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Source: The Journal of the Lepidopterists' Society, 70(2) : 159-163

Published By: The Lepidopterists' Society

URL: <https://doi.org/10.18473/lepi.70i2.a12>

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A NEW FOODPLANT FOR *HISTORIS ODIUS DIOUS* LAMAS, 1995 (NYMPHALIDAE: NYMPHALINAE)
WITH SOME NOTES ON THE LIFE HISTORY IN SURINAME**Additional key words:** Surinam, Cecropiaceae, *Cecropia*, *obtusa*, host plant

Historis odius (Fabricius, 1795) (Nymphalidae: Nymphalinae) ranges from the southern USA and the Caribbean to Argentina. There are three subspecies (Lamas 2004): ssp. *odius* (Fabricius, 1775) and *caloucaera* Brévignon, 2003 are distributed in part of the Caribbean, ssp. *dious* Lamas, 1995 occurs in the remainder of its range. *Cecropia insignis*, *C. obtusifolia* and *C. peltata* (Cecropiaceae) have been reported as larval foodplants for *H. odius dious* (Beccaloni et al. 2008, Janzen & Hallwachs 2009). Its early stages were described from El Salvador (Muysshondt & Muysshondt 1979) and figured from Costa Rica (Janzen & Hallwachs 2009). In Suriname, the species has been recorded throughout the country in cultivated and secondary vegetation as well as primary forests. We describe a new foodplant and provide additional descriptive detail on some aspects of the life history in Suriname.

On 27 March 2015 in Paramaribo, Suriname (5°49'405"N, 55°10'404"W), the second author detected a fourth instar larva of *Historis odius dious* on the underside of a leaf of a *Cecropia* species. By providing the leaves of this tree as its only food, the larva was reared to an adult according to standard methods. A botanical collection was made of the foodplant. Stages were photographed with a Nikon D300s camera, an AF Micro Nikkor 105 mm 1:2.8 D lens and a SB-800 flash. Photographs were made in NEF-format and without adjustments converted to TIF-files in the same color space.

The foodplant (Fig. 1) was identified as *Cecropia obtusa* Trécul (Cecropiaceae). Description: Tree, to 15 m, usually inhabited by ants, with stilt roots (Fig. 1A). Leaves peltate (Fig. 1B), petioles whitish due to dense cobweb-like hairs, at its base a trichilium with white Müllerian bodies (Fig. 1D); leaf blade with 6–9 lobes, ca. 60 cm diam.; upper side green, rough to the touch due to presence of short, stiff hairs; underside whitish because of dense cobweb-like hairs, lateral veins loop-connected just inside leaf margin (Fig. 1B). Inflorescences spikes on common peduncle. Female inflorescence usually 4 spikes, each 3–10 cm long and ca. 0.4 cm thick (Fig. 1H–J), male inflorescences have 12–15 thinner spikes (Fig. 1D–G).

Fourth instar (Fig. 2a–c). Head capsule shiny black with on each side a more or less rectangular red patch between the stemmata and frons and below this at the left side a smaller red spot; above two stout black horns, each with two lateral and three superior, orange-red tipped spines; between the horns close to the epicranial notch two small black spines; at both sides a row of 5–6 light yellow spines with black base. Ground color thorax and abdomen dorsolaterally black to very dark brown, below spiracles and ventrally dark red-brown. Prolegs dark red-brown with black patch above planta. Prothoracic shield black, bordered on both sides by yellow transverse bands, extending to subdorsal area. Anal plate black with two spines. Thoracic and abdominal segments bordered by narrow, straight transverse bands with two or three wider, irregularly formed transverse bands in between, often laterally merging around spiracle, giving the impression of a black oval surrounded by yellow. Middorsally, a longitudinal yellow stripe, interrupted on T1, T3 and A3–A6. Middorsally on A1–A9, at junction of longitudinal and anterior irregular transverse band, a orange-based (A1, A2) or red-based (A3–A9) scolus with three (A7), four (A1–A6) or five (A9) terminal, unbranched yellow spines. Subdorsally on T2, T3 and A3, a dark yellow scolus with five (T2, T3) or three (A2) terminal, unbranched spines. Laterally on A1–A10, above and slightly anterior to the spiracle when present, a dark yellow scolus with 3–4 terminal, unbranched spines. Ventral and anterior to these, on A2–A8, a dark yellow scolus with a single, unbranched spine. Ventrally on T1–A8, caudad and ventral to spiracle when present, a dark yellow scolus with a single, bifid spine, except T3 where there are three spines. Finally, T1 and T2 have a single-spined scolus ventrally at the caudad end of the segment and T1 has a ventral single-spined scolus at the anterior end of the segment. Found on 27 March 2015, length 30 mm. It grew to 33 mm and molted on 30 March.

Fifth instar (Fig. 2d–f). Head capsule as in fourth instar, but with four conspicuous red patches, at each side a squared one at the base of the horns and a larger one between the stemmata and frons; spines on horns translucent to pink; tips of horns next to epicranial

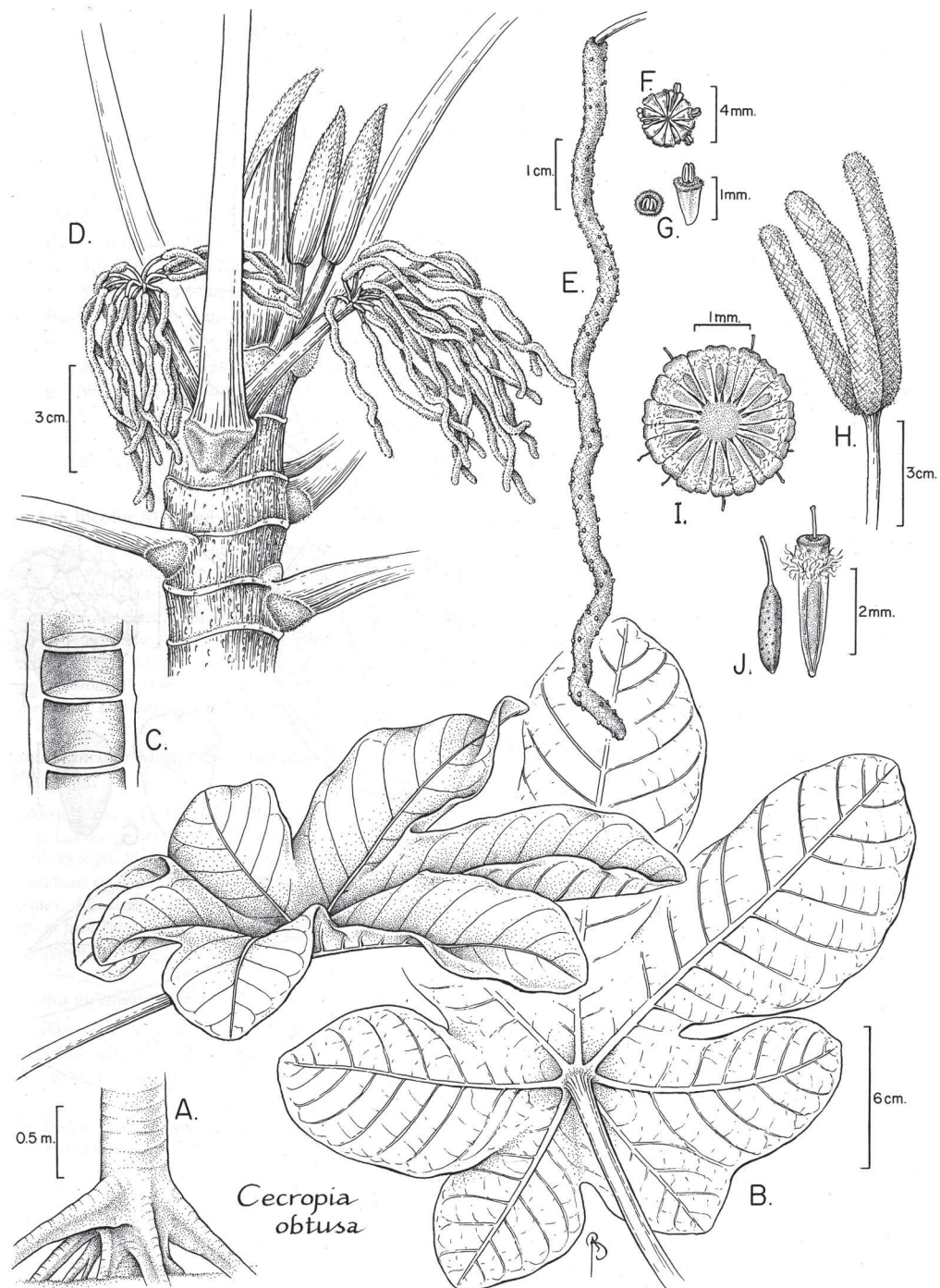


FIG. 1. *Cecropia obtusa* Trécul. **A:** roots and base of trunk; **B:** adaxial (left) and abaxial (right) sides of leaf; **C:** section of stem with hollow internodes; **D:** top of stem with male inflorescences and petioles with trichilia; note the spathes covering unopened inflorescences; **E:** single spike of male inflorescence; **F:** transverse section of male inflorescence; **G:** detail of male flower; **H:** female inflorescence; **I:** transverse section of female inflorescence; **J:** detail of female flower. Drawing by Bobby Angell; reproduced with permission from Bobby Angell from Mori et al. (2002).

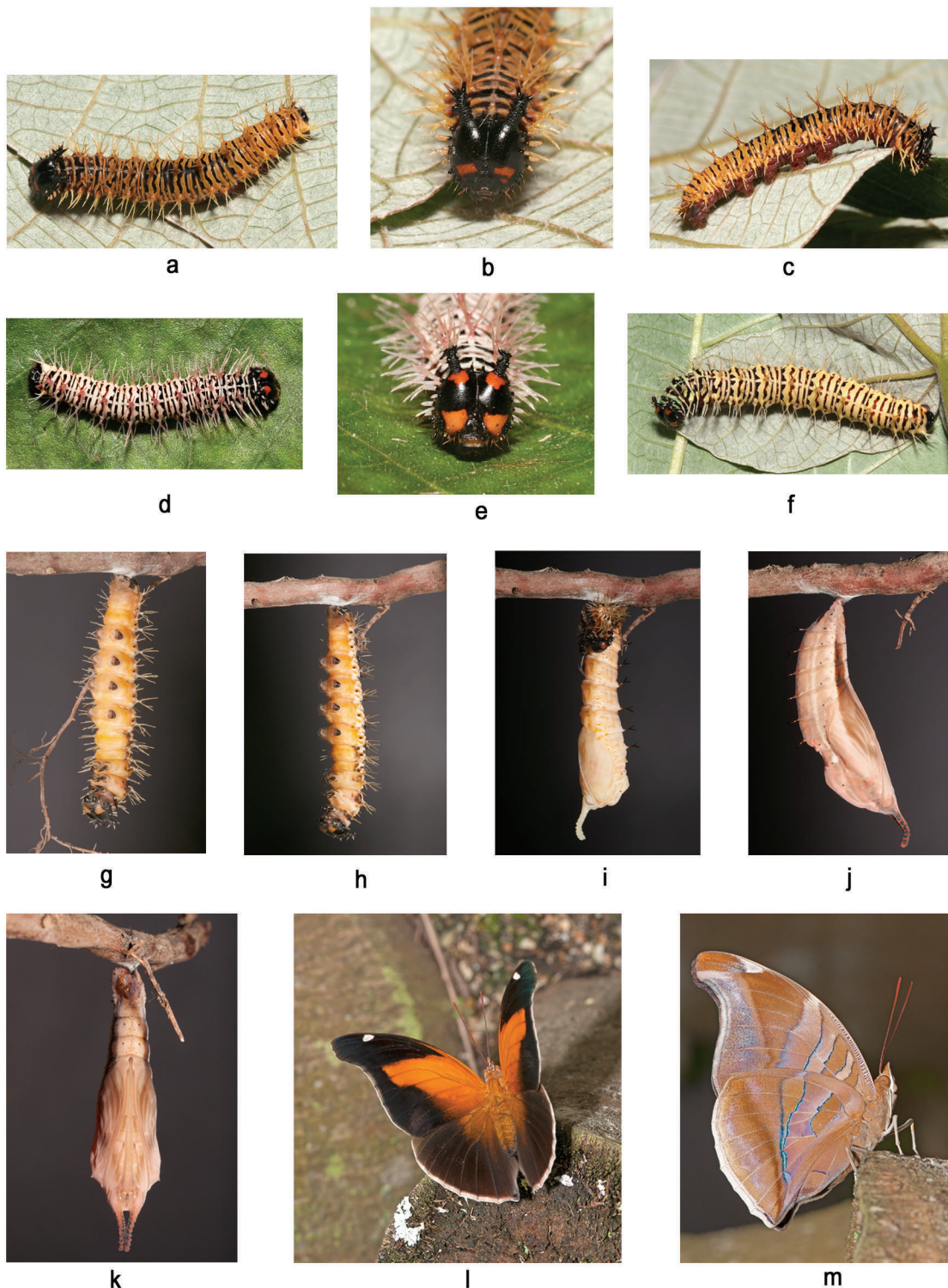


FIG. 2. Aspects of the life history of *Historis odius dious* on *Cecropia obtusa* Trécul, Paramaribo, Suriname. **a**: 4th instar, dorsal view (27-03-2015); **b**: 4th instar, anterior view (27-03-2015); **c**: 4th instar, lateral view (27-03-2015); **d**: 5th instar, dorsal view (01-04-2015); **e**: 5th instar, anterior view (01-04-2015); **f**: late 5th instar, dorsolateral view (04-04-2015); **g-h**: prepupa, ventrolateral view (07-04-2015); **i**: fresh pupa, lateral view with exuviae at caudal end (07-04-2015); **j**: pupa, lateral view (09-04-2015); **k**: pupa, ventral view (12-04-2015); **l**: adult male, dorsal view (18-04-2015); **m**: adult male, ventral view (18-04-2015). Photographs by second author.

notch translucent; spines on sides of head capsule translucent with black base. Thorax and abdomen as in fourth instar, including position of scoli; longitudinal lines and transverse bands white instead of yellow, middorsal longitudinal stripe more prominent, unbroken from T2 to A8; scoli and spines pink, translucent or white. On 1 April, the larva was 51 mm. On 4 April, it measured 62 mm and changed color (without molt): the ground color of the abdomen, and to a lesser extent the thorax, turned to dark brown, in some segments red-brown, and the longitudinal and transverse bands turned deep yellow, except for the bands on T2. On 6 April, it stopped eating and remained immobile horizontally on a twig. It measured 52 mm. No wandering phase was observed. On 7 April, it turned into the prepupa.

Prepupa (Fig. 2g–h). Head as in fifth instar. Ground color of thorax and abdomen dorsally light yellow, ventrally yellow-orange, between prolegs orange-red, some irregular brown patches lateroventrally on T1–A2. Armature as in fifth instar. The prepupa hung in vertical position for about 10 hrs.

Pupation (Fig. 2i). The pupal molt started on 7 April at 20.01 hrs and was finished at 20.05 hrs. The fresh skin was white-light yellow with darker yellow patches. It took the pupa about 5 minutes and much wriggling to get rid of its exuviae at its anal end. The pupa then started to curve, its lower two thirds turning ventrally, hinging at the A3–A4 junction.

Pupa (Fig. 2i–k). Lateral view: Dimensions: 50.5 × 13.2 mm (A2). From A10 gradual thickening to A8, more abruptly to A7, then more gradually to A2 (the pupa's widest segment), slightly constricting at A1 and especially at T3, humping dorsally at T2, then gradually tapering to head. Ground color pinkish-light brown. Head with two round, black with red, dorsally curved horns. Middorsally, from A2 to A7 near the junction of the anterior segment a brown-based 4-furcate spine. Subdorsal black wart on A2, T3 and T1. Laterally, two longitudinal lateral whitish stripes from A6 to A1 and a white rounded patch on T3. A black wart below the white line near the anterior border of A1–A7, A9 and A10, posteriorly on A8. Ventral and caudad to spiracle of A3–A7 a small circular brown-black spot. Ventral to these, a large dark brown patch from the ventral wing pad at T3 darkening and tapering to A6.

Ventral view: Dimensions: 50.5 × 12.3 mm (T2). From cremaster downwards abruptly thickening, gradually broadening to T2 with slight constriction at middle part of wing cases. A7–A10 fused ventrally forming an oval structure to which cremaster is attached dorsally. Midventrally, single short thorn on A3–A5 near junction with caudad segment. Subventrally on A4 and A5, laterally and caudadly from thorn, a paired dark

brown spot. T2 with lateral protuberances. Distal halves of head horns touching each other.

Ecdysis and adult (Fig. 2l–m). A male eclosed in the early morning on 18 April 2015.

C. obtusa is a new larval foodplant record for *H. o. dious*. It ranges from Panama to Peru and Bolivia. As a pioneer species it is common in secondary vegetation and in open areas in rain forest (van Roosmalen 1985, Heuret et al. 2002, Mori et al. 2002). In view of its wide distribution, it is likely to be found a larval foodplant in several other countries.

There were several morphological differences (color of head capsule and spines, ground color of thorax and abdomen, pattern of bands and stripes, middorsal longitudinal stripe, color changes of the late 5th instar and prepupa, pupal warts, thorns and spots) between earlier observations (Muysshondt & Muysshondt 1979) and our own. There were also behavioral differences (larva at underside of leaves, no wandering phase). Data from Costa Rica indicate some morphological characteristics are variable (Janzen & Hallwachs 2009). Further research is needed to assess the functional significance of larval and pupal characteristics, especially as to defensive capabilities.

ACKNOWLEDGMENTS

The authors wish to thank Frans Barten for preparing the figures and two anonymous reviewers for their constructive comments. We are grateful to Claudine Sakimin, Nature Conservation Division of the Suriname Forest Service, Paramaribo, for granting a research permit that includes the study of lepidopteran life histories. This research has been made possible by a grant from the Uyttenboogaart-Eliassen Foundation.

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Submitted for publication 18 July 2015; revised and accepted 19 December 2015.