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LIFE HISTORIES OF NEOTROPICAL BUTTERFLIES FROM TRINIDAD
3. *MORPHO PELEIDES INSULARIS* (LEPIDOPTERA: NYMPHALIDAE: MORPHINAE)

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ABSTRACT.– The life history of *Morpho peleides insularis* (Fruhstorfer) (Lepidoptera: Nymphalidae: Morphinae) is described from material reared on *Paragonia pyramidata* (L. C. Rich) in the family Bignoniaceae. Occasional hosts in Trinidad are also *Erythrina glauca* and *E. micropteryx* (Fabaceae). The complete life cycle takes 74 days at ambient temperatures in eastern coastal Trinidad (7 days in the egg stage, 53 days in four or five larval instars, and 14 days as a pupa).

KEY WORDS: *Antirrhea*, Bignoniaceae, biology, *Caerois*, Costa Rica, Fabaceae, hostplants, immature stages, larva, Leguminosae, life history, *Morpho*, Nymphalidae, *Pierella*, pupa, Satyridae, Tobago, Trinidad.

This paper is the third in a series of publications describing the life cycle stages and larval food plants of neotropical butterflies from the West Indies islands of Trinidad and Tobago. The initial report (Urich and Emmel, 1990a) introduced the series with a background discussion of the relevant ecogeographical features of the larger island of Trinidad, and included a description of the life history of *Pierella hyalinus fusimaculata* (Brown) (Satyridae).

The second paper (Urich and Emmel, 1990b) described the rearing methods and ambient conditions at Sangre Grande where these life histories were determined. It also described the life history of the only species of *Antirrhea*, *A. philoctetes* (Linnaeus) on the island of Trinidad; this butterfly is currently classified as a member of the nymphalid subfamily Morphinae, which includes a second odd genus, *Caerois*, and the 80-odd brilliant blue, white and brown *Morpho* species of Central and South America.

The present paper summarizes the lfie history of the only species of true *Morpho* on the islands of Trinidad and Tobago: *Morpho peleides insularis* (Fruhstorfer), locally known as "The Emperor" (Barcant, 1970). This subspecies is endemic to Trinidad and Tobago; the species *M. peleides* occurs from Mexico to Brazil (D'Abrera, 1984). While hundreds of this species have now been reared by the authors at Sangre Grande and the University of Florida, and by Ron Boender at Butterfly World in Coconut Creek, Florida, we will follow the format used in our past papers and describe the durations of the life history stages from the notes on the first egg reared by Urich. Photographs in the figures are by T. C. Emmel and were taken in Trinidad at the Sangre Grande rearing facilities in Sep 1987. Primary emphasis in the descriptions of larval instar coloration and pattern are on differences from mainland *M. peleides* larval descriptions.

DESCRIPTIVE NOTES

EGG: The egg followed in this life history was laid on 26 Sep 1975 on the side of the midrib on the underside of the host leaf. Egg 1mm in diameter, very pale green, hemispherical in shape, and smooth in surface texture. As in the Costa Rican subspecies, *M. p. limpida* (Young and Muyshondt, 1973), the eggs are laid singly on the upper surface of the host leaves. The egg hatched on 3 Oct 1975, or 7 days after oviposition.

LARVA:

First Instar: The larvae at hatching was 5.25mm in length.

Head: Maroon in ground color, surface covered with hairs. The hairs are black, and form arcs from the base of the head towards the frontal region of the head. These hairs are present over the entire surface of the head except the ventral side. The head is noticeably larger than the diameter of the body.

Body: Light lime-green in ground color, with two rectangles of maroon markings equally divided and placed along the dorsal side. In Costa Rican *limpida*, the larva is conspicuously yellow and red during the first three instars. This first molt took place on 10 Oct 1975, seven days after hatching from the egg.

Second Instar:

Head: The head contines to have red hairs thickly distributed both on the sides and on the top. The ground color is maroon.

Body: The second instar now has two reddish tufts of hairs standing straight upwards from the midsection of the dorsal side of the body. The body now carries fine white hairs sparsely distributed across the entire surface area. Directly behind the head arise longer white hairs from the body, curving slightly over the head, both from the sides and from the top of the first thoracic segment. The second molt took place on 23 Oct 1975, thirteen days after the first molt.

Third Instar:

Head and body as in second instar. The third molt took place on 3 Nov 1975, eleven days after the second molt.

Fig. 1. Fifth instar larva of *Morpho peleides insularis* (Fruhstorfer).

Fourth Instar: The caterpillar in this instar reached 53mm in length.

Head: Reddish-brown, and triangular in shape from frontal view. A triangularly-shaped light mark curves in the center of the front of the head, with the surrounding area being a reddish-brown color. The head is covered with short reddish-brown hairs, about 1.5mm in length.

Body: The color pattern of this instar and the fifth instar are very similar, and will be described together. Along the dorsal surface between the head and the caudal end are two irregular oblong pale lime-green markings, with thin black lines surrounding these two patches. These patches are situated roughly equidistant from each other, and from the head and caudal end.

Directly behind the head, and slightly to each side, two patches or tufts of beige-colored clusters of hairs curve forward, and end evenly with the contour of the head when viewed from the side. The front of the head slopes backwards at a slight angle towards the dorsal side of the body. In the two lime-green patches described above are alternating, extremely fine lines which roughly follow the outline of the irregular shape of each patch. These lines are of a slightly more reddish color. The general shape formed by these fine lines resembles a short club, with the handle end nearest the front end of the caterpillar for both patches.

Running the entire length of the body along both sides are complicated reddish-brown markings. These are arranged in combination with irregular lime-green markings, in a sort of herringbone design which faces posteriorly.

Just above the legs on both sides of the body are tufts of fine reddish-white hairs which tend to obscure the legs. These extend downwards and touch the foodplant on which the caterpillar rests, obscuring any shadow cast by the sun. Finally, at the terminal caudal end of the body are two small tufts of hairs, one on each side and extending straight behind the body. These are composed of short hairs, which are reddish-brown in color.

There is a small and elongated lime-green mark situated just ahead of the first irregular lime-green marking on the dorsal surface. On both sides of this small elongated mark are situated four extremely short tufts of dark maroon hairs. These clusters are extremely tightly packed. Between the two irregular dorsal markings of lime-green described earlier lies a small oblong lime-green patch, in the approximate center of the length of the body. Lying between those two blotches, this lime-green patch is surrounded by a rough circle of alternating fine lines of maroon and lime-green colors. On both sides of this marking are situated two tufts which lean slightly posteriorly and diverge slightly apart from each other. These are approximately 6mm apart at their bases, and are maroon in color. They each end in a point. The length of these tufts is about 5mm. There is another pair of much shorter reddish tufts just to the front of the second dorsal blotch of lime-green. These two tufts emerge about six mm apart on the dorsal surface. While they are the same distance apart as the longer one just described above, they are only 1.5mm in length.

Two additional pairs of reddish tufts of hairs terminating in a point are situated at 10mm from the end of the tail hair tuft. Their length is 5mm each, and each pair is approximately 5mm apart on the dorsal surface.

Fifth Instar:

Molt of the fourth to fifth instar occurred at approximately 14 Nov 1975. By Nov 25, the larva had reached a maximum length of approximately 93mm. Its brighter colors gradually grew lighter in hue as the larva grew larger. About three days before pupation, the larva became relatively inactive and ceased to eat any more of the host plant. Just before becoming inactive, the larva chose a suitable spot on which to spin the silken web for the later attachment of the cremaster of the future suspended pupa. After this inactive period during which the larva shrunk to about two-thirds of the fully grown length, pupation finally took place on 25 Nov 1975, 11 days after the fourth molt.

In Costa Rica, Young and Muyshondt (1973) found that the fifth instar could be either colored with fine brown, red and black lines dorsally and laterally, or (in Guanacaste province) lacking red and yellow entirely, with patterns of fine gray and pale brown lines. The hair tufts on the head, body and sides are described as similar to those found in the Trinidad *M. peleides* larvae.

PUPA:

The pupa is ovoid or pear-like in general shape, dark green in color with a smooth surface. It has two small pointed ends extending from the dorsal cephalic surface. The pupal stage lasted fourteen days, and an adult female hatched on 9 Dec 1975.

ADULT: The adults of this subspecies are large butterflies with a richly brilliant iridescent blue bordered by black margins dorsally and a dark umber brown ventrally. Both sexes have a suffusion of black scaling near the body. The male has brilliant medium-blue iridescence

extending to within a cm of the wing margin. This last area is jet black, except for five or six white spots centred in the black margin at the forewing apex. A white bar extends downward from the leading edge of the wing, just outside the forewing cell. The female is similarly patterned except that the black margin is twice as broad (and thus the blue areas are more band-like), and a second, submarginal row of five or six white, streak-like, larger spots occurs interiorly from the marginal row of white spots.

The adults are usually found inside the rain forest, especially the females. Males may be encountered along sunlit trails, stream beds, gullies or canyons in the morning hours, while females tend to be more secretive. Males may be caught at banana, papaya, and other rotting fruit baits. The flight is powerful, erratic, and extraordinarily deceptive; the adults have superb eyesight as well. The most effective way to capture one in flight is to wait motionless at the side of a trail or stream until the butterfly has passed; then, one can swing upwards or from behind with a large-diameter net, and have a reasonable chance of netting the adult.

HOSTS: The wild host in Trinidad is usually *Paragonia pyramidata*, a vine in the family Bignoniaceae. The larvae described and photographed for this paper were reared on this plant. There are several species of this vine genus in Trinidad; *P. pyramidata* may be identified by the reddish-colored character of its young leaves, while the young leaves of the other species are a light green color. Occasionally, females have been observed to lay eggs on *Erythrina glauca* (locally known as Water Immortal) and *Erythrina micropteryx* (Mountain Immortal). The reported hosts for a mainland *Morpho peleides* subspecies (*limpida)* in Costa Rica are *Dalbergia, Lonchocarpus, Machárium, Mucuna, Platymiscium, Pterocarpus,* and *Swartzia* (all legumes in the family Fabaceae) (Young and Muyschondt, 1973; Young, 1978, 1982; DeVries, 1987).

GENERATION TIME (egg to imago): 73 days.

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