

A NOTE ON THE LIFE HISTORY OF *DYNASTOR NAPOLEON* IN SOUTHERN BRAZIL (LEPIDOPTERA: NYMPHALIDAE: BRASSOLINAE)

THOMAS C. EMMEL

Department of Zoology, University of Florida, Gainesville, FL 32611, USA

ABSTRACT.— The mature larva of *Dynastor napoleon* Doubleday (Lepidoptera: Nymphalidae: Brassolinae) is described from material reared in southern Brazil on a large bromeliad species in the family Bromeliaceae. The larva is dull green, with lighter-green spined bumps across the entire surface and a series of beige/dark brown mid-dorsal spots, one at each intersegmental junction. The bifid tails are long. On each side the highly patterned head has four knobbed, dark brown horns.

KEY WORDS: biology, *Brassolis*, Bromeliaceae, *Dynastor*, Hesperidae, hostplants, immature stages, larva, life history, Megathymidae, Neotropical.

Three species of the unusual brassoline genus *Dynastor* occur in the American tropics. As part of a series of life history papers on neotropical butterflies (Urich and Emmel, 1990a, 1990b, 1991a), the life histories of two of these spectacular large crepuscular species have been described (Urich and Emmel, 1991a, 199b) from Trinidad: *Dynastor macrosiris* Westwood and *D. darius darius* (Stichel). The mature larva of the third species, *Dynastor napoleon* Doubleday, is described from southern Brazilian material in this present paper.

All three *Dynastor* species occur on the mainland of South America. Little is known of their biology, geographic variation, or ecology (Barcant, 1970; D'Abrera, 1984; DeVries, 1987). They have been classified as members of the subfamily Brassolinae of the family Nymphalidae (Ehrlich, 1958; DeVries 1987) or as members of the family Brassolidae (Barcant 1970; D'Abrera 1984). Superficially, their robust bodies, large eyes, and stout broad wings make their relationship to the rest of the true Nymphalidae in the superfamily Papilionoidea resemble that of the Megathymidae (Giant Skippers) to the Hesperidae (True Skippers) in the superfamily Hesperioidea. This parallelism is enhanced by the fact that the *Dynastor* (and *Brassolis*) species have a rudimentary proboscis (first recognized by Urich and Boos, 1982), like the Megathymidae among the skippers, and apparently do not feed on either fruit juices or nectar during their adult lives.

On 16 March 1987, during a visit to the home of Herbert W. Miers of Joinville in the state of Santa Catarina, southern Brazil, I was able to observe and photograph a mature fifth-instar larva of *Dynastor napoleon* feeding on "pineapple bromeliad," a spine-edged, large, ground Bromeliaceae species. Miers had secured eggs from a female taken near São Bento do Sul, Santa Catarina state, where adults of this *Dynastor* species flies at peak abundance at the end of December. The notes included in this paper allow comparison of the larvae of all three species of *Dynastor*, including *D. macrosiris* and *D. dairus* from Trinidad (Urich and Emmel, 1991a, 1991b [this issue]).

DESCRIPTIVE NOTES

LARVA:

Fifth Instar:

Head: The head is light brown or beige in ground color. Viewed from the front, the principal suture is dark brown; the central portion is narrowest, expanding in width both dorsally and ventrally as the suture meets the triangular beige section above the labrum and mandibles. On either side of the central suture, medium-brown patches create a design likened to two courting booby seabirds or geese, sky-pointing with their necks, heads, and bills directed vertically as they face each other across the dark brown suture. Their tails are also erected vertically at the margins of the head. Each of these figures stands on a large tan patch at the bottom of either side of the head. The head is covered with short, stiff, beige hairs, pointed slightly downwards. On each side of the head are four, stout, spine-covered horns. The top pair is black, the second and third pairs are medium-brown, and the shortened bottom pair is beige except for a medium-brown base. Both a frontal view and a dorsal view of the head capsule are shown in the accompanying figure.

Body: The base color of the body is dull olive green. There are no alternating lighter and darker markings running lengthwise as seen in the other two *Dynastor* species. However, the dorsal surface is very slightly darker green than the two lateral surfaces. The entire body is covered densely with rather short, stout, colorless hairs.

Along the length of the dorsal surface occurs a series of oval markings, each placed at the junction between two segments. The largest oval is placed at the junction of the third and fourth abdominal segments. To the anterior and posterior of this largest spot are considerably smaller oval spots which decrease greatly in size to almost vanish on the thoracic segments and the last two abdominal segments. (All these spots are greatly reduced in size compared to those on larvae of either *D. macrosiris* or *D. dairus*.) Each oval spot is principally reddish in color. In the center of the largest spot, there is a tan center, with a blackish line separating it from the main reddish area. The front of that central spot is sharply pointed (like the needle end of a hypodermic syringe), while the rear end of that central spot tapers more gradually and irregularly to a rounded point. Outside the red oval at both ends (larger and more noticeable at the anterior end) is a light tan "bullet"-shaped patch, with a fine tan line extending posteriorly as a thin border around each red patch. A thin brown line surrounds the tan area

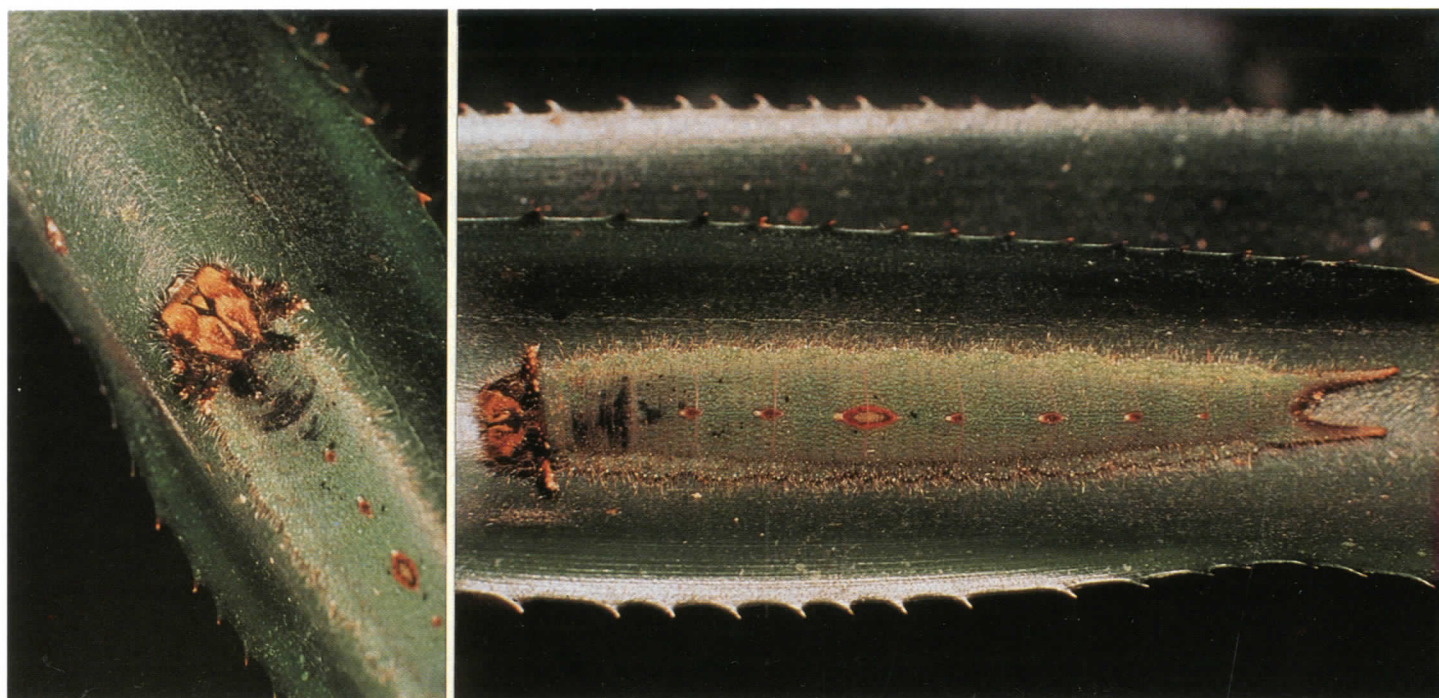


Fig. 1. The mature larva of *Dynastor napoleon* from São Bento do Sul, Santa Catarina, Brazil. (a) Dorsal view of fifth-instar body and head capsule. (b) Frontal view of fifth-instar head capsule.

as a terminal outside boundary to each mid-dorsal oval spot.

The tails are relatively long. They are thick at their bases, tapering gradually and outwardly. The dorsal and outside surfaces are dull olive green like the body, while the inside surfaces of the tails are blackish brown. The tails are thickly covered with beige hairs like those of the body.

ADULT: This immense species is the largest of the genus, with females reaching well over 15cm (6.0 inches) to 17cm (6.75 inches) in wingspan. Additionally, both forewings and hindwings are broad in all dimensions, giving a tremendous surface area to this notable expanse. The males are somewhat smaller (11-13cm, or 4.5-5.0 inches) in wingspan, and are more brightly colored than the females. The majority of the central portions of the dorsal forewing and hindwing surfaces are a rich dark umber brown, while the marginal areas (particularly on the hindwing) are bright orange. Four large, boldly marked yellow spots cross the subapical area of each forewing. Ventrally, both sexes are tan to brown, heavily mottled with yellow and several distinct yellow subapical spots again on the forewing. The body of both sexes is robust, much like the diurnal neotropical moths of the family Castniidae that fly in the same rain forest areas.

Dynastor napoleon is known only from southern Brazil and virtually nothing has been published since the brief notes by H. Fruhstorfer (in Seitz, 1924: p. 290), who said: "*D. napoleon* Westw. [sic] seems to be an archaic, nearly extinct species, exclusively confined to the state of Rio de Janeiro, and even there only recorded from Petropolis; from time to time the splendid butterfly has been successfully bred from the larva. The larva, although known for over 30 years, has not yet been described. According to von Bönninghausen it lives on one of the Bromeliaceae, with non-dentate leaves."

COMPARISONS

Each of the three species of *Dynastor* has a distinctive pattern and coloration on the fifth-instar larval body and head capsule. All are adapted, with superb cryptic and disruptive (mid-dorsal "dead leaf area" spots) coloration and spines, to blend in with the spiny bromeliad leaves on which they feed and rest. The most immediately obvious distinguishing feature between the three species' fifth instars is the series of mid-dorsal markings and longitudinal lines (present or absent) on the larva.

The *Dynastor macrosiris* larva has two huge, greatly elongated patches extending across three or four segments each, with a small patch or two both anteriorly and posteriorly from these. Longitudinal body lines are present.

The *Dynastor darius darius* larva has one large brown dorsal "eye-spot" (between abdominal segments three and four) with smooth shadings creating an illusion of an eye with "depth." Three small oval spots follow posteriorly. The light and dark green body line pattern is quite evident.

The *Dynastor napoleon* larva has the least modified or developed dorsal spot pattern. One oval spot is present at each junction of body segments, the only modified one being the center large one between the third and fourth abdominal segments. No longitudinal pattern of light and dark lines is present to mimic the host-leaf venation; the ground color is virtually concolorous.

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