FIRST RECORD OF THE PARASITOID *ARCHYTAS ATERRIMUS* (DIPTERA: TACHINIDAE) FROM *UTETHEISA ORNATRIX* (LEPIDOPTERA: ARCTIIDAE)[1]

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ABSTRACT: A male of the tachinid fly, *Archytas aterrimus*, was noted to emerge from a pupa of *Utetheisa ornatrix*, an arctiid moth that sequesters pyrrolizidine alkaloids from its larval foodplants. Chemical analysis of the fly showed it to be free of pyrrolizidine alkaloids, indicating that it does not itself acquire the chemicals from its host. *A. aterrimus* is known to parasitize other lepidopteran species, including some that are also chemically protected.

A shipment that we received recently from Winston-Salem, North Carolina, of live, field-collected larvae of *Utetheisa ornatrix* (L.), included one larva that upon pupation gave rise to a single male of *Archytas aterrimus* (Robineau-Desvoidy) (Fig. 1). The tachinid had not formerly been reported from this host (Ravlin and Stehr 1984). *U. ornatrix* is a well protected insect. As a larva it feeds on plants of the genus *Crotalaria* (Fabaceae), which contain pyrrolizidine alkaloids. The larvae sequester these alkaloids, retain them into adulthood, and as adults transmit them in part to the eggs (Eisner and Meinwald 1995). All stages of *U. ornatrix* are protected as a result, the larvae and adults against spiders (Eisner and Eisner 1991, Eisner and Meinwald, 1995), the eggs against ants and ladybird beetles (Hare and Eisner 1993, Dussourd et al. 1988).

Development in a host that is chemically protected must be advantageous to a parasitoid, since the parasitoid is thereby itself protected against predation. One wonders whether *A. aterrimus* parasitizes *U. ornatrix* as a matter of routine, or whether it does so only under exceptional circumstances. Either way, it seems clear that the tachinid parasitizes other protected lepidopteran larvae as well. Its hosts include, for example, *Cerura* sp. and *Lochmaeus* (*Heterocampa*) *manteo* (Doubleday) (Ravlin and Stehr 1984), notodontid caterpillars that spray formic acid-containing secretions (Hintze 1969, Eisner et al. 1972), and *Cycnia tenera* Huebner (Ravlin and Stehr 1984), an aposematic arctiid larva that sequesters cardenolides from its foodplants (milkweeds) (Cohen and Brower 1983). It would be interesting to know whether *A. aterrimus* is in

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Fig. 1. The male of *A. aterrimus* that hatched from *U. ornatrix*, photographed live shortly after emergence. The specimen was triturated for chemical extraction and was therefore not preserved for voucher purposes. Bar = 2 mm.

some special way(s) adapted to seek out protected hosts and cope with their defenses. Even if so, however, the fly is known to parasitize a number of chemically unprotected lepidopterans as well (Ravlin and Stehr 1989).

To check whether *A. aterrimus* might itself incorporate some of the pyrrolizidine alkaloids from its host, we analyzed our single male for pyrrolizidine alkaloid content. To this end, the fly was extracted with phosphate buffer (pH = 3) and the extract analyzed by High Pressure Liquid Chromatography (C_{18} column, Keystone Sci. BDS Hypersil, 250 x 4.6 mm, 5 µm particle size, 120 Å phosphate acetonitrile 98:2). We found no detectable quantity of alkaloid in the fly (detection threshold=25 ng).

Note added in proof:

Since writing the above we have come upon a second specimen of *A. aterrimus* that emerged from a *U. ornatrix* pupa from Lake Placid, Highlands Co., FL. This fly also proved to lack detectable amounts of pyrrolizidine alkaloids.

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