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Crinocerus sanctus (Fabricius, 1775)

foto: U. Drechsel

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

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Abstract: The immature stages of *Automeris bilinea* (Walker, 1855) of paraguayan origin are described. In the wild a female was found in the Paraguari department. In the laboratory larvae were fed with leaves of *Bauhinia variegata* L. (Fabaceae). Generation (oviposition to imago) lasted 173 days. Ova, larval instars, cocoon, pupa and adults are illustrated.

Resumen: Los estados inmaduros de *Automeris bilinea* (Walker, 1855) de origen paraguayo se describen. En la naturaleza se encontró una hembra en el departamento de Paraguari. En el laboratorio se alimentaron las larvas con hojas de *Bauhinia variegata* L. (Fabaceae). Una generación (oviposición a imago) duró 173. Huevos, estadios larvales, capullo, pupa y adultos se ilustran.

Zusammenfassung: Die praeimaginale Stadien von *Automeris bilinea* (Walker, 1855) paraguayischen Ursprungs werden beschrieben. In freier Wildbahn wurde ein Weibchen im Departament von Paraguari gefunden. Im Labor wurde mit Blättern von *Bauhinia variegata* L. (Fabaceae) gefüttert. Dauer von der Eiablage bis zum Imago 173 Tage. Photographien von Eiern, Larvenstadien, Kokon, Puppe und Imagos werden gegeben.

Key words: Paraguay, Saturniidae, Hemileucinae, *Automeris bilinea*, 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. naranja* Schaus, 1898 and *A. submacula* (Walker, 1855). The known distribution area of *A. bilinea*

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extends from Venezuela via Suriname, French Guiana, Peru, Bolivia, Brazil to Paraguay and Argentina (Jujuy). In Paraguay, the species is known from the departments of Concepción, Canindeyú, Alto Paraná, Paraguari, Cordillera, Caaguazú, Guairá and San Pedro.

Material and methods

The starting materials for the breeding were a few ova originated from a female which was found in the department of Paraguari. The ova were transported to the laboratory and repeatedly sprayed with water until the hatching of larvae. Leaves of *Bauhinia variegata* L. 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.

Immature stages

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 oval, chalky white and somewhat flattened, and measure 1.95 mm 1.53 mm and 1.25 mm. In the area of the micropyle the egg shell is transparent and the egg content can be seen as a yellowish green spot (Fig. 1).



Figs: 1-4: *Automeris bilinea*; 1) ova; 2) newly hatched first instar; 3) first instar; 4) second instar

First instar: The first instar larvae hatched after seventeen days since oviposition. Head and legs are light brown, body is yellow and bears six rows of urticating scoli on abdominal and thoracic segments, two rows dorsal, subdorsal and lateral respectively. Dorsal and subdorsal scoli are dark brown, lateral scoli are yellow. The thoracic scoli are bi- or trifurcated at the top, the abdominal scoli have a simple tip. Each scoli tip armed with a long light brown seta as long as the segment diameter. Duration of the first instar twelve days. (fig. 2 and 3).

Second instar: Head and thoracic legs are light brown, body is yellow and has green longitudinal stripes between the scoli rows. Dorsal and subdorsal scoli are black, lateral scoli yellow. Terminal bristles of the tree-shaped scoli are black, lateral bristles white. Duration of the second instar thirteen days. (fig. 4).

Third instar: Head, legs, body and longitudinal rows of scoli as before. Duration of the third instar twelve days. (fig. 5).

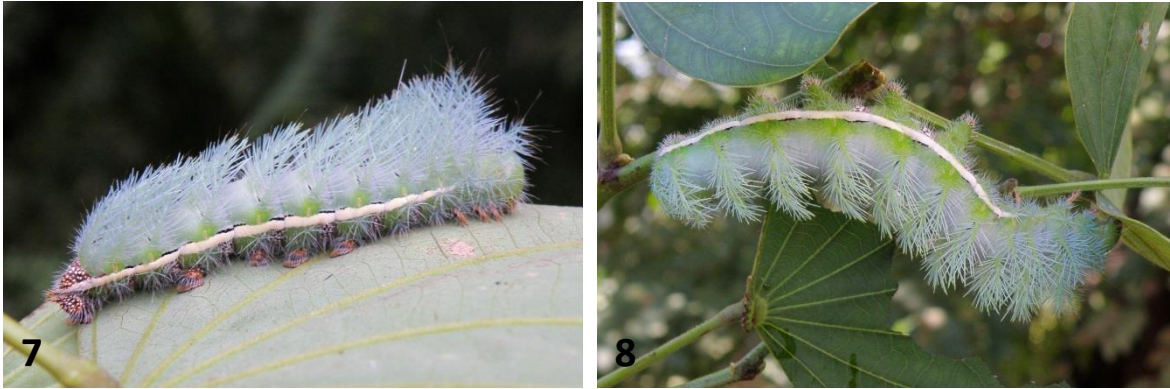
Fourth instar: Head, body and scoli green, mouthparts and legs brown, prolegs and anal plate brown with tiny white spots. The body bears between the subdorsal and lateral row of scoli a white longitudinal band. Above the white band, between the spiracles there is a longitudinal interrupted black band (fig. 6). The abdominal segments bear between the lateral scoli and below the white band a dark brown transverse band, which is densely covered with white spots. Duration of the fourth instar fourteen days.

Fifth instar: Coloration of head, legs, body and longitudinal rows of scoli as before. The coloration is more intense than in the previous instar, the bristles of scoli are denser and the thoracic scoli significantly longer than the others. The body is laterally grass green, changing dorsally in a blue green color. The spiracles are seen as light brown narrow ovals with a slightly darker core (fig. 7). Duration of the fifth instar thirteen days.

Sixth instar: Color and scoli as in the previous instar (fig. 8). Duration of the sixth instar fourteen days.



Figs: 5-6: *A. bilinea*; 5) third instar; 6) fourth instar

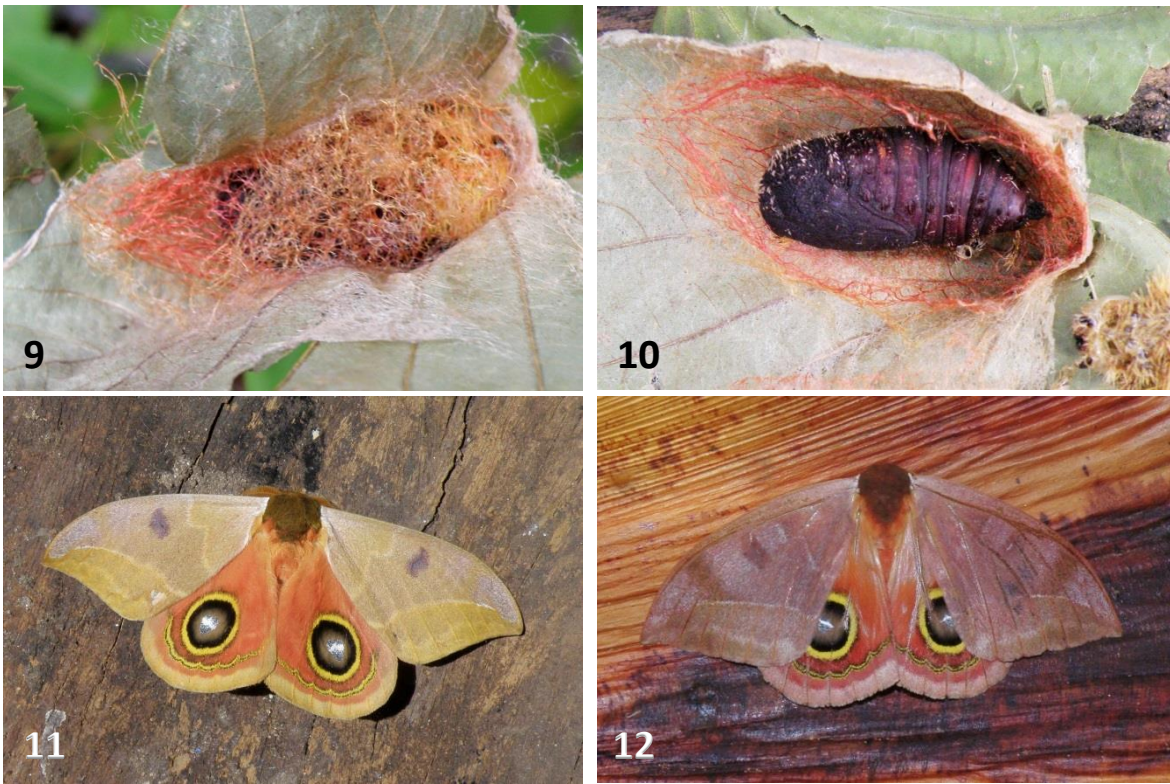


Figs: 7-8: *A. bilinea*; 7) fifth instar: 8) sixth instar

Cocoon: The cocoon is made individually between leaves or other objects. It consists of two layers of wide-meshed silk, the outer layer is brown, the inner red (fig. 9 and 10).

Pupa: The pupa is dark brown, dorsally and in the abdominal area also ventrally covered with sparse and short white hairs (fig. 10).

Imago: The first adult moth, a male, emerged after 78 days after pupation. The newly hatched females were mated immediately after dark and the copula lasted until dawn. (figs. 11 and 12).



Figs: 9-12: *A. bilinea*; 9) cocoon; 10) pupa; 11) male imago; 12) female imago

Discussion

Larvae live gregarious in small groups during the first four instars, feed, rest and molt at the same time. From the fifth instar, the communities dissolved and larvae dispersed around individually. The first moth hatched 173 days after oviposition, indicating two generations per year. Also the finding of adult moths in the months of August, September, October and then again in January, February and March suggests that the species is bivoltin.

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