

Banded Net-Winged Beetle, *Calopteron discrepans* (Newman) (Insecta: Coleoptera: Lycidae)¹

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Introduction

The banded net-winged beetle, *Calopteron discrepans* (Newman), is a colorful black and orange net-winged beetle commonly found resting on vegetation in moist woods throughout much of the eastern United States.

Distribution

Florida west to Texas and north to Manitoba and Québec (Evans 2014).

Description

Adults

The adults range in length from approximately 10 to 15 mm. Males are smaller than females. The elytra have the elevated lengthwise ridges and cross ridges characteristic of most lycids and are orange with a median and a terminal black band (Figure 1).

The banding patterns of *Calopteron discrepans* and the closely-related *Calopteron reticulatum* (Fabricius) are very similar in appearance. In *Calopteron discrepans*, the sutural

extension of the median black band is expanded basally and is widest at the scutellum. Also, the metasternum and second antennal joint are totally black in *Calopteron discrepans* whereas the metasternum of *Calopteron reticulatum* is more or less rufous antero-medially, and the second antennal segment is fulvous or brown (Green 1952, Dillon and Dillon 1961).



Figure 1. *Calopteron discrepans* (Newman) adults mating. The smaller male is on top.

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A third sympatric species, *Calopteron terminale* (Say) usually lacks the median black band on the elytra, and the elytra when viewed from the side are wavy with a depression anterior to the apical band. If a median band is present in *Calopteron terminale*, it is not produced along the suture toward the bases of the elytra. Because of their similarity

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in appearance and variability of the banding patterns, the *Calopteron* species have often been misidentified.

Larvae

Larvae are black with burnt-orange patches (Figures 2, 3, and 4).



Figure 2. *Calopteron discrepans* (Newman) distended prepupal larva (dorsal view).

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Figure 3. *Calopteron discrepans* (Newman) distended prepupal larva (ventral view).

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Figure 4. *Calopteron discrepans* (Newman) pupa within last instar larval case.

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Life Cycle and Biology

Nothing is known of the egg stage and oviposition site of *Calopteron* species. *Calopteron* larvae are reported to live in rotten logs, under loose bark or, less commonly, in soil or leaf litter. Lycid larvae are reported to be predacious by some authors (Miller 1988, Triplehorn and Johnson 2005) whereas other authors (Lawrence 1991, Marshall 2006, McCabe and Johnson 1979, Withycombe 1926) report that they feed on myxomycetes, fungi, or fermenting plant juices.

Full-grown larvae of *Calopteron* species aggregate prior to pupation (McCabe and Johnson 1979, Moffat 1883, Withycombe 1926) (Figure 5).



Figure 5. Prepupation aggregation of larvae of *Calopteron* sp.
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These aggregations may ultimately contain hundreds of pupae packed together in shingled masses. The *Calopteron discrepans* aggregation pictured below (Figure 6) is part of a larger aggregation that contained over 600 pupae.



Figure 6. *Calopteron discrepans* (Newman) pupal aggregation and newly emerged adult.

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Defenses

Aposematic Coloration

The integument of *Calopteron* larvae displays bright, contrasting coloration, and the larvae are likely distasteful. Pupation occurs within the last instar larval exoskeleton (Young and Fischer 1972). The exoskeletons which retain the bright larval coloration probably provide not only shelter but also aposematic (warning coloration) benefit to the pupae.

Aggregation of aposematic insects is generally believed to be adaptive as a defensive mechanism against predators (Riipi et al. 2001, Vulinec 1990), and that is the presumed benefit of the pre-pupation aggregation behavior of *Calopteron*.

Chemical Defense

The colorful adults of *Calopteron reticulatum* have been shown to contain pyrazines (<https://pubchem.ncbi.nlm.nih.gov/compound/pyrazine#section=Top>) (Accessed June 23, 2023) (that likely impart the repugnant scent of the beetles) and lycidic acid and other fatty acids that may render them distasteful to predators (Eisner et al. 2005). The ridges on the wings are brittle and rupture easily releasing defensive chemicals. They also reflex-bleed from the leg joints when attacked (Evans 2014). Eisner et al. (2008) demonstrated that North American species of the lycid genera *Lycus* and *Calopteron* are rejected by thrushes (*Hylocichla* spp.), wolf

spiders (*Lycosa* spp), and the orb-weaving spider *Trichonephila clavipes* (L).

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