

PROTESILAUS ORTHOSILAUS AND ITS IMMATURE STAGES

(LEPIDOPTERA: PAPILIONIDAE, PAPILIONINAE)

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Abstract – Immature stages, adult and immature behavior, and host-plants are described for *Protesilaus orthosilaus* (Weymer) (Papilionidae, Papilioninae). The female is illustrated for the first time. Larvae were reared on *Nectandra gardineri* Meissner (Lauraceae).

RESUMO – Neste trabalho, descreve-se os estágios imaturos, divulga-se a planta hospedeira natural e informações etológicas e de distribuição espacial de *Protesilaus orthosilaus* (Weymer) (Papilionidae, Papilioninae). A fêmea é ilustrada pela primeira vez. As larvas foram criadas em *Nectandra gardineri* Meissner (Lauraceae).

Key words: Behavior, biology, Brazil, butterflies, Cerrado, defensive behavior, distribution, eggs, hostplants, Hymenoptera, immatures, larvae, larval morphology, Lauraceae, Mato Grosso, morphology, life history, Neotropical, Paraguay, parasitoids, pupae, Rondonia, South America, voltinism.

Protesilaus orthosilaus (Weymer, 1899), the most beautiful of all species of the genus (Fig. 9-10), is endemic to the Central Brazil Plateau, ranging northwest into Rondônia and southwest into Paraguay (Tyler, Brown Jr., and Wilson, 1994). It is a very uncommon species throughout its territory and is not well represented in collections. In the high Arinos River region, Diamantino, Mato Grosso, Brazil, from where the material studied here was obtained, adults were collected during the last 25 years, in Jan-Mar, Jun-Aug, and Oct-Nov, being more abundant in Jul-Aug, and Oct-Nov. During his collecting trips through Mato Grosso, C. L. Collenete collected it in April, and more frequently in Jul-Aug (Talbot, 1928), which indicates that it is a bivoltine species. Its natural foodplant, *Nectandra gardineri* Meissner (Lauraceae), a mid-size tree, is frequently found on sandy soils throughout the Cerrado region, on transitional areas between the Cerrado and the gallery forests, following rivers and streams.

This research has been accomplished during the period January-February 1996.

MORPHOLOGY

EGG (Fig. 1).

Globular, with base slightly flattened, chorion smooth, shiny light-cream, 2mm along its longest axis. Incubation takes 4 days.

LARVA

First Instar (Fig. 2). Head spherical, black. Body black, a white dot on A4-5, from suprspiracular area to dorsal line; dorsal line black; ventral area more light in T1-3 and A1-2, dark brown on other segments. Subdorsal area of all segments with groups of black setae, thoracic longer, especially those of prothorax. 2.5 mm on emergence, ending 5.0mm long, development is completed in 2 days.

Second Instar (Fig. 3). Head cordiform, light-brown, with frontal and lateral setae of same color; frontoclypeous slightly darker. Body with trapezoidal pronotum, light brown, with setae slightly darker and with black puncture on the upper side, just above osmeterium. Subdorsal setae shorter than those of first instar. Tegument similar to that in first instar. The white mark on A4-5 very variable; in some larvae present from suprspiracular to subdorsal; in others more reduced or even absent. 8.5mm long, development is completed in 3 days.

Third Instar (Fig. 4). Head similar to that of previous instar. Body: pronotum as in second instar; tegument T2-3 and A1-3 black from dorsal to subspiracular area; whitish from this to ventral area. White patch on A4-5 interrupted by black on dorsal area and by yellow on ventral. A6 white from subspiracular to subdorsal area. Some larvae totally black, missing white marks, but with normal ventral surface. Supranal scutum triangular, light brown, with lateral setae darker. 13.0mm long, development is completed in 2-3 days.

Fourth Instar (Fig. 5). Head spherical, same color as in previous instar. Body with cervical scutum and pronotum orange-brown around osmeterium, black on dorsal area. T2-3 and A6-10 citrine-green from subventral to suprspiracular area, mixed orange-brown in the suprspiracular area. A4-5 with same coloration as remaining segments towards subspiracular area, followed by white with small black dots to subdorsal area; dorsal area velvet black, except A10 orange. Legs greenish, translucent, marbled brown. Spiracle slightly visible, peritreme light-brown. Length is 22.5mm, development is completed in 3 days.

Fifth Instar (Fig. 6-7). [Yellow form]. Head greenish-yellow, marbled dark yellow; lateral setae whitish; sutures lighter; frontoclypeous light brown; mandibles and ocelli black. Body: osmeterium light green when displayed, V-shaped, well opened. Pronotum green, marbled

yellow, spotted black; orange around osmeterium; dorsal area black. Tegument citrine-yellow from ventral to subdorsal area, where is interrupted sinuously by dorsal black coloration; in A4-5 citrine-yellow coloration extends more dorsally; subdorsal area A9-10 and dorsal and anal scuta marbled reddish-brown. Setae whitish on ventral area from A1-2 and on abdominal and anal legs. Thoracic legs more yellowish than surrounding tegument. Spiracle yellow; peritreme brown. Length 37.0mm, development is completed in 5 days.

Prepupa. The larva expels all intestinal content, shrinks and the tegument turn translucent, and finally spins the girdle. Duration is 2 days.

PUPA (Fig. 8).

Cuneiform, with latero-ventral constriction on metathorax. Expansions pyramidal, distributed as follows: first cephalic, acute, lateral; second also lateral, smaller, near dorsum, apex slightly flattened; last on thorax, dorsally, slightly bent forward, apex triangular. Striae thin, distributed as follow: dorsal from edge of metathorax to projection apex, following to vertex; second oblique, latero-dorsal, from projection apex, following wing edges to A5; third, dorsal, from projection to mid A1; last, subdorsal, from A2 to cremaster. Striae whitish, except dorsally, from projection to A1. A10 flattened dorsally, square, depressed near cremaster; cremaster with small hooks. Tegument striated, rugosity more intense on head, thorax and wings; wings with veins well marked. There are two main color forms: green, spotted with whitish fine punctuation; and brownish-green, spotted with brown fine punctuation. Spiracle elliptic, slightly visible. Length 27.0mm; width 11.0mm laterally and 9.0mm ventrally. Average duration is 15 days. One pupa took 262 days to hatch.

BEHAVIOR

The eggs are laid singly or, less frequently, in small groups of 2-4, at the end of young shoots. The larvae feed only on young, tender leaves. Cannibalism is very frequent, with older larvae eating the younger. Sometimes even the older ones are eaten when immobilized due to molting. Eggs are parasitized by small Hymenoptera, and the larvae are predated by wasps, contributing greatly to the scarcity of the species. Larvae protrude the osmeterium immediately as defensive behavior.

Adult males (Fig. 9) are attracted to wet sandy or muddy ground, always solitary. They never mud-puddle together with other species, even of the same genus, which frequently congregate in such places. They fly throughout the sunniest, hottest hours, even after mid day. Females (Fig. 10), which are illustrated here for the first time, feed on nectar and on plant secretions produced by young shoots. They are most active between 1000-1200h.

ACKNOWLEDGMENTS

I am very grateful to Prof. Gert Hatschbach, Museu Botânico Municipal de Curitiba, Paraná, Brazil, who identified the hostplant. Vitor O. Becker, Departamento de Zoologia, Universidade de Brasília, Brazil, helped with the translation from Portuguese.

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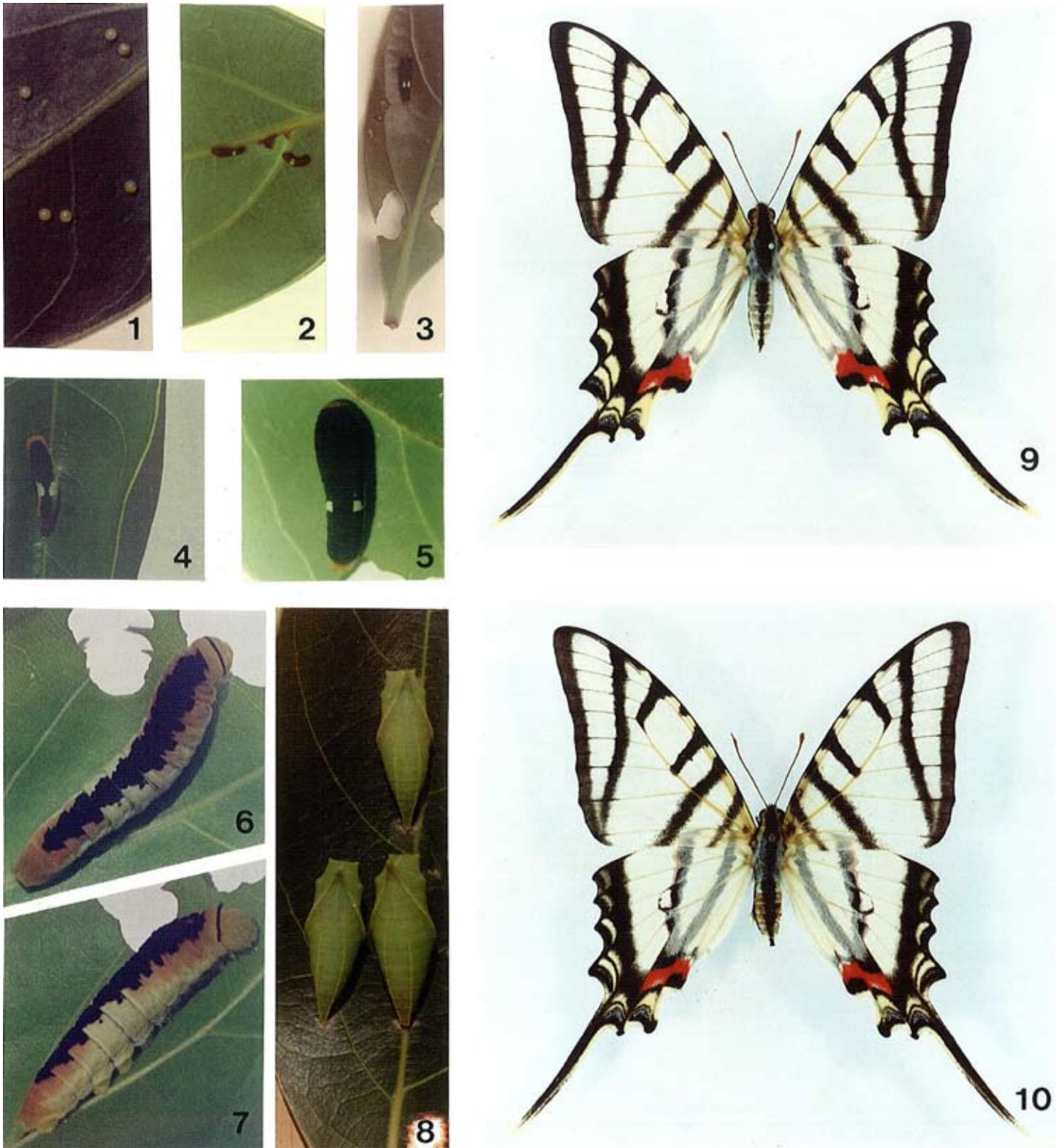


Fig. 1-10. *Protesilaus orthosilaus* (Weymer): 1) Eggs. 2) First instar larvae, dorsal view. 3) Second instar larva, dorsal view. 4) Third instar larva, dorsal view. 5) Fourth instar larva, dorsal view. 6-7) Fifth instar larvae (6, dorsal view, 7, lateral view). 8) Pupae, dorsal view. 9) Adult male. 10) Adult female. Natural size: male = expanse 73mm; female = expanse 72mm.