

LIFE HISTORIES OF NEOTROPICAL BUTTERFLIES FROM TRINIDAD

1. *PIRELLA HYALINUS FUSIMACULATA* (LEPIDOPTERA: SATYRIDAE)

F. CLIVE URICH and THOMAS C. EMMEL

Sans Souci Estate, Sangre Grande, Trinidad, and Department of Zoology,
University of Florida, Gainesville, FL 32611, USA

ABSTRACT.— The life history of *Pierella hyalinus fusimaculata* (Brown) (Lepidoptera: Satyridae) is described from material reared in captivity on grasses in eastern Trinidad. The complete life cycle takes 84 days (8 days in the egg stage, 60 days in four larval instars, and 16 days as a pupa).

KEY WORDS: *Caligo*, Gramineae, grasses, Heliconiaceae, immature stages, life history, Marantaceae, Nymphalidae.

The island of Trinidad, southernmost of the West Indies, lies between latitudes 10° and 11° N, and is separated from Venezuela on the mainland of South America by only about 10 miles (16 km) at its two projecting northwestern and southwestern peninsulas. With a total land area of 1,754 square miles (2806 sq km), the island is roughly rectangular in shape, being 55 miles (88km) at its greatest length from north to south, and having an average width of 40 miles (64km). The mountains of the Northern Range rise to over 3,000ft (1417m); two lower ranges transverse the island to the south, separated by swamps and plains. Rainfall may exceed 150 inches (3810mm) in the eastern part of the Northern Range, dropping to 60 inches (1524mm) along that coast (French, 1976). The wet season occurs from late May to December (with a short break occurring in September or October), while the dry season lasts from January to April. The temperatures are typically tropical (generally between 70°F and 86°F), and humidity is very high, remaining near 90% during much of the day in the wet season.

Tropical rain forest formerly covered large parts of the island, especially in the Northern Range and eastern and southern parts of the island. Rapid human population growth, logging, agricultural clearing, and oil field development have rapidly decimated the native forests, even in the Forest Reserves. Areas of second growth and remaining rain forest still support substantial butterfly populations, however.

Barcant (1970) recorded 627 indigenous butterfly species for Trinidad, and with some additions and deletions to that list made in the last two decades, the total number of butterfly species is now around 640. The richness of this island fauna offers abundant opportunities for biological research on butterflies. The senior author has resided at Sangre Grande in eastern Trinidad for many years, and has bred a diversity of Trinidad butterflies whose life histories have not heretofore been recorded or illustrated. The junior author has made a number of research expeditions to Trinidad as part of a broad research program on the ecology and

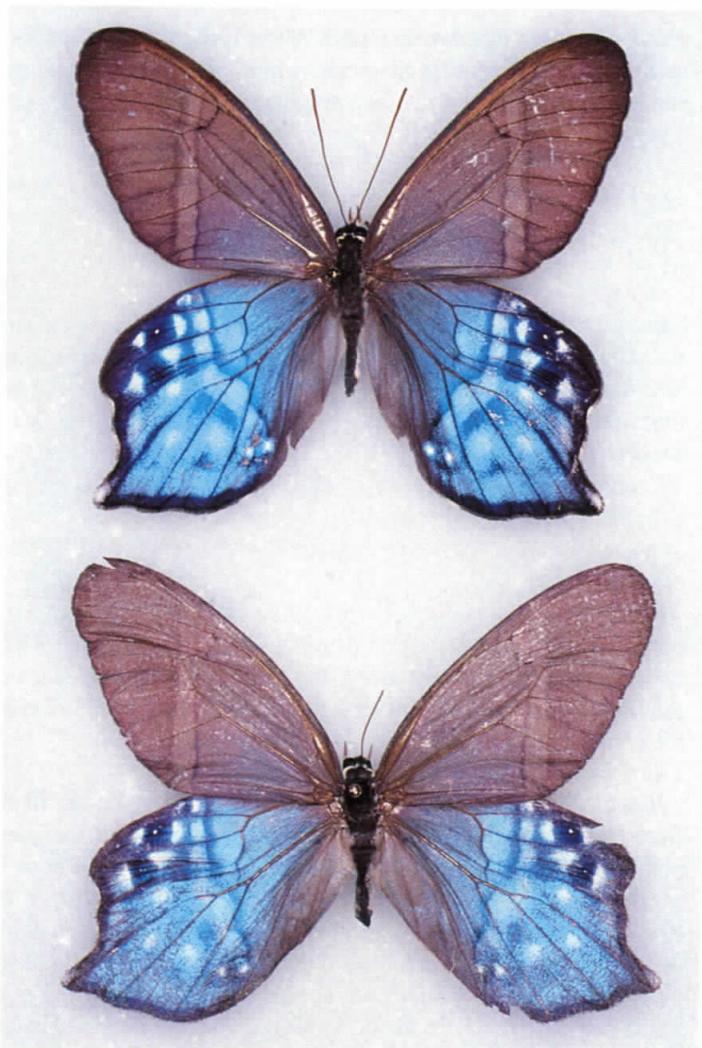


Fig. 1. Adult *Pierella hyalinus fusimaculata* (Brown): ♂ (above), Simla, 4 mi N. Arima; ♀ (below), La Brea, Trinidad.

evolution of neotropical butterflies, and has also accumulated life history information on some of these same species on Trinidad or in mainland areas of South America. This paper represents the first in a series of joint publications describing our observations. It treats the metamorphosis of *Pierella hyalinus fusimaculata* (Brown), locally known as the "Lady Slipper" (Barcant, 1970) and an inhabitant of wet forest.

DESCRIPTIVE NOTES

ADULT: The adults of this species of *Pierella* (Fig. 1) are dark brown with hindwings heavily spotted with blue. They are usually encountered while flying about four inches off the ground along a trail through the rain forest. Adults of both sexes feed on the juices of rotting fruits. Of the 20 known species of *Pierella* in the Neotropics, only *P. hyalinus* occurs on Trinidad (Barcant, 1970; D'Abbrera, 1984).

HOSTS: The laboratory host plants for the larvae were unidentified grasses with short, ovate leaves. However, the reported host plants for the genus in nature in Central America are in the Heliconiaceae and Marantaceae (DeVries, 1987).

EGG: A single egg was laid on 23 Nov 1985. Its description is as follows. Egg 1mm in diameter, white, globular in shape, and smooth in surface texture. The egg hatched on 2 Dec 1985, or 8 days after being laid.

LARVA:

First Instar:

The caterpillar at instar maximum was 6mm in length.

Head: Black, oval in shape.

Body: Beige in color, with four reddish brown stripes running the length of the body. Two short tails are present. Soon after hatching, the larva consumed the egg shell. The first molt took place on 11 December 1985.

Second Instar:

Head: Still oval in shape, shining black, with a pair of extremely short blunt knobs extending upwards from the very top of the oval head. The two bumps on the epicranium are very close together.

Body: Mottled brownish, with lines along the length of the body being much less visible than before this molt. Eight small white dots are distributed along the entire length of the sides of the body. The second molt took place on 23 Dec 1985, 12 days after the first molt.

Third Instar:

Head: Still oval in shape, with a pair of short knobs rising from the top of the head. These knobs are broad at the base, pointed at the top, and very short. The apex of each horn is slightly blunt. The bases of the horns are close together, extending upwards, leaving an opening between them at an angle of about 45 degrees. Seen from the front, the head forms a black oval, the outline of which ends at half the thickness of the oval shape due to the body in the background. Surrounding both sides of the rear of the head is a collar of rough-looking beige lines. Behind this collar, the neck is also black in color. The beige

masks on both sides of the head do not curve over the top of the head, but stop short, just below and short of the horns.

Body: The body color is the same mottled dull brown as after the first molt. The third ecdysis took place on 8 Jan 1986, or 16 days after the second molt.

Fourth Instar:

All aspects of this larva are the same as after the second molt, save that on the dorsal side of the body there are now two rows of whitish marks similar to the equals sign and placed at intervals in line with the segments of the body. The body color is a slightly darker brown at this stage, with scallops running along both sides of larva. This larval stage pupated on 30 Jan 1986, 22 days after the third molt.

PUPA: The rounded and squat shape of the *Pierella* pupa is a smaller version of the brassolid-type pupae as found in the owl butterflies of the genus *Caligo*. The wing areas of the pupa are a rust color, with grayish marks. The abdomen of the pupa is gray in color, with two rows of small rectangular markings that run the length of the abdomen. These rectangular marks are rust in color, and a thin, gray, slightly raised line separates the right and left row of marks. Further from these two rows on both sides of the abdomen lies another rust-colored rectangular blotch which runs longitudinally on each lateral surface.

The pupal stage lasted 16 days, and an adult male hatched on 15 Feb 1986.

GENERATION TIME (egg to imago): 84 days.

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REFERENCES CITED

- Barcant, M.
1970. Butterflies of Trinidad and Tobago. London: Collins. 314 pp.
- D'Abbrera, B.
1984. Butterflies of the Neotropical region. Part V. Nymphalidae (conc.) and Satyridae. Victoria, Aust.: Hill House. Pp. 680-877.
- DeVries, P. J.
1987. The butterflies of Costa Rica and their natural history. Princeton: Princeton Univ. Press. 327 pp.
- French, R.
1976. A guide to the birds of Trinidad and Tobago. Valley Forge, Pa: Harrowood Books. 470 pp.