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# DESCRIPTION OF THE EARLY STAGES OF *PODOTRICHA TELESIPHE* (NYMPHALIDAE: HELICONIINAE)

**Additional key words:** *Passiflora*, Ecuador, instar duration, oviposition behavior.

The genus *Podotricha* Michener includes two species that are found in mid-elevations in the Andes: *P. euchroia* (Doubleday) in Colombia and Ecuador (Vane-Wright, Ackery & Smiles 1975), and *P. telesiphe* (Hewitson) in Ecuador, Peru, and Bolivia (Vane-Wright, Ackery & Smiles 1975, Brown 1979). The adults of *P. telesiphe* have mimetic affinities with the distantly related *Heliconius telesiphe* Doubleday, which is aposematic on both surfaces of the wings. Unlike *H. telesiphe*, *P. telesiphe* adults have a cryptic, mottled brown pattern on the under surface of the wings (for more information on mimicry and a color plate of the adults, see Vane-Wright, Ackery & Smiles 1975). Neither species of *Podotricha* has received much attention from butterfly ecologists, and the life history of *P. euchroia* remains unknown.

This study provides descriptions of the egg, larva, and pupa of *Podotricha telesiphe* collected in August–September 1992 in Ecuador. Observations on instar duration, leaf damage by larvae, and oviposition behavior are presented. Positive identification of the host plant is not available, although vegetative parts resemble those of *Passiflora montana* Holm-Nielsen & Lawesson, *P. resticulata* Mast., and *P. sprucei* Mast. (S. Knapp per. comm.). Live specimens of the host plant are being maintained in greenhouses at the University of Texas, Austin.

The study site is located in Baeza, Napo, Ecuador (1800 m), on the bank of the Río Quijos. The forest is patchy, interspersed with pasture. Six species of *Passiflora* were found in the immediate vicinity; eggs were found on only one of these. During the study, ambient temperature ranged from 16°C at 0900 h and 1400 h to a maximum of 20°C at 1200 h. September 1992 was rainy and frequently overcast, with only occasional sunlight. Butterflies were observed flying at the edge of the forest, where both males and females were captured, as well as crossing open fields.

Females were observed on several occasions searching for host plants in areas of high humidity where the *Passiflora* host plants occur. However, only one oviposition event was observed, on 19 September 1992, at 1400 h, during overcast skies following a period of light rain. The female found the host plant on a trail (near the "camino antiguo a Borja") at the edge of a patch of forest. She flew around the plant repeatedly, inspecting leaves from ground level to a height of 4 to 5 m, alighting both on the surrounding plants and on the host plant. During a 12-minute period of observation, the female alighted on the host plant nine times, apparently laid four eggs, and departed. About five minutes later, presumably the same female (based on wing condition and its ability to immediately locate the plant) returned to the site, inspected the plant again, laid one egg on a branch that was not used during the first observation period, and immediately left.

The following descriptions are based on eggs and larvae collected in the field and reared at ambient temperature (16–20°C) in plastic containers. Examples of the early stages were preserved in 70% ethanol.

**Egg** (Fig. 1a). Creamy white, adorned with vertical and horizontal ridges; 0.8 mm x 0.8 mm (n = 5). Duration of egg stage approximately 10 days.

Eggs are laid singly, usually on the underside of mature leaves, but occasionally on the upperside, from ground level to over 4 m high. More than one egg was commonly found on the same leaf. The damage produced by larval feeding is characterized by holes in the leaf surface away from the edges (Fig. 1c). The larvae typically rest under the leaf.

**Larva** (Fig. 1b). *First instar*. Head dark brown; body translucent white when newly hatched, later developing milky white patches and brown spots (especially noticeable in

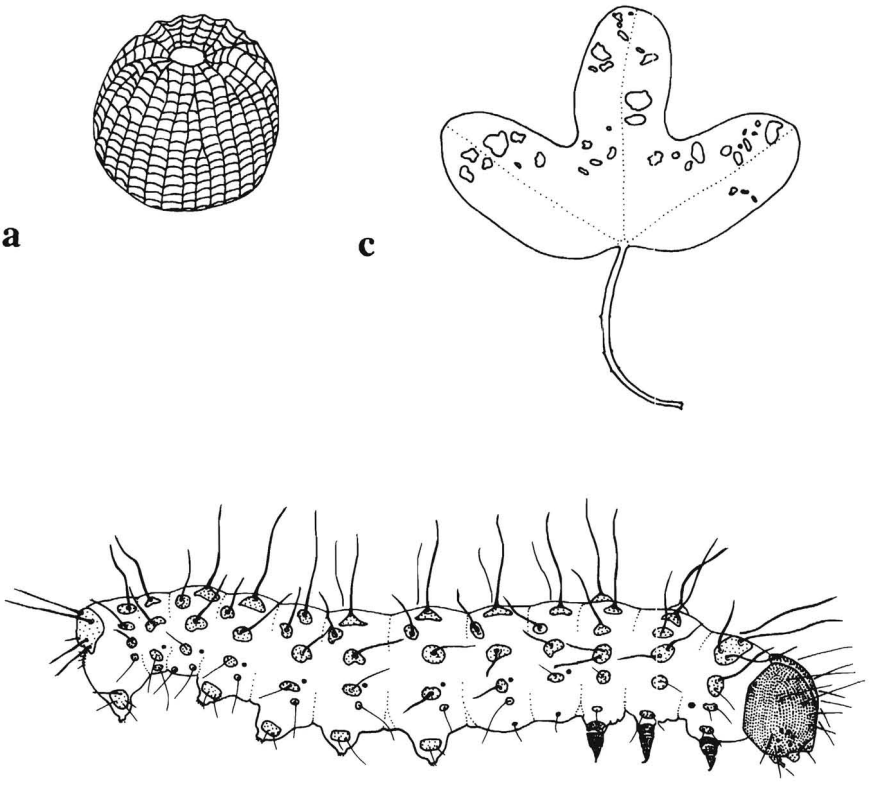


FIG. 1. Early stages of *Podotricha telesiphe* and typical leaf damage. A, Egg, drawn from a specimen preserved in 70% ethanol, approximately 1 month after it was collected; B, First instar larva, drawn from a specimen preserved in 70% ethanol, approximately 1 month after it was collected; C, Leaf damage produced by first and second instar larvae, drawn from a pressed leaf.

dorsum of abdominal segments 3, 5 and 7); body setae black, long, thick, linear to slightly bowed, sharply pointed. Duration of first instar 11–14 days (n = 2). *Second instar.* Head black, with scoli approximately one-third the length of head; body white, spotted with black; body scoli thick, adorned with black spinules; dorsal scoli entirely black, approximately one-half the length of head; subdorsal scoli black, approximately the same length as dorsal scoli; lateral scoli lighter in color, approximately the same length as dorsal scoli. Duration of second instar 5 days (n = 2). *Third instar.* Head mostly black, adfrontal region gray, gray spot on apex on both epicrania posterior from the insertion of the head scoli; head scoli slightly longer than head; body white with numerous black spots; yellow spot at base of dorsal scoli; body with faint yellow lateral line; dorsal scoli black with black spinules, yellow at base, except on segment 10, where dorsal scoli are white with black tips and white spinules; dorsal scoli approximately 1.25 times the length of head; subdorsal scoli black, slightly shorter than dorsal scoli; lateral scoli white, approximately

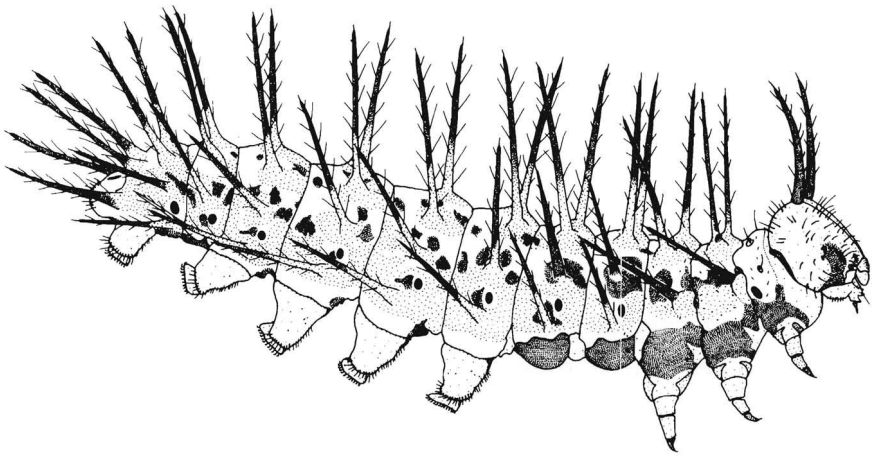

FIG. 2. Fifth instar larva of *Podotricha telesiphe*, drawn from a specimen preserved in 70% ethanol, approximately 1 month after it was collected. [Note that there is a discrepancy in the length of the head scoli between the written description (accurate) and the figure, which is due to the three-dimensional structure of the specimen.]

two-thirds the length of dorsal scoli; anal cap white. Duration of third instar 7–9 days (n = 5). *Fourth instar*. Same as third instar, except yellow areas more strongly developed on dorsum and sides of body; lateral scoli white with black tips. Duration of fourth instar 8–9 days (n = 5). *Fifth instar* (Fig. 2). Head creamy white; head scoli and setae black, approximately 1.5 times the length of head; dark occular area; body white with numerous black spots, large yellow spots at base of dorsal scoli, body with well-developed yellow lateral line; basal one-fourth of dorsal body scoli yellow, distal three-fourths black, dorsal scoli approximately 1.3 times the length of head; subdorsal scoli black, white or yellow at base, approximately three-fourths the length of dorsal scoli; lateral scoli generally black, approximately two-thirds the length of dorsal scoli; anal cap white; ventral side of thoracic segments, A1–2, and A7–9 black. Two or three days before pupation the white areas of the body become faint blue. Duration of fifth instar 9–10 days (n = 3).

**Pupa** (Fig. 3). Light brown, mottled with white; white ventral line on A5–7; paired gold spots on A1; head ornaments approximately 1.3 times the length of head, round at tip, with three ridges that reach the tip; thick, round flanges on A3, flages less developed on A4–7, knobbed on A6–7; cremaster pointed, with small round crown projecting ventrally. Duration of pupal stage 16 days (n = 2).

Brown (1981) presents abbreviated information on the morphology of the egg, fifth instar larva, and pupa of *P. telesiphe* based on his observations and those of L. E. Gilbert of a sample of eggs and larvae collected, reared, and photographed by Gilbert in Pedro Ruiz, Amazonas, Peru, in 1975. Unfortunately, the only larva reaching maturity produced a deformed pupa that did not develop into an adult (Gilbert pers. comm.). A comparison of the color slides of the fifth instar larva taken by Gilbert with material I collected in Ecuador confirms that the photographs are of a *Podotricha* larva. *Podotricha euchroia* is not found in Peru (K.S. Brown pers. comm., G. Lamas pers. comm.) suggesting that the identification of the specimens decribed by Brown (1981) is correct. There are a few differences between the Peruvian sample (Brown 1981 and color slides of Gilbert) and those descibed in this study. The egg is described as 1.0 mm in height, 0.8 mm in diameter, and yellow-white by Brown (1981: Table 1). In contrast, eggs collected in Baeza, Ecuador were 0.8 in height, 0.8 mm in diameter, and white. The description of the fifth instar presented by Brown (1981), based on the color photograph by Gilbert, includes the following: background coloration green-white; yellow strips; black spots; black, white,

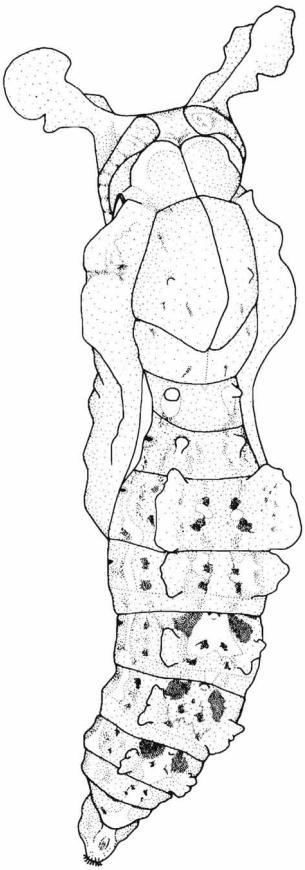

FIG. 3. Pupa of *Podotricha telesiphe*, drawn from a specimen preserved in 70% ethanol, approximately 1 month after it was collected.

yellow scoli; yellow head. However, a closer examination of the photograph by Gilbert indicates the following: (1) bluish background coloration, which is observed before pupation in Ecuadorian samples; (2) completely black dorsal spines inserted in the center of a yellow spot in the body, while the spines of the Ecuadorian larvae differed only in that they were yellow at the base; and (3) head white (not yellow as described by Brown), with a dark blotch below the horns at the edge of the epicrania, which is lacking in the Ecuadorian samples. The general color pattern is similar and the larvae most likely represent the two subspecies: *P. telesiphe telesiphe* (Peru) and *P. telesiphe tithraustes* (Ecuador). The description of the pupa given by Brown (1981) reads only "non-*Heliconius*." Both the Peruvian and the Ecuadorian larvae were found on *Passiflora* with trilobed leaves. However, the leaf shape of the two plants differ in that the leaves of the Peruvian *Passiflora* has longer lobes than that of the Ecuadorain one.

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## LITERATURE CITED

BROWN, K. S. 1979. Ecologia geográfica e evolução nas florestas Neotropicais. Vols. 1 & 2. Tese de Livre Docência, Universidade Estaual de Campinas, Campinas, SP, Brazil.

———. 1981. The biology of *Heliconius* and related genera. Ann. Rev. Entomol. *26*: 427–456.

VANE-WRIGHT, R. I., P. R. ACKERY & J. J. SMILES. 1975. The distribution, polymorphism and mimicry of *Heliconius telesiphe* (Doubleday) and the species of *Podotricha* Michener. Trans. Royal Entomol. Soc. (London) *126*:611–636.

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# BERINGIAN TORTRICIDAE: A NEW SYNONYMY IN *EPIBLEMA* AND A RECOUNT OF HOLARCTIC SPECIES

**Additional key words:** *Epiblema arctica, E. simplonianum,* nearctic, palearctic.

Beringia consists of Alaskan, Yukonian, and Siberian lands next to the Bering and Chukchi seas. Its east and west boundaries are inexact, but it includes the present sea floor, which emerged several times as a land bridge during Pleistocene time (Hopkins et al. 1982). Today, high proportions of Beringian biota are represented on both sides of the Bering Straits. Two examples are plants and Noctuidae: 57 percent of Beringian plants are holarctic (Matthews 1982), and 26 percent of Beringian noctuids are holarctic (Lafontaine & Wood 1988).

Kuznetsov and Mikkola (1991) recently summarized Beringian Tortricidae collected on the Siberian side. They reported 66 species in all, of which 39 percent were counted as holarctic. Some Beringian Tortricidae have been described on each side of the Straits under different names. I report one new synonymy of this kind here as well as five other species whose holarctic occurrence was not included in the above count.

*Epiblema simplonianum* (Duponchel) is among the many Tortricidae reported for the first time from Beringia by Kuznetsov and Mikkola (1991). This taxon was said to be a transpalearctic arctoalpine species (type locality nr. Simplon, Switzerland). As the lone Beringian *Epiblema,* it begged comparison with *E. arctica* Miller, previously the lone arctic *Epiblema* (type locality Anaktuvuk Pass, Alaska). I found that illustrations of *E. arctica* wings and genitalia (Miller 1985a) matched those of *E. simplonianum* (Kuznetsov 1987). Further comparison of male and female Alaskan and Yukonian *E. arctica* specimens with Siberian, Finnish, and Swedish *E. simplonianum* specimens confirmed that both taxa are the same morphospecies. These results are summarized as follows: