BRIEF NOTE

Behavior of *Calopteron reticulatum* (F.) Larvae (Coleoptera: Lycidae)[1]

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ABSTRACT. **Observations suggest that some Lycidae, including *Calopteron reticulatum* (F.), are predators that forage in the leaf litter and do not aggregate as last instar larvae.**

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INTRODUCTION

Lycid larvae traditionally have been considered to be predacious (Crowson 1967, Britton 1970, Arnett 1973, Borror et al. 1981), although actual observations have not been documented. Alternatively, there has been some discussion of larval xylophagy of decomposing wood (Mjörberg 1925, Withycombe 1926, McCabe and Johnston 1979 and 1980). Lawrence (1982) suggested that they may not feed directly on wood, but on fungi or the products of fungal decay. Several observations herein reported indicate that at least some lycid larvae are predacious and are not restricted to a subcortical habitat.

OBSERVATIONS

Two young larvae of *Calopteron reticulatum* (Fabricius) were collected in Millersville, Davidson County, Tennessee on 4 July 1985. Both were found exposed, one on top of a pile of recently cut pine logs about 2.5 m above the ground and the other on leaf litter near the edge of the cleared lumber yard adjacent to a small stream. The surrounding habitat was second growth oak woodland. After the larvae were placed together in a pint (0.5 L) refrigerator container, the two came in contact within seconds and began to attack each other. This behavior was characterized by an attempt of each to raise its head and strike the other with its mandibles in a downward motion. As one larva was removed from the container to prevent damage, it is not known if the attack would have continued or have resulted in death. This behavior is of particular interest as several species of lycid larvae, including *Calopteron terminale* (Say) and *C. tropicum* (L.), are known to aggregate prior to pupation (Withycombe 1926, Rosenberg 1939, Young and Fischer 1972, McCabe and Johnson 1980, Miller unpubl. data). Evidently, last instar larval aggression is inhibited in *C. reticulatum*, or this species does not aggregate before pupation.

Subsequently, an endodontid snail, *Anguispira alternata* (Say) collected in the same habitat was placed in the container with one larva. After apparent random movement, the lycid encountered the snail and climbed upon the shell dorsum by use of its legs and pygopod. Fastened in this position by its pygopod, it then repeatedly elevated its anterior end by releasing the purchase of its legs, and quickly thrusted its mandibles down into the cepahalic region of the mollusc. The snail attempted to dislodge the lycid by swaying its shell from side to side and partially withdrew into the shell at each thrust. Finally, the snail retired into its shell and was not observed to venture out again. The following morning, the lycid was found within the shell feeding in much the same manner as lampyrid larvae.

The two larvae were kept alive for several weeks by feeding them physid and planorbid aquarium snails (*Physa* sp. and *Helisoma* sp., respectively). Whether they killed these or only fed on them after the snails had died was not established. Unfortunately, the larvae perished by dessication while I was in the field.

My attempts to culture various larval lycids on decomposing wood in which they are found have failed to date. Field-collected larvae from decomposing wood will pupate, but oviposition by the resulting adults has not been achieved. All larvae collected to date from wood appear to be last instar larvae; no earlier instar larvae have been obtained from this habitat. Although these larvae apparently feed on spongy, decomposing wood, they also feed in a similar manner on wet paper towels and wet hornwort (*Ceratophyllum* sp.) without apparent damage to either. This feeding on wet substrates seems to be infrequent, when they are maintained at a high humidity, and increases with low humidity. However, no quantitative test correlating probable water uptake with water loss has yet been conducted.

In addition to the two exposed *C. reticulatum* larvae, diurnal movement of early instar *Calopteron* larvae in the leaf litter was noted in Tar Hollow State Park, Ross County, Ohio on 19 May 1984. These larvae, like those of *Lycus* which are also found on the soil surface, have aposomatic coloration of orange and black. It is unknown whether lycid larvae are protected by distasteful properties as is reported in adults (Moore and Brown 1981). If so, an exposed life style would be expected (Wickler 1968). Work in progress on the larvae of leptolycine lycids indicates that they also spend at least a portion of their life at the soil surface in the leaf litter (Miller unpubl. data).

These observations suggest that *C. reticulatum* is a predator of snails and actively forages in the leaf litter for its prey. Also, the fighting behavior of the two larvae indicates that this species may not be gregarious prior to the last larval instar. Finally, because only last instar larvae are known from decomposing wood, it is suggested that this may only be a site for pupation and that many, if not all, early lycid larvae are soil inhabitants closely tied to the leaf litter.

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