



# Life history of *Euselasia chrysippe* and *E. bettina* (Lepidoptera: Lycaenidae: Riodininae) on *Miconia calvenscens* (Melastomataceae) in Costa Rica



Kenji NISHIDA 西田 賢司

Sistema de Estudios de Posgrado en Biología, Escuela de Biología, Universidad de Costa Rica, San José, Costa Rica  
 knishida@carari.ucr.ac.cr http://rbt.ots.ac.cr/kenji/bio.html http://www.biologia.ucr.ac.cr/~sep/ http://www.hear.org/MiconiaInHawaii/index.html

**INTRODUCTION:** The life history and early stages of *Euselasia chrysippe* (Bates, 1866) and *E. bettina* (Hewitson, 1869) were observed on *M. calvenscens* DC. as part of an effort to evaluate potential biological control agents for this weed, which is highly invasive in Tahiti and Hawaii. These observations on life history will be useful for biological control workers pursuing quarantine studies of *Euselasia* spp. in Hawaii.

The genus *Euselasia* Hübner, [1819] is distributed from southwestern North America throughout Central America, into South America, having the center of species diversity in the Amazon Basin. Currently approximately 150 species have been described (Sichel 1930-1931).

*Euselasia chrysippe* (Ec) ranges from Mexico to Colombia. In Costa Rica, it has been collected in all seven provinces, from Atlantic lowlands at sea level to approximately 1500 m in North and Central Cordillera Volcánica and in Central Pacific region (DeVries 1997, INBio 1999, Janzen and Hallwachs 2001, NABA 2004). Other recorded host plants for *E. chrysippe* are *Miconia elata* (Sw.) DC., *Miconia trinervia* (Sw) D.

Don (DeVries 1997, Janzen and Hallwachs 2001), and *M. doneana* Naudin (Proyecto Miconia UCR, unpublished data).

*Euselasia bettina* (Eb) has been found from Nicaragua to Ecuador. In Costa Rica, it has been observed from elevations between 400 and 1200 m on both Atlantic and Pacific slopes. The host plant and the early stages of this species have not been reported before (DeVries 1997).

**Methods:** For the past three years collection and observation of adults, eggs, larvae, and pupae were conducted in several sites in Costa Rica, at elevations of 60-1200 m. Leaves of *M. calvenscens* were checked thoroughly in the field. Eggs and larvae collected were placed in plastic vials or transparent plastic bags for transporting and rearing. Some of the larvae were reared and observed on live plants growing in flower pots, at the laboratory (22-25 °C) in the Escuela de Biología (elevation 1150 m). Fresh leaves or new potted plants were supplied as necessary. Eggs, larvae of each instar, and pupae were preserved in 75% EtOH. Adults were pin-mounted. Some adults were released in enclosed butterfly gardens and in a small ecological reserve located on the UCR campus to obtain further adult behavioral data and reproduction of successive generations.



## LIFE HISTORY

**Habitat:** Wet area, usually along rivers, valleys, or near lakes of low to mid-elevation tropical rainforest.

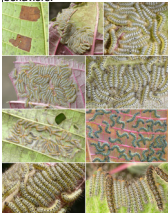
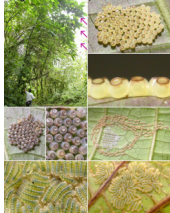
**Ovipositions (Ec)** were observed between 11 am and 3 pm under sunny to light rain conditions.

**Egg** ca. 0.42 mm, fustrum shape; chorion smooth, (Ec translucent to light creamy brown)(Eb creamy pale yellow) with area of microplpy purple-dark brown; laid in clusters on the underside of leaves. Mean number of eggs per cluster were Ec-70 (SD=20; range=44-113; n=29), Eb-89 (SD=9; range=82-99; n=3).

**Larvae** of both species possess six instars, and the larvae are processionary throughout their development. They are gregarious foliage consumers that feed, rest, and molt synchronously. First and second instar larvae rasp leaf tissue on the underside. From the third instar, larvae consume entire leaf tissue except for thick veins. First instar larva 0.6 to 2 mm long; head capsule 0.25 mm wide. Last instar larva 12 to 16 mm; head capsule 1.7 mm wide. Larvae of Ec and Eb are similar in size. They possess some unique "defensive" behaviors.



**Pupa:** 5x10x3 mm, brown to light brown with dark brown areas. Head and thoracic area semi-oval, highest point at center part of the thorax; abdomen wider than thorax, flat and plate-like dorsally, tapered; ca. 1 mm long spike-like brown setae projected over the body. Pupate vertically, head downwards, on the side of flower pots or horizontally in upside-down position on underside of desks, attached to the surface via silk-cremaster and silk thread spun around T3-A1, and usually clustered together up to about 50 individuals.



**Duration of early stages (Ec):** Egg 13-25 days, Larva 16-34 days, Prepupa stage 1 day, Pupa stage 7-12 days, Total 37-72 days.

**Courtship behavior (Ec)** was observed in a butterfly garden: between 6:30 and 7:00 am several males chasing after a female, ca. 2.5-3 m high from the ground. Males were also observed perching on top of broad plant leaves situated about 2 m high in direct, early morning sunlight. Mating couples were found on underside of leaves, and copulation lasted approximately 20 minutes.



**Adult feeding:** In captivity, both species were observed feeding on rotten fruits (banana and guava), and water drops and honey water on leaves. Under natural conditions, Ec adults have been observed visiting fruits of *Ficus*, and extrafloral nectaries of *Inga* and *Passiflora* (L. Chacón, INBio database).

**Parasitoids:** a species of Aphelinidae (all males, probably a sp. of *Encarsia*) was reared from eggs of both species, and a *Calodydella* sp. (Diptera: Tachinidae) was reared from late instar larvae of Ec.