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Description of the immature stages and life history of *Euselasia* (Lepidoptera: Riodinidae) on *Miconia* (Melastomataceae) in Costa Rica

KENJI NISHIDA

Escuela de Biología, Universidad de Costa Rica, 2060 San José, Costa Rica.

E-mail: knishida@cariari.ucr.ac.cr; kenji.nishida@gmail.com



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Abstract

The immature stages and life histories of *Euselasia chrysippe* (Bates, 1866) and *E. bettina* (Hewitson, 1869) are described, providing the first detailed morphological characters for the subfamily Euselasiinae. The larvae of *Euselasia chrysippe* and *E. bettina* specialize on several species of *Miconia* (Melastomataceae). The eggs are stalked (the first reported case of such in Lepidoptera) and laid in clusters on the underside of leaves. The larvae are gregarious and feed, rest, molt, and pupate 'synchronously'. Both species have six larval instars which exhibit processionary behavior throughout their development. SD2 setae on the prothoracic shield are sensitive to airborne vibrations and are related to the head-flicking behavior exhibited by larvae while feeding, perhaps as a defensive strategy to deter attacks by parasitoids. Several morphological characters of first instar larvae are unique among Lepidoptera: extra setae, bifurcated dorsal setae on A1–8, and various organs. Sixth instar larvae possess subcircular plates on the dorsolateral surfaces of all segments of the thorax and abdomen. These smooth plates have a metallic-blue iridescence that is structural in nature. Pupation occurred singly or gregariously under laboratory conditions. The total duration of the life cycle under laboratory conditions lasted up to eight weeks. New records of parasitoids for *Euselasia* include *Encarsia* and *Telenomus* from eggs. A list of host plants recorded for Euselasiinae, a summary of parasitoid records for *Euselasia*, and summary tables of unique organs and setae of immature stages are provided. *Euselasia chrysippe* and *E. bettina* are currently considered potential biocontrol agents for *Miconia calvescens* DC in Hawaii.

Key words: auditory mechanoreceptor, biological control of weeds, metalmark butterflies, *Calolydella*, *Corrachia*, *Encarsia*, *Euselasia aurantia*, *E. bettina*, *E. chrysippe*, gregarious, host plants, *Miconia calvescens*, Nemeobiinae, Neotropical, processionary behavior, structural color, *Telenomus*

Resumen

Se describe en detalle las historias naturales y los estadios inmaduros de *Euselasia chrysippe* (Bates, 1866) y *E. bettina* (Hewitson, 1869), brindando por primera vez caracteres morfológicos en detalle para la subfamilia Euselasiinae. Las larvas se especializan en especies de *Miconia* (Melastomataceae). Los huevos son sostenidos por un pedúnculo (el primer caso que se encuentra de esta condición en Lepidoptera) y son puestos en grupos en el lado inferior de las hojas. Las larvas son gregarias y se alimentan, descansan, mudan y pupan 'sincronizadamente'. Ambas especies pasan por seis estadios larvales y muestran comportamiento procesionario a través de su desarrollo. Las setas SD2 en la placa del protórax son sensibles a vibraciones del aire, y están relacionadas con el comportamiento de tiritar de cabeza de las larvas mientras se alimentan, probablemente parte de una estrategia defensiva para detener ataques de parasitoides. Los caracteres morfológicos de la larva en el primer estadio son únicos entre Lepidoptera por tener un número extra de setas, setas dorsales bifurcadas en A1–8 y varios otros órganos. La larva del sexto estadio posee placas sub-circulares en la superficie dorso-lateral de todos los segmentos del tórax y abdomen. Estas placas lisas producen una iridiscencia azul metálica que es estructural en la naturaleza. La pupación se dio individualmente o de forma gregaria. La duración total del ciclo de vida bajo condiciones de laboratorio se extendió hasta ocho semanas. Nuevos registros de parasitoides para *Euselasia* incluyen *Encarsia* y *Telenomus* a partir de huevos. Se presenta una lista de plantas hospederas registradas para la subfamilia Euselasiinae, un resumen de parasitoides registrados para *Euselasia* y cuadros resumidos de órganos y setas de estadios inmaduros. Estos dos riódinidos son actualmente considerados como potenciales agentes de control biológico para *Miconia calvescens* DC. en Hawai.

Palabras clave: *Calolydella*, color estructural, comportamiento de procesión, control biológico de malezas, *Encarsia*, *Euselasia aurantia*, *E. bettina*, *E. chrysippe*, gregario, mariposas diurnas, plantas hospederas, mecanoreceptor auditorio, *Miconia calvescens*, neotrópico, Nemeobiinae, *Telenomus*