



Revista Caatinga

ISSN: 0100-316X

caatinga@ufersa.edu.br

Universidade Federal Rural do Semi-Árido  
Brasil

Azevedo Pereira, Alexandre Igor; Silva Curvêlo, Carmen Rosa da; Nogueira Moura Guerra, Antonia  
Mirian; Santos Andrade, Gilberto; Cola Zanúncio, José

*Eucalyptus cloeziana* AS A NEW HOST TO *Hylesia paulex* (LEPIDOPTERA: SATURNIIDAE) IN  
SOUTHEAST BRAZIL

Revista Caatinga, vol. 22, núm. 1, enero-marzo, 2009, pp. 1-5

Universidade Federal Rural do Semi-Árido  
Mossoró, Brasil

Available in: <http://www.redalyc.org/articulo.oa?id=237117625002>

- How to cite
- Complete issue
- More information about this article
- Journal's homepage in redalyc.org

redalyc.org

Scientific Information System

Network of Scientific Journals from Latin America, the Caribbean, Spain and Portugal

Non-profit academic project, developed under the open access initiative

***Eucalyptus cloeziana* AS A NEW HOST TO *Hylesia paulex*  
(LEPIDOPTERA: SATURNIIDAE) IN SOUTHEAST BRAZIL**

*Alexandre Igor Azevedo Pereira*

Departamento de Biologia Animal/BIOAGRO, Doutorando, Bolsista do CNPq, Universidade Federal de Viçosa, CEP 36571-000, Viçosa, MG, Brasil. E-mail: [aiapereira@yahoo.com.br](mailto:aiapereira@yahoo.com.br)

*Carmen Rosa da Silva Curvêlo*

Mestranda em Fitotecnia, Bolsista do CNPq, Deptº de Fitotecnia - Universidade Federal de Viçosa, CEP 36.571-000, Viçosa, MG, Brasil. E-mail: [carmencurvelo@yahoo.com.br](mailto:carmencurvelo@yahoo.com.br)

*Antonia Mirian Nogueira Moura Guerra*

Doutoranda em Fitotecnia, Bolsista do CNPq, Deptº de Fitotecnia - Universidade Federal de Viçosa, CEP 36.571-000, Viçosa, MG, Brasil. E-mail: [mirianagronoma@hotmail.com](mailto:mirianagronoma@hotmail.com)

*Gilberto Santos Andrade*

Departamento de Biologia Animal/BIOAGRO, Universidade Federal de Viçosa, CEP 36571-000, Viçosa, Estado de Minas Gerais, Brasil. E-mail: [gilbertoandrade1@yahoo.com.br](mailto:gilbertoandrade1@yahoo.com.br)

*José Cola Zanúncio*

Departamento de Biologia Animal/BIOAGRO, Universidade Federal de Viçosa, CEP 36571-000, Viçosa, MG, Brasil. E-mail: [zanuncio@ufv.br](mailto:zanuncio@ufv.br)

**Abstract** - An unidentified Lepidoptera species was found defoliating *Eucalyptus cloeziana* (Myrtaceae) in a cerrado area of Minas Gerais State, Brazil. Pupae of this insect, collected in the area, were brought to the laboratory and maintained in Petri dishes (9.0 cm x 1.5 cm) under  $25 \pm 2^\circ\text{C}$ , relative humidity of  $60 \pm 10\%$  and 12 hours photophase to obtain adults and eggs. This insect was identified as *Hylesia paulex* Dognin (Lepidoptera: Saturniidae), and, in that way, the objective of the present study was to register for the first time its herbivory in *E. cloeziana* plants. Newly-emerged caterpillars were reared in 10 plastic pots (500ml), with 30 caterpillars per pot and fed, daily, with fresh leaves of *Eucalyptus cloeziana* (Myrtaceae). The egg incubation period of *H. paulex* was  $32.00 \pm 1.19$  days. The total duration of the seven instars of this insect was  $67.83 \pm 0.84$  days. *Hylesia paulex* completed its life cycle with *E. cloeziana* plants, what proves its adaptability to this kind of exotic Myrtaceae in Brazil.

**Key words:** Myrtaceae; *Eucalyptus*; *Hemileucinae*; *Herbivory*; Viçosa

***Eucalyptus cloeziana* COMO UM NOVO HOSPEDEIRO PARA  
*Hylesia paulex* (LEPIDOPTERA: SATURNIIDAE) NO SUDESTE DO  
BRASIL**

**Resumo** - Uma espécie não identificada de Lepidoptera foi encontrada desfolhando *Eucalyptus cloeziana* (Myrtaceae) em uma área de cerrado do Estado de Minas Gerais, Brasil. Pupas desse inseto, coletadas em campo, foram trazidas para laboratório e mantidas em placas de Petri (9,0 cm x 1,5 cm) sob  $25 \pm 2^\circ\text{C}$ , umidade relativa de  $60 \pm 10\%$  e 12 horas de fotoperíodo para obtenção de adultos e ovos. Este inseto foi identificado como *Hylesia paulex* Dognin (Lepidoptera: Saturniidae) e, dessa forma, o objetivo do presente trabalho foi registrar pela primeira vez sua herbivoria em plantas de *E. cloeziana*. Lagartas recém-emergidas foram criadas em 10 potes plásticos (500 ml), com 30 lagartas por pote, e alimentadas, diariamente, com folhas frescas de *E. cloeziana*. O período de incubação dos ovos de *H. paulex* foi de  $32,00 \pm 1,19$  dias. A duração total dos sete estádios larvais desse inseto foi de  $67,83 \pm 0,84$  dias. *Hylesia paulex* completou seu ciclo de vida com plantas de *E. cloeziana*, o que comprova sua adaptabilidade a esse tipo de Myrtacea exótica no Brasil.

**Palavras-chave:** Myrtaceae; *Eucalyptus*; *Hemileucinae*; *Herbivoria*; Viçosa

## INTRODUCTION

Eucalyptus plantations are simple systems with extensive areas and low biotic complexity. The increase on food supply to herbivores, the low diversity of natural enemies and the expansion of these plantations contributes to the adaptation of new pests (ZANUNCIO *et al.*, 2001; ZANUNCIO *et al.*, 2003; BATISTA-PEREIRA *et al.*, 2004; CALDERON & CONSTANTINO, 2007).

Moths of the genus *Hylesia* Hübner, (1820) (Lepidoptera: Saturniidae), originated from the Neotropical region and found from Mexico to Argentina are usually reported as secondary pests of eucalyptus (ZANUNCIO *et al.*, 1994a) but they are receiving more attention due to their taxonomic complexity (LEMAIRE, 2002), development on many hosts of economic importance (SANTOS *et al.*, 1996, SPECHT *et al.*, 2006) and for being found in natural (CAMARGO & BECKER, 1999), agricultural (BORGES *et al.*, 2003) and reforested (ZANUNCIO *et al.*, 1994a; BITTENCOURT *et al.*, 2003) systems of many regions of Brazil.

Species of the genus *Hylesia* presents, also, medical importance, because their larvae and/or adults can cause burns (dermatitis) on humans (RODRIGUEZ-MORALES *et al.*, 2005; SALOMON *et al.*, 2005). However, studies on *Hylesia* spp. in Brazil are scarce, except for those developed for *Hylesia nanus* Walker (SANTOS *et al.*, 1988; SANTOS *et al.*, 1996), *Hylesia nigricans* Berg (SPECHT *et al.*, 2006) and *Hylesia metapyrrha* Walker (SPECHT *et al.*, 2007).

The objective of this work was to register the occurrence of a Lepidoptera species feeding on *Eucalyptus cloeziana* (Myrtaceae) in a plantation in the cerrado area of Minas Gerais State, Brazil.

## MATERIAL & METHODS

Caterpillars and pupae of this insect were collected in a plantation of *E. cloeziana* in an outbreak of this insect in the Cerrado of Minas Gerais in November 2006. Its pupae were individualized in Petri dishes (9.0 cm x 1.5 cm) in a acclimatized chamber of the BOD type at the temperature of  $25 \pm 2^\circ\text{C}$ ,  $60 \pm 10\%$  relative humidity and a photo phase of 12 hours to obtain adults and eggs.

Newly emerged caterpillars were transferred to ten 500 ml pots with a hole on their

cover and covered with screen, in groups of 30 caterpillars per pot and fed, daily, with fresh leaves of *E. cloeziana*. The petiole of each leaf was wrapped with a cotton wad soaked with distilled water to reduce its drying. This material was inserted per plastic tube of odontologic anesthesia type and put inside the pots. The leaves of *E. cloeziana* were washed in running water and bathed in a solution of sodium hypochlorite (10%) and renewed every 48 hours. The plastic pots were cleaned, daily, and substituted every seven days. The material used by the caterpillars to weave the shelter in the pre-pupa and pupa stages (branches and remains of leaves) was maintained.

Pairs of this insect were individualized, immediately after their emergency in 30 x 30 x 30 cm screened cages with wood bottom and glass cover. Branches of *E. cloeziana*, wrapped in water soaked cotton wads, were put inside the cages to feed caterpillars of this insect. A distilled water honey solution (1:10) was supplied to adults of this insect.

Recently-emerged adults of this insect were mounted, photographed and sent to the Department of Zoology, Section of Biological Sciences, of the Federal University of Paraná, Brazil, where they were identified as *Hylesia paulex* Dognin, 1922 (Lepidoptera: Saturniidae) and deposited. This insect was, also, deposited at the Museum of Entomology of the Federal University of Viçosa (UFV), in Viçosa, Minas Gerais State, Brazil.

## RESULTS & DISCUSSION

The egg masses of this species, collected in the field, were always covered by irritant hairs from the lateral area of the abdomen of the females, probably, to prevent parasitism and attack by predators (RODRIGUEZ *et al.*, 2004). The egg incubation period of *H. paulex* was  $32.00 \pm 1.19$  days. Its eggs present oval format and they were round and with flat extremities in its largest length.

The larval stage of *H. paulex* had seven instars. Their newly emerged caterpillars presented black head, orange ventral area and the dorsal region with brown or ash-clear colors with groups of clear and yellowish spines on the back. The caterpillars of this species became whitish color in the ventral area and more darkened (ash to black) in the back along its development. Last instar

caterpillars of *H. paulex* had  $4.01 \pm 0.27$  cm length, head brilliant red color, pronounced ash to black spines, hair thorns with yellow-clear color and small stripes with black coloration on its lateral part. Caterpillars of *H. paulex* presented strong aggregation, with few individuals being dispersed from the others, besides great synchronism during its ecdyses, what reinforces the hypothesis of benefits of gregarious behavior for Lepidoptera species (READER & HOCHULI, 2003). These caterpillars moved around in single lines from the second to the sixth instars during the night, which was similar to that presented by *Hylesia lineata* Druce (FITZGERALD & PESCADOR-RUBIO, 2002), *Dirphia avicula* Walker (Lepidoptera: Saturniidae) (ZANUNCIO *et al.*, 1994b) and *Dirphia moderata* Bouvier (PEREIRA *et al.*, 2008), with ecological importance due to aposematism.

Caterpillars of *H. paulex* wove a shelter of a bag form starting from the fifth or sixth instars with a mixture of silk threads and remains of branches, leaves and feces. They stayed inside this shelter during the day, what represents a defense behavior common of the genus *Hylesia* (SANTOS *et al.*, 1988; SANTOS *et al.*, 1996; SPECHT *et al.*, 2006). They abandoned this shelter during the night to feed. The back thorns of *H. paulex* were found in groups, always in pairs and without erucism, which differs from other Saturniidae (LORINI *et al.*, 2004; RODRIGUEZ-MORALES *et al.*, 2005; SPECHT *et al.*, 2006). This characteristic facilitated the manipulation of *H. paulex* in the laboratory and it can be useful for the control of this species in the field.

Caterpillars and some pupae of *H. paulex* reared in the laboratory presented typical symptoms of bacterial infection in the last two instars such as described for *Hylesia metabus* (Cramer) (Lepidoptera: Saturniidae) (OSBORN *et al.*, 2002). However, caterpillars of this species without infection completed, satisfactorily, its life cycle.

*Hylesia paulex* had a considerable reduction on its corporal length and quitted feeding in the pre-pupa stage. The caterpillars wove a rudimentary and individual cocoon composed by silk threads, remains of branches, leaves and feces in this stage. Many pre-pupae of this insect were observed, strongly, united by single substratum mass in the field, suggesting also aggregation in this stage (WOLFE, 1988).

Adults of *H. paulex* did not feed. This was also reported for other species of this genus (SPECHT *et al.*, 2006; SPECHT *et al.*, 2007). Females and males of *H. paulex* present sexual dimorphism (SANTOS *et al.*, 1988). The abdomen of the females is more robust than that of males, with hairs covering again, just, the lateral of the

end part of the body up to egg laying. Adults of both sexes presented the abdomen covered by hairs with irritant function what can generate problems of public health such as for *H. metabus* (RODRIGUEZ-MORALES *et al.*, 2005) and *H. nigricans* (SALOMON *et al.*, 2005). The wing span of *H. paulex* females was  $5.04 \pm 0.14$  cm while that of males was  $3.70 \pm 0.10$  cm. The wings of females had gray color and, discreetly, darker than those of males. The antenna of males of this species is bipectinated and with clear beige coloration, while those of females were filiform and of dark color.

## CONCLUSION

*Hylesia paulex* completed its life cycle with leaves of *E. cloeziana*, in the laboratory, what demonstrates the importance of the *Eucalyptus* gender as a host to this insect.

## ACKNOWLEDGEMENTS

To “Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq)” and “Fundação de Amparo à Pesquisa do Estado de Minas Gerais” (FAPEMIG) for financial support.

## REFERENCES

- BATISTA-PEREIRA, L. G.; WILCKEN, C. F.; NETO S. D. P. Calling behavior of *Thyriniteina arnobia* (Stoll) (Lepidoptera: Geometridae) reared on *Psidium guajava* and *Eucalyptus grandis* host-plant leaves and on artificial diet. **Neotropical Entomology**, v. 33, p. 21-28, 2004.
- BITTENCOURT, M. A.; BOARETTO, L.; SERAFIM, I.; BERTI FILHO, E. Fauna de Lepidoptera associada a um ecossistema natural no estado de São Paulo. **Arquivos do Instituto Biológico de São Paulo**, v. 70, p. 85-87, 2003.

- BORGES, L. R.; LÁZZARI, S. M. N.; LÁZZARI, F. A. Comparação dos sistemas de cultivo nativo e adensado de erva mate, *Ilex paraguariensis* St. Hil., quanto à ocorrência e flutuação populacional de insetos. **Revista Brasileira de Entomologia**, v. 47, p. 563-568, 2003.
- CALDERON, R. A.; CONSTANTINO, R. A survey of the termite fauna (Isoptera) of an eucalypt plantation in central Brasil. **Neotropical Entomology**, v. 36, p. 391-395, 2007.
- CAMARGO, A. J. A.; BECKER, V. O. Saturniidae (Lepidoptera) from the Brazilian Cerrado: composition and biogeographic relationships. **Biotropica**, v. 31, p. 696-705, 1999.
- FITZGERALD, T. D.; PESCADOR-RUBIO, A. The role of tactile and chemical stimuli in the formation and maintenance of the processions of the social caterpillar *Hylesia lineata* (Lepidoptera: Saturniidae). **Journal of Insect Behavior**, v. 15, p. 659-674, 2002.
- LEMAIRE, C. Les *Saturniidae Americains* (=Attacidae), *Hemileucinae*, Keltern (Goecke & Evers). **The Saturniidae of America**, v. 4, 2002.
- LORINI, L. M.; REBELATO, G. S.; BONATTI, J. Reproductive parameters of *Lonomia oblique* Walker, 1855 (Lepidoptera: Saturniidae) in laboratory. **Brazilian Archives of Biology and Technology**, v. 47, p. 575-577, 2004.
- OSBORN, F.; BERLIOZ, L.; VITELLI-FLORES, J.; MONSALVE, W.; DORTA, B.; LEMOINE, V. R. Pathogenic effects of bacteria isolated from larvae of *Hylesia metabus* crammer (Lepidoptera: Saturniidae). **Journal of Invertebrate Pathology**, v. 80, p. 7-12, 2002.
- PEREIRA, F. F.; FELIPE, J. P. M.; CANEVARI, G. C.; MIELKE, O. H. H.; ZANUNCIO, J. C.; SERRÃO, J. E. *Dirphia moderata* Bouvier, 1929 (Lepidoptera: Saturniidae) in *Eucalyptus cloeziana* and *Psidium guajava* in Viçosa, State of Minas Gerais, Brazil. **Brazilian Archives of Biology and Technology**, v. 51, p. 369-372, 2008.
- READER, T.; HOCHULI, D. F. Understanding gregariousness in a larval lepidopteran: the roles of host plant, predation, and microclimate. **Ecological Entomology**, v. 28, p. 729-737, 2003.
- RODRIGUEZ, J.; HERNANDEZ, J. V.; FORNÉS, L.; LUNDBERG, U.; AROCHA-PIÑANGO, C. L.; OSBORN, F. External morphology of abdominal setae from male and female of *Hylesia metabus* (Lepidoptera: Saturniidae) adults and their function. **Florida Entomologist**, v. 87, p. 30-36, 2004.
- RODRIGUEZ-MORALES, A. J.; ARRIA, M.; ROJAS-MIRABAL, J. Short report: lepidopterism due to exposure to the moth *Hylesia metabus* in northeastern Venezuela. **American Journal of Tropical Medicine and Hygiene**, v. 73, p. 991-993, 2005.
- SALOMON, O. D.; SIMON, D.; RIMOLDI, J. C. Lepidopterismo por *Hylesia nigricans* (mariposa negra) investigacion y accion preventiva em Buenos Aires. **Medicina**, v. 65, p. 241-246, 2005.
- SANTOS, G. P., ANJOS, N.; ZANUNCIO, J. C. Biologia de *Hylesia nanus* (WALKER, 1855) (Lepidoptera: Attacidae), desfolhadora de cutieira (*Joannesia princeps*: Euphorbiaceae). **Revista Ceres**, v. 35, p. 479-485, 1988.
- SANTOS, G. P.; ZANUNCIO, T. V.; DIAS, O. S.; ZANUNCIO, J. C. Biologia de *Hylesia nanus* (Walker) (Lepidoptera: Attacidae). **Anais da Sociedade Entomológica do Brasil**, v. 25, p. 479-482, 1996.
- SPECHT, A.; FORMENTINI, A. C.; CORSEUIL, E. Biologia de *Hylesia nigricans* (Berg) (Lepidoptera, Saturniidae, Hemileucinae). **Revista Brasileira de Zoologia**, v. 23, p. 248-255, 2006.
- SPECHT, A.; FORMENTINI, A. C.; CORSEUIL, E. Biological aspects of *Hylesia metapyrrha* (Lepidoptera; Saturniidae; Hemileucinae), in laboratory. **Brazilian Journal of Biology**, v. 67, p. 173-177, 2007.
- WOLFE, K. L. *Hylesia acuta* (Saturniidae) and its aggregated larval and pupal pouch. **Journal of the Lepidopterists' Society**, v. 42, p. 132-137, 1988.

## **REVISTA CAATINGA — ISSN 0100-316X**

UNIVERSIDADE FEDERAL RURAL DO SEMI-ÁRIDO (UFERSA)  
Pró-Reitoria de Pesquisa e Pós-Graduação

---

- ZANUNCIO, J. C.; NASCIMENTO, E. C.; GARCIA, J. F.; ZANUNCIO, T. V. Major lepidopterous defoliators of eucalypt in southeast Brazil. **Forest Ecology and Management**, v. 65, p. 53-63, 1994a.
- ZANUNCIO, J. C.; GUEDES, R. N.C.; ZANUNCIO, T. V.; FABRES, A. S. Species richness and abundance of defoliating Lepidoptera associated with *Eucalyptus grandis* in Brazil and their response to plant age. **Austral Ecology**, v. 26, p. 582-589, 2001.
- ZANUNCIO, T. V.; ZANUNCIO, J. C.; MEIRA, I. A.; ARAÚJO, F. S. Caracterização das fases larval e adulta de *Dirphia avicula* (Lepidoptera: Saturniidae) em folhas de *Eucalyptus urophylla*. **Revista Árvore**, v. 18, p. 153-158, 1994b.
- ZANUNCIO, J. C.; ZANUNCIO, T. V.; FREITAS, F. A.; PRATISSOLI, D. Population density of Lepidoptera in a plantation of *Eucalyptus urophylla* in the State of Minas Gerais, Brazil. **Animal Biology**, v. 53, p. 17-26, 2003.