Blasticotomidae) are visited by ants: a new kind of trophobiosis. – Russian Entomological Journal 16: 67-72.

\* Based on a presentation at the 2<sup>nd</sup> Central European Workshop of Myrmecology at Szeged, Hungary, 17 - 19 May 2007