

Euselasia hygenius occulta (Riodininae): First Report of Feeding on Psidium guajava (Myrtaceae) in Minas Gerais State, Brazil

Authors: Zanuncio, José Cola, Soares, Marcus Alvarenga, Zanuncio, Teresinha Vinha, Mielke, Olaf Hermann Hendrik, Ramalho, Francisco De Sousa, et al.

Source: The Journal of the Lepidopterists' Society, 67(3) : 221-224

Published By: The Lepidopterists' Society

URL: <https://doi.org/10.18473/lepi.v67i3.a8>

The BioOne Digital Library (<https://bioone.org/>) provides worldwide distribution for more than 580 journals and eBooks from BioOne's community of over 150 nonprofit societies, research institutions, and university presses in the biological, ecological, and environmental sciences. The BioOne Digital Library encompasses the flagship aggregation BioOne Complete (<https://bioone.org/subscribe>), the BioOne Complete Archive (<https://bioone.org/archive>), and the BioOne eBooks program offerings ESA eBook Collection (<https://bioone.org/esa-ebooks>) and CSIRO Publishing BioSelect Collection (<https://bioone.org/csiro-ebooks>).

Your use of this PDF, the BioOne Digital Library, and all posted and associated content indicates your acceptance of BioOne's Terms of Use, available at www.bioone.org/terms-of-use.

Usage of BioOne Digital Library content is strictly limited to personal, educational, and non-commercial use. Commercial inquiries or rights and permissions requests should be directed to the individual publisher as copyright holder.

BioOne is an innovative nonprofit that sees sustainable scholarly publishing as an inherently collaborative enterprise connecting authors, nonprofit publishers, academic institutions, research libraries, and research funders in the common goal of maximizing access to critical research.

Journal of the Lepidopterists' Society
67(3), 2013, 221–224

EUSELASIA HYGENIUS OCCULTA (RIODININAE): FIRST REPORT OF FEEDING ON *PSIDIUM*
GUAJAVA (MYRTACEAE) IN MINAS GERAIS STATE, BRAZIL

JOSÉ COLA ZANUNCIO

Departamento de Biologia Animal, Universidade Federal de Viçosa, 36571-000, Viçosa, Minas Gerais State, Brazil, E-mail: zanuncio@ufv.br

MARCUS ALVARENGA SOARES

Departamento de Agronomia, Universidade Federal dos Vales do Jequitinhonha e Mucuri, 39100-000, Diamantina, Minas Gerais State, Brazil, E-mail: marcussoares@yahoo.com.br

TERESINHA VINHA ZANUNCIO

Departamento de Biologia Animal, Universidade Federal de Viçosa, 36571-000, Viçosa, Minas Gerais State, Brazil, E-mail: tvzanuncio@ufv.br

OLAF HERMANN HENDRIK MIELKE

Departamento de Zoologia, Universidade Federal do Paraná, 19020, Curitiba, Paraná State, Brazil, E-mail: omhesp@ufpr.br

FRANCISCO DE SOUSA RAMALHO

Unidade de Controle Biológico, Embrapa Algodão, Av. Osvaldo Cruz, 1143, CEP 58107-720, Campina Grande, Paraíba State, Brazil, E-mail: framalho@cnpa.embrapa.br

SEBASTIÃO LOURENÇO DE ASSIS JÚNIOR

Unidade de Controle Biológico, Embrapa Algodão, Av. Osvaldo Cruz, 1143, CEP 58107-720, Campina Grande, Paraíba State, Brazil, E-mail: assisjr_ento@yahoo.com.br

AND

CARLOS FREDERICO WILCKEN

Departamento de Produção Vegetal, Universidade Estadual Paulista Júlio de Mesquita Filho, 18603-970 Botucatu, São Paulo State, Brazil, cwilcken@uol.com.br

ABSTRACT: Insect defoliators of native Myrtaceae in Brazil are important because of potential outbreaks in reforestation of exotic *Eucalyptus* spp. The objective of this study was to identify a lepidopteran defoliator of *Psidium guajava* (Myrtaceae) found at the Federal University of Viçosa in Viçosa, Minas Gerais, Brazil. Insects were identified as *Euselasia hygenius occulta* Stichel 1919 (Lepidoptera: Riodininae). Larvae of this insect are gregarious and feed, rest, molt, and pupate synchronously. This species exhibits processionary behavior during its five instars. Caterpillars are yellow in the first instar and dark brown in the last one with six longitudinal white stripes, two on the back, and two on each side. Head of caterpillars is orange in color and the body has multiple setae per segment. Adults of this species have sexual dimorphism with females having a pale gray dorsal tinge, a darker gray ventral coloration and a 2.5 cm wingspan. Males are dark gray ventrally and black dorsally with a 2.7 cm wingspan. The head of both sexes has a "V" shape when viewed from the front. *Euselasia hygenius occulta* should be included in monitoring programs of *P. guajava* pests, its native host, and also on those of *Eucalyptus* spp. due to the apparent palatability of these nonnative plants.

Additional key words: Caterpillars, *Eucalyptus*, Lepidoptera

Native Myrtaceae in Brazil are damaged by defoliating caterpillars, which can migrate to important crops such as exotic *Eucalyptus* spp. (Zanuncio et al. 1993, Oliveira et al. 2000). Lepidoptera defoliators of *Eucalyptus* species in Brazil include native moth species such as *Eupseudosoma aberrans* (Schaus 1905) and

Eupseudosoma involuta (Sepp 1855) (Lepidoptera: Erebididae), *Automeris* sp. (Walker) and *Eacles imperialis* (Walker 1856) (Lepidoptera: Saturniidae), *Oxydia vesulia* (Cramer 1779), *Sabulodes caberata* (Guenée 1857) and *Thyrintina arnobia* (Stoll 1782) (Lepidoptera: Geometridae) (Zanuncio et al. 1998, Soares et al. 2009a).

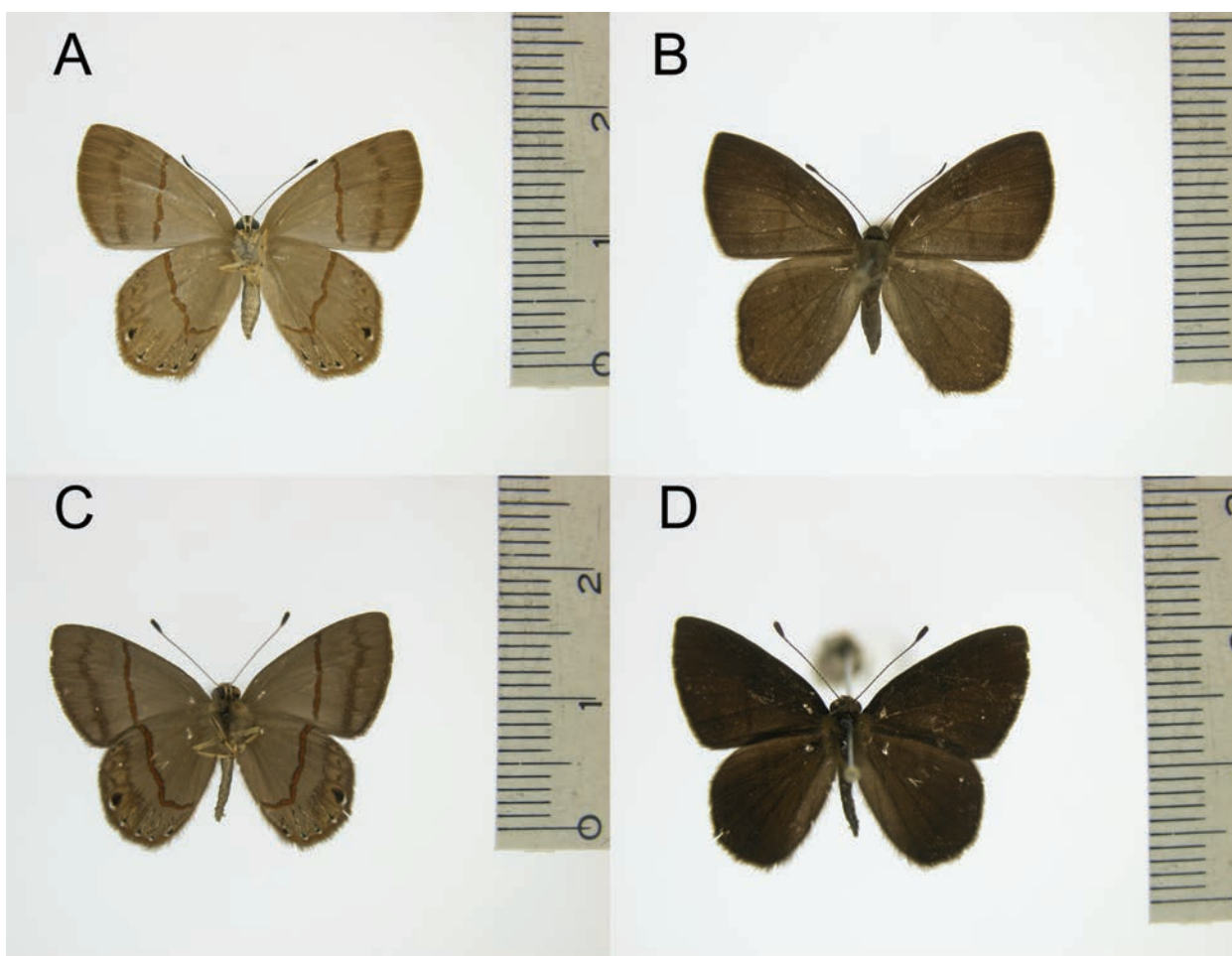


FIG. 1. *Euselasia hygenius occulta* (Lepidoptera: Riodininae); Ventral view of female (A); dorsal view of female (B); ventral view of male (C); dorsal view of male (D). Viçosa, Minas Gerais State, Brazil.

Insects can expand their host plant range onto nonnative agricultural plants that have been introduced as reported for tropical crops such as cocoa (*Theobroma cacao*), sugarcane (*Saccharum officinarum*), tomato (*Solanum lycopersicum*) (Leite et al. 2001) and eucalyptus (*Eucalyptus* spp.) (Strong 1974, Oliveira et al. 2005, Soares et al. 2009b). Caterpillars of the genus *Euselasia* spp. feed on *Eucalyptus* spp. and on *Eugenia pitanga*, *Eugenia uniflora*, *Psidium grandifolium* and *Psidium guajava* (Myrtaceae), their natural hosts (Silva et al. 1968). *Euselasia eucerus* (Hewitson 1982) (Lepidoptera: Riodininae), reported as *Euselasia apisaon*, was collected in an *Eucalyptus* sp. plantation in the Vale do Rio Doce and Zona da Mata regions of Minas Gerais State, Brazil (Zanuncio et al. 2009). Eggs of *Euselasia apisaon* (Dahman 1823) (Lepidoptera: Riodininae) were collected in plantations of *Eucalyptus grandis* (Myrtaceae) in Belo Oriente, Minas Gerais State, Brazil (Murta et al. 2008). *Euselasia mys lara* (Stichel 1919)

(Lepidoptera: Riodininae) was reported feeding on plants of *P. guajava* in Viçosa, Minas Gerais State, Brazil. The inclusion of this species in monitoring programs of *Eucalyptus* spp. was recommended due to the phylogenetic proximity of these host plants (Soares et al. 2009b).

A basic understanding of host plant diet breadth is critical to understanding population dynamics of native lepidopterans and for modeling the probability that a species of Lepidoptera might extend its feeding to an exotic plant species (Murta et al. 2008, Zanuncio et al. 2009). The objective of this study was to identify a Lepidoptera feeding on *P. guajava* at the Federal University of Viçosa in Viçosa, Minas Gerais State, Brazil.

First instar caterpillars of a lepidopteran were observed on the underside of *P. guajava* leaves in August 2009 at the campus of the Federal University of Viçosa in Viçosa, Minas Gerais State, Brazil (South Latitude of 20° 45'14" and West Longitude of 42°

52'55" and altitude of 648 meters). Leaves of *P. guajava* with caterpillars were detached from the plant, packed in plastic containers and taken to the Laboratory of Biological Control of Insects of the Institute of Biotechnology Applied to Agriculture (BIOAGRO) where they were kept at $25 \pm 2^\circ \text{C}$, $70 \pm 5\%$ relative humidity and photoperiod of 12 hours. These leaves were changed daily until adult emergence. Adults were killed in a killing chamber, wrapped in an entomological blanket and sent to Dr. Olaf Hermann Hendrik Mielke of the Federal University of Paraná in Curitiba, Paraná State, Brazil for identification.

Insects were identified as *Euselasia hygenius occulta* Stichel 1919 (Lepidoptera: Riodininae). Its larvae are gregarious and feed, rest, molt, and pupate synchronously. This species has five instars with processionary behavior throughout its development. Caterpillars range in color from yellow during early instars to dark brown at the final instars with six longitudinal white stripes, two on the back, and two on each side. The head is orange and strongly sclerotized and caterpillars have many setae dorsally on all segments. Adults of this species exhibit sexual dimorphism. Females are pale gray dorsally and gray ventrally, abdomen prominent and 2.5 cm wingspan wings. Males are dark gray ventrally and dorsally black with 2.7 cm (Fig. 1). Adults of both sexes show a "V" at the front view of the head.

This species had been cited in monitoring programs in tropical forests and savanna areas with traps, but without its host plants being specifically identified (Emery et al. 2006, Bonfanti et al. 2009). Thus, this is the first report of *E. hygenius occulta* feeding on *P. guajava* anywhere. Aside from the observations here, the habitat and host plants of different species of the genus *Euselasia* spp. are poorly known (Callaghan et al. 2007).

Immature stages of *E. hygenius occulta* present morphology and behavior similar to those of other species of this genus such as *Euselasia chrysippe* (Bates 1866) and *Euselasia bettina* (Hewitson 1869) (Lepidoptera: Riodininae), but with shorter larva stadium and apparent absence of the sixth instar stage (Nishida 2010).

Euselasia hygenius occulta adults differ from other species such as *E. hygenius* by its sexual dimorphism (Zanuncio et al. 1995). Adults of the latter species do not show dimorphism. In both male and females the front and rear wings are black dorsally. *Euselasia eucerus*, reported as *E. apisaon*, also shows sexual dimorphism, but the dorsal surface of male wings has red brick color with dark edges on both pairs. Females of this species are dark gray and sometimes exhibit

three pairs of white circular spots in the middle of the forewing (Zanuncio et al. 1990). *Euselasia mys lara* has accentuated sexual dimorphism. The dorsal of both pairs of wings of males are black with dark red spots, that begin near the chest and radiate to the edge of wings. These spots are absent in females. Males of *E. mys lara* have an average wingspan of 3.0 cm and females 2.6 cm (Soares et al. 2009b).

The abundance of species of *Euselasia* spp. in Brazil and reports of *E. eucerus* feeding on *Eucalyptus* spp. plants show that other species of this butterfly genus could also damage this plant as a result of selection pressure in extensive forest plantation areas (Soares et al. 2009b). This is important because other Lepidoptera such as *T. arnobia*, the main defoliator of *Eucalyptus* spp. in Brazil (Oliveira et al. 2005, Soares et al. 2009a,c) has often being reported causing economic damage in this culture. *Euselasia hygenius occulta* should be included in monitoring programs of *P. guajava* pests and *Eucalyptus* spp. due to its potential migration to plants of this last genus.

ACKNOWLEDGEMENTS

To "Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq), Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (CAPES)" and "Fundação de Amparo à Pesquisa do Estado de Minas Gerais (FAPEMIG)" for scholarships and funding this research.

LITERATURE CITED

- BONFANTI, D., R. A. DI MARE & R. GIOVENARDI. 2009. Butterflies (Lepidoptera: Papilionoidea and Hesperioidea) from two forest fragments in northern Rio Grande do Sul, Brazil. Check List – J. Species Lists and Distrib. 5:819-829.
- CALLAGHAN, C. J., J. LLORENTE-BOUSQUETS & A. LUIS-MARTINEZ. 2007. Descriptions of four new Mexican riodinids (Lepidoptera: Riodinidae). Zootaxa 1660:33-43.
- EMERY, E. O., K. S. BROWN JR. & C. E. G. PINHEIRO. 2006. As borboletas (Lepidoptera, Papilionoidea) do Distrito Federal, Brasil. Rev. Bras. Entomol. 50:85-92.
- LEITE, G. M. P. P. CANO, R. N. C. GUEDES & J. C. ZANUNCIO. 2001. Role of plant age in the resistance of *Lycopersicon hirsutum* f. *glabratum* to the tomato leafminer *Tuta absoluta* (Lepidoptera: Gelechiidae). Sci. Hortic. 89: 103-113.
- MURTA, A. F., F. T. O. KER, D. B. COSTA, M. M. ESPÍRITO-SANTO & M. L. FARIA. 2008. Efeitos de remanescentes de Mata Atlântica no controle biológico de *Euselasia apisaon* (Dahman) (Lepidoptera: Riodinidae) por *Trichogramma maxacalii* (Voegelé e Pointel) (Hymenoptera: Trichogrammatidae). Neot. Entomol. 37:229-232.
- NISHIDA, K. 2010. Description of the immature stages and life history of *Euselasia* (Lepidoptera: Riodinidae) on *Miconia* (Melastomataceae) in Costa Rica. Zootaxa. 2466:1-74.
- OLIVEIRA, H. N., J. C. ZANUNCIO, D. PRATISSOLI & I. CRUZ. 2000. Parasitism rate and viability of *Trichogramma maxacalii* (Hym.: Trichogrammatidae) parasitoid of the *Eucalyptus* defoliator *Euselasia apisaon* (Lep.: Riodinidae), on eggs of *Anagasta kuehniella* (Lep.: Pyralidae). For. Ecol. Manage. 130:1-6.
- , J. C. ZANUNCIO, E. P. PEDRUZZI & M. C. ESPINDULA. 2005. Rearing of *Thyrintina arnobia* (Lepidoptera: Geometridae) on guava and *Eucalyptus* in laboratory. Braz. Arch. Biol. Technol. 48:801-806.

- SILVA, A. G. D. A., C. R. GONÇALVES, D. M. GALVÃO, A. J. L. GONÇALVES, J. GOMES, M. N. SILVA, L. SIMONI. 1968. Quarto catálogo dos insetos que vivem nas plantas do Brasil, seus parasitas e predadores, v.2, n.1, Laboratório Central de Patologia Vegetal, Rio de Janeiro. 622pp.
- SOARES, M. A., J. C. ZANUNCIO, G. L. D. LEITE, E. D. WERMELINGER & J. E. SERRÃO. 2009a. Does *Thyrinteina arnobia* (Lepidoptera: Geometridae) use different defense behaviours against predators? J. Plant Dis. Protect. 116:30-33.
- , T. V. ZANUNCIO, J. C. ZANUNCIO, O. H. H. MIELKE & J. E. SERRÃO. 2009b. *Euselasia mys lara* (Stichel, 1919) (Lepidoptera: Riodinidae) a potential pest on *Eucalyptus* in Brazil? J. Res. Lepid. 41:76-83.
- , C. TORRES-GUTIERREZ, J. C. ZANUNCIO, A. R. P. PEDROSA & A. S. LORENZON. 2009c. Superparasitismo de *Palmistichus elaeisis* (Hymenoptera: Eulophidae) y comportamiento de defensa de dos hospederos. Rev. Col. Entomol. 35:62-65.
- STRONG, D. R. 1974. Rapid asymptotic species accumulation in phytophagous insect communities: The pests of cacao. Science 185:1064-1066.
- ZANUNCIO, J. C., J. B. ALVES, G. P. SANTOS & W. O. CAMPOS. 1993. Levantamento e flutuação populacional de lepidópteros associados à eucaliptocultura: VI- Região de Belo Oriente, Minas Gerais. Pesq. Agropecu. Bras. 28:1121-1127.
- ZANUNCIO, T. V., J. C. ZANUNCIO, J. B. TORRES & A. J. LARANJEIRO. 1995. Biologia de *Euselasia hygenius* (Lepidoptera: Riodinidae) e seu consumo foliar em *Eucalyptus urophylla*. Rev. Bras. Entomol. 39:487-492.
- ZANUNCIO, T. V., J. C. ZANUNCIO, M. M. M. MIRANDA & A. G. B. MEDEIROS. 1998. Effect of plantation age on diversity and population fluctuation of Lepidoptera collected in *Eucalyptus* plantations in Brazil. For. Ecol. Manage. 108:91-98.
- ZANUNCIO, J. C., J. F. GARCIA, G. P. SANTOS, T. V. ZANUNCIO & E. C. NASCIMENTO. 1990. Biologia e consumo foliar de lagartas de *Euselasia apisaon* (Dalman, 1823) (Lepidoptera: Riodinidae) em *Eucalyptus* spp. Rev. Árv. 14:45-54.
- , J. B. TORRES, C. A. Z. SEDIYAMA, F. F. PEREIRA, P. L. PASTORI, E. D. WERMELINGER & F. S. RAMALHO. 2009. Mortality of the defoliator *Euselasia eucerus* (Lepidoptera: Riodinidae) by biotic factors in an *Eucalyptus urophylla* plantation in Minas Gerais State, Brazil. An. Acad. Bras. Ciên. 81:61-66.

Submitted for publication 17 August 2012; revised and accepted 13 March 2013.