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A NEW HOST PLANT AND NOTES ON THE LAST LARVAL INSTAR OF *COLOBURA ANNULATA* (NYMPHALIDAE: NYMPHALINAE) IN SURINAME

Additional key words: *Cecropia*, *sciadophylla*, Urticaceae, Neotropics

The genus *Colobura* Bilberg, 1820 (Lepidoptera: Nymphalidae: Nymphalinae) has two species (Lamas 2004). *C. dirce* (Linnaeus, 1758) is distributed from Mexico and the Greater Antilles to Argentina and SE Brazil in two subspecies (Smith et al. 1994, Willmott et al. 2001). Six species of *Cecropia* (*C. hololeuca*, *C. insignis*, *C. obtusa*, *C. obtusifolia*, *C. pachystachya*, *C. peltata*) and one species of *Coussapoa* (*C. nymphaeifolia*) have been reported as host plants, all Urticariaceae (Wilmott et al. 2001, Beccaloni et al. 2008, Robinson et al. 2017, Janzen & Hallwachs 2017). In Suriname, there are numerous records for *Colobura dirce* from the northern part of the country, from primary and secondary forests as well as cultivated areas (Gernaat et al. 2012). The larvae feed on *Cecropia obtusa* (second author, pers. obs.).

Colobura annulata Willmott, Constantino & J. Hall 2001 (Fig. 1) ranges from S Mexico to W Ecuador and from Venezuela, Trinidad and the Guianas to Bolivia (Willmott et al. 2001). Host plants records known from Costa Rica and Colombia are *Cecropia insignis*, *C. longipes*, *C. obtusifolia*, *C. peltata*, *C. virgusa* and *Pourouma cecropiifolia* (Wilmott et al. 2001, Beccaloni et al. 2008, Janzen & Hallwachs 2017). In Suriname, there are scattered records of *Colobura annulata* from northern (Rama (Fig. 1), Brownsberg) and central (Raleigh falls) primary forests.

We describe a new host plant for *C. annulata* from Suriname, add descriptive detail to the last instar larva and mention some aspects of late larval variation. On 25 October 2015, at Plantage Katwijk, Suriname (05º 51' 50" N, 54º 59' 45" W, 5 m asl; about 22 km NEE of Paramaribo), two *C. annulata* larvae were found feeding on the foliage of a *Cecropia* tree at a height of about 2.5 m. They were collected and reared according to standard methods in Paramaribo. On 25 October 2015, one larva was 41 mm long. The next day, it had stopped eating and was 31 mm. It pupated in the afternoon of 27 October. The pupa was 30 mm long. A male *C. annulata* eclosed on 6 November 2015, it was deposited in the collection of Naturalis Biodiversity Center. The length of the second larva was 26 mm on 25 October and 37 mm on 29 October. It pupated on 1 November. The next day, it had died of unknown causes. The larvae were compared with a larva collected in the field and reared in the Lelydorp butterfly garden in Suriname in 2010. Photographs were made with Nikon D300s and D700 cameras, an AF Micro Nikkor 105 mm 1: 2.8 D lens and a SB-800 flash. Photographs were made in NEF-format and with minor adjustments of exposure, contrast and sharpening converted to TIF-files in the same color space.

Host plant (Fig. 2). The host plant was identified as *Cecropia sciadophylla* Mart. Description (Mori et al.

FIG. 1. *Colobura annulata*, female, forewing length 42 mm, Rama, Suriname, 22-VII-1972, leg. D. Schilder, coll. Naturalis Biodiversity Center; dorsal (left) and ventral (right) view (from Gernaat et al. 2012).

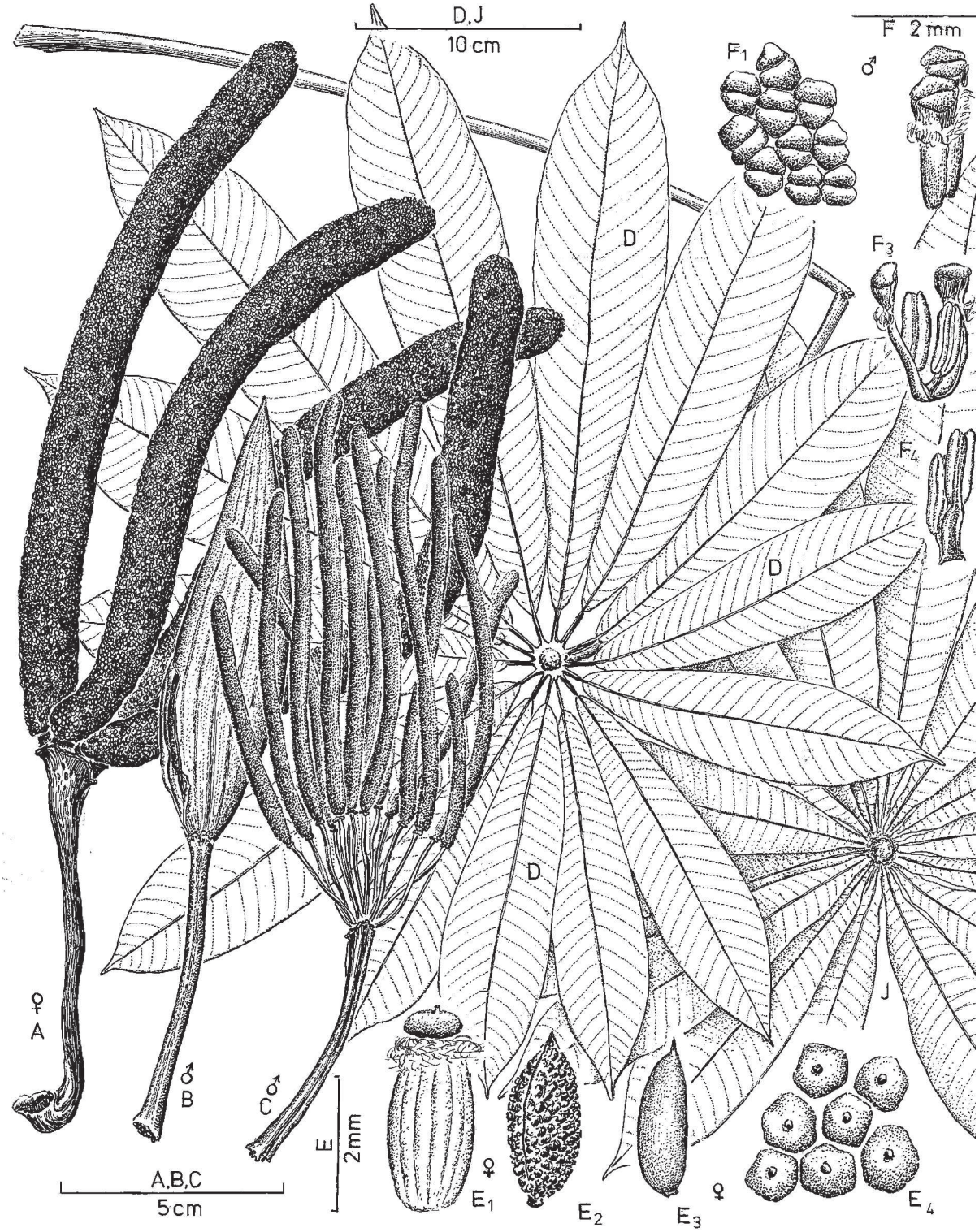

FIG. 2. *Cecropia sciadophylla* Mart., host plant of *Colobura annulata* in Suriname. **A.** pistillate inflorescence. **B.** staminate inflorescence eclosed by spathe. **C.** staminate inflorescence. **D.** palmately compound leaf with leaflets. **E1**: pistillate flower with tubular perianth. **E2**: tuberculate achene. **E3**: seed. **E4**: apical view of pistillate flowers. **F1**: apical view of staminate flowers. **F2**: lateral view of staminate flowers with tubular perianth. **F3**: lateral view of staminate flowers with anthers exerted. **F4**: detail of stamens. Drawing by W. Hekking, Naturalis Biodiversity Center.

2002, van Andel & Ruysschaert 2011): Tree, up to 30 m, unisexual, with stilt roots. Stem and branches with circular scars, hollow with septa, cavities not inhabited by ants, trichilia absent. Stipules envelop the bud, sparsely hirsute, up to 50 cm. Leaves alternate, long petiolate, palmately compound; leaflets 11–15, petiolate, up to 60 × 10 cm; adaxially glabrous, abaxially sparsely hirsute. Inflorescence a unisexual, axillary, petiolate bundle of spikes, surrounded by densely hirsute bract. Male inflorescence with 8–15 spikes 0.4 – 0.8 cm thick; female inflorescence slightly larger, with 4–6 spikes, in fruit up to 20 × 2 cm. Fruit small, tubular. Seed 1, small.

Last instar larva (Fig. 3). Overall appearance of a black caterpillar with two orange head horns, white transverse rings and yellow scoli. **Head**: Vertices, lobes, and frontoclypeus shiny black. Epicranial notch shallow. On both sides of the epicranium a long (about 1.4 times the distance between the epicranial notch and the mid-labrum) orange scolus with multiple, dark red-tipped spines of various length, each ending in a seta. Laterally on the head capsule, multiple, prominent chalazae. Epicranial suture and ecdysial lines gray. Anteclypeus gray-brown, labrum dark gray.

Thorax: Ground color velvet black, intersegmental membranes gray. T1 with a black prothoracic shield with a narrow, interrupted, middorsal light gray stripe (continuous with epicranial suture) and, depending on light conditions, an irregular pattern of transverse gray bands from the middorsal stripe to the subdorsal area; subdorsally, a white-based, brown-tipped, yellow-orange spine on either side of the gray bands; length of prothoracic shield about 60% of the segment; spiracle black. T2 and T3 with paired midsegmental subdorsal and lateral scoli. The scoli are dark yellow, some with a creamy-white basal part, and have five to seven spines, the tip of which may be dark brown. The lateral scolus on T2 is located just above the T1 spiracle, the one on T3 at the same level as the A1 spiracle.

Abdomen: Ground color velvet black, including spiracular area. Intersegmental membranes brown-gray. Prolegs on A3–A6 and A10, with multiple setae, a rather short, black base and gray planta. A1–A8 with subdorsal, lateral and subventral scoli, A9 with lateral scolus only. Scoli as on thorax. Abdomen with creamy-white rings, encircling the body between each segment, anteriorly and posteriorly on the segment and adjacent to the intersegmental membranes, running transversely with their lowest point on either side just below the lateral scoli or about midway between the lateral and subventral scoli. Caudoventrally to the anterior tranverse band, there is an oval, teardrop-shaped, triangular or almost rectangular creamy-white spot of varying size, its upper edge at, just above or below the lateral scoli, its lower end about midway between the lateral and subventral scoli. Anal plate black with multiple setae.

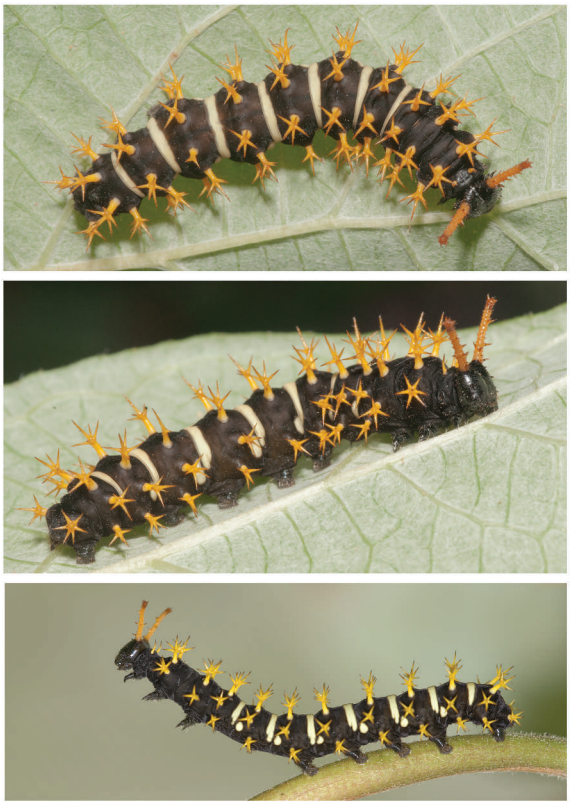

Fig. 3: Last instar larvae of *Colobura annulata* in Suriname. **A**: last instar larva, Suriname, Plantage Katwijk, 25 October 2015; dorsolateral view, note one two-spined subdorsal scolus on A6. **B**: second last instar larva, Suriname, Plantage Katwijk, 25 October 2015; lateral view, note lateral scolus on A4 lacking and rectangular/oval white lateral spots. **C**: last instar field-collected larva, butterfly farm Lelydorp, 24 November 2010; note teardrop-shaped white lateral spots. Photographs: A–B: second author, C: Borgesius G. Beckles.

Cecropia sciadophylla is a new host plant record for *Colobura annulata*. The tree is distributed throughout the Guianas and the Amazon region. In Suriname, it is common in abandoned plots, secondary forest and open areas in primary forest (Mori et al. 2002, Van Andel & Ruysschaert 2011). In view of its wide distribution, partly overlapping the range of *C. annulata*, it is likely to be found as a larval host plant in several other countries.

The last instar *C. annulata* larvae showed variation in the number of spines of the scoli (Fig. 3a, b), in the shape and size of the abdominal lateral creamy-white spots (Fig. 3b, c) and one individual had the A4 lateral scolus on one side missing (Fig. 3b). Further research is

required to further document larval variation, defence mechanisms, pathogens, predators and parasitoids.

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