

# PARAGUAY BIODIVERSIDAD

PARAGUAY BIODIVERSITY

PARAGUAY BIODIVERSITÄT



*Drymaeus poecilus* (D'Orbigny, 1835)

foto: S. Drechsel

# The early stages of *Automeris submacula* (Walker, 1855) (Lepidoptera: Saturniidae: Hemileucinae)

Ulf Drechsel\*

**Abstract:** The larval stages of *Automeris submacula* (Walker, 1855) of paraguayan origin are described. In the wild a female was found in the Caazapá department and laid a few ova. In the laboratory larvae were fed with leaves of *Phyllostachys aurea* Riviere & C. Riviere, 1878 (Poaceae). Ova, seven larval instars and adult are illustrated.

**Resumen:** Los estados larvales de *Automeris submacula* (Walker, 1855) de origen paraguayo se describen. En la naturaleza se encontró una hembra en el departamento de Caazapá la cual puso huevos. En el laboratorio se alimentaron las larvas con hojas de *Phyllostachys aurea* Riviere & C. Riviere, 1878 (Poaceae). Huevos, siete estadios larvales e imago se ilustran.

**Zusammenfassung:** Die Larventadien von *Automeris submacula* (Walker, 1855) paraguayischen Ursprungs werden beschrieben. In freier Wildbahn wurde ein Weibchen im Departament von Caazapá gefunden, welches einige Eier ablegte. Im Labor wurde mit Blättern von *Phyllostachys aurea* Riviere & C. Riviere, 1878 (Poaceae) gefüttert. Photographien von Eiern, sieben Larvenstadien und Imago werden gegeben.

**Key words:** Paraguay, Saturniidae, Hemileucinae, *Automeris submacula*, early stages.

## Introduction

The genus *Automeris* Hübner [1819] is represented in Paraguay with nine species: *A. amoena* (Boisduval, 1875), *A. basalis* (Walker, 1855), *A. beckeri* (Herrich-Schäffer, [1856]), *A. bilinea* (Walker, 1855), *A. egeus* (Cramer, 1775), *A. granulosa* Conte, 1906, *A. hamata* Schaus, 1906, *A. na-*

\*Gral. Aquino 694, Asunción, Paraguay ([ulfdrechsel@hotmail.com](mailto:ulfdrechsel@hotmail.com))

*ranja* Schaus, 1898 and *A. submacula* (Walker, 1855). The known distribution area of *A. submacula* includes Brazil, Bolivia and Paraguay (Lemaire, 1973). Recently the species was detected in northwestern Argentina (Borquez & Penco, 2012). In Paraguay the distribution is restricted to the eastern part of the country in the departments of Kanindeyú, Caaguazú, Caazapá, Alto Paraná, Guairá, Cordillera, Paraguari and Itapúa. Certainly, the species will be also found in the northern departments of Amambay and Concepción, since reports from the neighboring Mato Grosso do Sul exist.

### Material and methods

The starting materials for the breeding were five ova originated from a female which was found in the department of Caazapá in “Estancia Golondrina” on the southern margin of the Monday River, an open valley with natural low vegetation and with forest on the higher elevations. The ova were transported to the laboratory and repeatedly sprayed with water until the hatching of larvae. Leaves of *Phyllostachys aurea* Riviere & C. Riviere, 1878 (Poaceae) were offered as food and adopted without delay. Classification and terminology of scoli follow Deml & Dettner (2002) and Nässig (1989). Measurements of ova were taken with a binocular microscope with micrometric eyepiece.

### Course of breeding

**Ova:** Eggs are laid on the food plant in groups, the micropyle at the pole of the long side is always opposite to the base of the egg mass. The eggs are flat oval, whitish pink and somewhat flattened, and measure 1.95 x 1.75 x 1.30 mm. In the area of the micropyle the egg shell is slightly darker pink (Fig. 1).



Figs: 1-2: *Automeris submacula*; 1) ova; 2) first instar

**First instar:** The first instar larvae hatched after thirteen days since oviposition. Head, body and legs are chestnut brown. Body bears six rows of urticating dark brown scoli on abdominal and thoracic segments, two rows dorsal, subdorsal and lateral respectively. Dorsal and subdorsal scoli end in three star-shaped peaks, two of which are short and broad, the third is extended into a long thin point, about the length of the scoli base. Subdorsal and lateral scoli end in three star-shaped peaks, all of them short and broad (fig. 2). Duration of the first instar seven days.

**Second instar:** Head, thoracic legs and scoli are dark brown, body is orange brown bearing six rows of urticating scoli. The three peaks of all scoli long extended, ending in a thin bristle. Dorsal and subdorsal scoli have two or three additional spines branching off the scoli trunk (fig. 3). Duration of the second instar seven days.



Figs: 3-6: *A. submacula*; 3) second instar; 4) third instar; 5) fourth instar; 6) fifth instar

**Third instar:** Head and body are chestnut brown, thoracic legs and scoli black. Scoli tree-shaped with numerous lateral bristles on the scoli trunk (fig. 4). Duration of the third instar six days.

**Fourth instar:** Head is reddish brown, legs and scoli are black. The body has a light brown-violet color. Blurry lighter longitudinal stripes are located between the rows of scoli. Scoli as before, tree-



shaped with numerous lateral bristles on the scoli trunk (fig. 5). Duration of the fourth instar seven days.

**Fifth instar:** Head is red, genae are largely brown with a red stripe along the epicranial suture. Thoracic legs are black, body is bluish gray. Trunks of dorsal and subdorsal scoli are orange, the lateral trunks and all bristles black (figs. 6,7).



Figs: 7-8: *A. submacula*; 7) fifth instar; 8) sixth instar

**Sixth instar:** Head legs and body as before, the lateral scoli trunks are now orange too (fig. 8). Duration of the sixth instar ten days.

**Seventh instar:** Head legs and body as before.



Figs: 9-10: *A. submacula*; 9) seventh instar; 10) head capsules first to seventh instar



Fig: 11: *A. submacula* male

### Discussion

During the first three instars larvae are gregarious, feed and rest together closely in a group. From the fourth instar, the group dissolved and the caterpillars lived separately. This behavior as well as the immediate acceptance of bamboo leaves suggests that the natural food plants may be grasses. Unfortunately, the development cycle could be observed only up to and including the seventh instar. Excessive spraying of insecticides over the entire urban area, which is believed to counteract an upcoming dengue epidemic, poisoned all available forage plants and larvae died during the seventh instar.

### Acknowledgements

The author wishes to thank Carlos Valiente for logistic support and the opportunity to visit the Golondrina cattle ranch.

### References

- BORQUEZ, J.A. & F.C. PENCO, 2012. Nuevos registros de Saturniidae de la República Argentina (Lepidoptera: Saturniidae). *Historia Natural* 2(2): 101-110.
- DEML, R. & K. DETTNER, 2002. Morphology and classification of larval scoli of Saturniinae and Hemileucinae (Lepidoptera: Saturniidae). *Journal of Zoological Systematics and Evolutionary Research* 40: 82–91.
- LEMAIRE, C., 1973. Révision du genre *Automeris* et des genres voisins. *Mémoires du Museum National d'Histoire Naturelle, Sér. A*, 79.
- NÄSSIG, W.A., 1989. Wehrgane und Wehrmechanismen bei Saturniidraupen (Lepidoptera: Saturniidae). *Verhandlungen Westdeutscher Entomologentag* 1988: 253-264.

