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LARVA AND HOSTPLANT OF THE BRAZILIAN CERRADO MOTH, *AUCULA MUNROEI* (LEPIDOPTERA: NOCTUIDAE: AGARASTINAE)

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ABSTRACT.– The caterpillar of *Aucula munroei* Todd & Poole is reported and figured in color for the first time. Caterpillars were found in cerrado areas (savanna-like vegetation) only on the hostplant, *Davilla elliptica* (Dilleniaceae). They were reared in the laboratory to maturity.

KEY WORDS: biology, Brazil, cerrado, Dilleniaceae, ecology, Ecuador, hostplant, immature stages, larva, Neotropical, Panama, South America, Vitaceae.

The genus *Aucula* Walker is limited to tropical South America except for one species, which occurs in Panama. Species and individuals are infrequently found and only slightly over a hundred specimens of *Aucula* are known in collections around the world. Of the 24 currently valid species, 9 are known from unique types, and only 7 species are known from more than 5 specimens (Todd and Poole, 1981; Rawlins, 1992).

The species seem to be very rare. All the descriptions were made based on males, and the caterpillar's foodplants have been completely unknown (Todd and Poole, 1981). On the other hand, Rawlins (1992), working in Ecuador, described a new species (*Aucula franclemontoides* Rawlins), and found a series of 23 males and 2 females of *Aucula franclemonti* Todd & Poole. He also found a caterpillar feeding in the field and one adult female was reared from it, confirming a Vitaceae as the foodplant. In addition, he mentioned that most of the known foodplants for agaristine species worldwide belonged to Vitaceae, and the remainder in 13 unrelated families, including Dilleniaceae.

The distribution of *A. munroei* Todd & Poole is known only from the type locality (Estação Florestal, DF, Brazil). The male holotype was deposited in the Canadian National Collection, and paratypes (4 males and 1 female) from the same locality in the United States National Museum (Todd and Poole, 1981). The immature stages and the hostplants for the species were not known until now.

The type locality, called Estação Florestal by Todd and Poole (1981), belongs to the Environmental Protection Area – APA Cabeça do Veado, 1100m, Brasilia, DF, Brazil, comprising the University of Brasilia experimental farm, the Botanic Garden, and the Biological Reserve of IBGE. This study was carried out at the University of Brasilia experimental farm (FAL: 15°55'S, 47°55'W) during two years (1996 and 1997). The study area is a savanna-like vegetation, called cerrado *sensu stricto* (Goodland, 1971), in central Brazil, with a sharp seasonal dry period of five months, from May to September. The cerrado biome of Brazil represents 22% of the land area of the whole country, with an exceptionally rich flora and fauna (Dias, 1996; Ratter, 1996).

The study area of 4 ha was divided into quarters, with one quadrate used in each sampling time. Subsequent samples rotated among the other quarters. We sampled lepidopteran larvae weekly all year round, searching among mature and new foliage of 15 individual plants of *Davilla elliptica* (Dilleniaceae). This *Davilla* is a deciduous shrub with very tough leaves. Leaves change between September and December during the transition between dry and wet seasons.

Fig. 1. Larva of *Aucula munroei* (Noctuidae) on leaf of *Davilla elliptica* (Dilleniaceae).

All caterpillars found were collected and reared under laboratory conditions. Dr. Vitor O. Becker identified adults, and voucher specimens were deposited in the Dept. of Zoology Entomological Collection of the University of Brasilia.

We found a low abundance of *A. munroei* associated with *D. elliptica* in the same type locality (central Brazilian cerrado). Of the 604 censused plants, four had caterpillars on their leaves (0.7%). Caterpillars were found in both years only during November and December when most of the plants were flushing new leaves. The aposematic caterpillars were encountered singly or in clumps of 2-5 individuals on the undersides of leaves, eating the entire leaves including their veins. Detailed developmental observations were not made, but the final instar was 30mm in length, with a head width of 5mm and long yellowish setae along all its body; orange head, black thorax with orange transverse spots, and yellow abdomen with black transverse bands of different widths (Fig. 1). Under laboratory conditions, the pupation time lasted an average of 19 days. Emerging adults presented reddish brown forewings and yellow scales, brownish black outer margin of the hindwing and yellow inner margin (Fig. 2).

Fig. 2. Adult of *A. munroei* reared from a larva collected on the hostplant in the cerrado study site (Brasilia, DF, Brazil).

Of the 24 described species of *Aucula*, 6 are known to occur in Brazil: *A. exiva* Todd & Poole and *A. usara* Todd & Poole (Amazonian species), *A. josioides* Walker (coastal mountains of Rio de Janeiro and São Paulo states); *A. tricuspis* Zerny, *A. fona* Todd & Poole and *A. munroei* are probably species of the central Brazilian cerrado (Todd and Poole, 1981). *A. tricuspis* and *A. fona* have not been found on *D. elliptica* in the study area. The later species must also be very rare and with specific diets, because after 7 years of sampling more than 40 species of hostplants year round, they were never encountered.

This study suggests that in the cerrado area *A. munroei* specializes on *Davilla elliptica*, occurs seasonally, at the beginning of the wet season, with a very low abundance relative to resource availability (density of hostplant species), and may be considered a very rare species. Luckily, the type locality of this rare species in Brasilia (DF) is protected by law. The caterpillar fauna of Brazilian cerrado is rich in species, most of which are extremely rare (Price *et al.*, 1995; Diniz and Morais, 1997). Since hostplant density does not seem to be related to such abundance, it is unclear what factors produce this intriguing pattern. Future work needs to concentrate on comparisons between cerrado sites to understand the underlying factors shaping whole communities.

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LITERATURE CITED

Dias, B. F. S.
1996. *Alternativas de Desenvolvimento dos Cerrados: Manejo e Conservação dos Recursos Naturais Renovaveis*. Brasilia: Fund. Pró-Natureza. 97pp.

Diniz, I. R., and H. C. Morais
1997. Lepidopteran caterpillar fauna of cerrado host plants. *Biodiv. Conserv.* (London), 6:817-836.

Goodland, R.
1971. A physiognomic analysis of the 'cerrado' vegetation of central Brazil. *J Ecol.* (Oxford), 59:411-419.

Price, P. W., I. R. Diniz, H. C. Morais, and E. S. A. Marques
1995. The abundance of insect herbivore species in tropics: high local richness of rare species. *Biotropica* (Washington), 27:468-478.

Ratter, J. A., and J. F. Ribeiro
1996. Biodiversity of the flora of the cerrado. *In* R. C. Pereira and L. C. B. Nasser (eds), *Proceedings of the 1st International Symposium on Tropical Savannas*, 3-5. Planaltina: EMBRAPA. 508pp.

Rawlins, J. E.
1992. Life history and systematics of the west andean moth *Aucula francle-monti* with description of a new species from Ecuador (Lepidoptera: Noctuidae: Agarastinae). *J. New York Ent. Soc.*, 100:286-310.

Todd, E. L., and R. W. Poole
1981. A revision of the agaristid genus *Aucula* Walker (Lepidoptera: Noctuidae). *J. Lepid. Soc.* (Los Angeles), 35:194-215.