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HOST PLANT AND LATE LARVAL STAGES OF *HYPERCOMPE CUNIGUNDA*
(EREBIDAE: ARCTIINAE) IN SURINAME

Additional key words: Arctiini, Surinam, Cucurbitaceae, *Melothria*, neotropical

The genus *Hypercompe* (Erebidae: Arctiinae: Arctiini) currently encompasses 89 species, distributed from the USA through the Caribbean to Argentina and Bolivia (Vincent & Laguerre 2014). The early stages are only known for a handful of species (Dyer et al. 2004, Wagner 2005, Janzen & Hallwachs 2009). Here, we describe a hostplant and late larval stages of *H. cunigunda* (Stoll, 1781) from Suriname.

On 3 March 2014 at Colakreek, Suriname (05° 27' 50" N, 055° 13' 40" W, 15m asl; about 46 km S of Paramaribo), on white sand savanna with secondary vegetation next to a ditch, a black-and-red setose larva was observed on a herbaceous vine (Fig. 1). The plant was tentatively identified as a species within the Cucurbitaceae and a herbarium sample (voucher Gernaat044, deposited in Naturalis Biodiversity Center, Leiden, the Netherlands) was taken. The larva was collected and fed leaves of the host. When this material was finished, it was fed carefully cleaned and rinsed skin of commercially grown cucumber *Cucumis sativus* L. Measurements of length were taken including the setae. Photographs were made with a Nikon D-800 and an AF Micro Nikkor 105 mm 1:2.8 D lens on a tripod in NEF-format. They were converted to TIF-files in the same color space after minor adjustments of exposure, contrast and sharpening. Measurements of the last instar and photographs of the pupa were lost due to a computer crash in Suriname. Eclosion took place during a short field trip so that the imago could only be collected 1–2 days later.

The host plant (Fig. 1). The host plant was identified as *Melothria pendula* L. (Cucurbitaceae). Description after Mori et al. (2002) and Van Anandel & Ruysschaert (2011): Delicate, annual vine, to 4 m long climbing over low vegetation. Tendrils simple, lateral to petioles. Leaves alternate, with long petiole, simple, thin, usually shallowly 3-lobed, 5–10 × 4–9 cm; base

deeply cordate, apex acute, both sides pubescent, venation palmate. Inflorescences axillary, both sexes often found at the same node. Male inflorescences with 5–15 small, yellow flowers. Female inflorescences with 1–2 small, yellow flowers with elongated ovary and long pedicle. Berry cylindrical, juicy, about 1.4 × 1 cm, mottled green, then dark purple to almost black at maturity. Seeds 2–4, white. Distribution: E and SE USA and Caribbean to Argentina, has become an invasive species in SE Asia. In Suriname widespread in disturbed vegetation. Popular names: busikomkomro, sneki-komkomro (Suriname), creeping cucumber (USA).

Antepenultimate instar (Fig. 1, Fig. 2a, b). *Head*: vertices and frons black, no spines or scoli; light gray line over coronal sulcus and upper one-fourth of adfrontal sulci; clypeus light gray, upper border convex; labrum dirty yellow with in upper half a semicircular



FIG. 1: Antepenultimate instar of *Hypercompe cunigunda* (Stoll, 1781) on *Melothria pendula* L. (Cucurbitaceae), Colakreek, Suriname, 3 March 2014. Note pistillate yellow flower below.

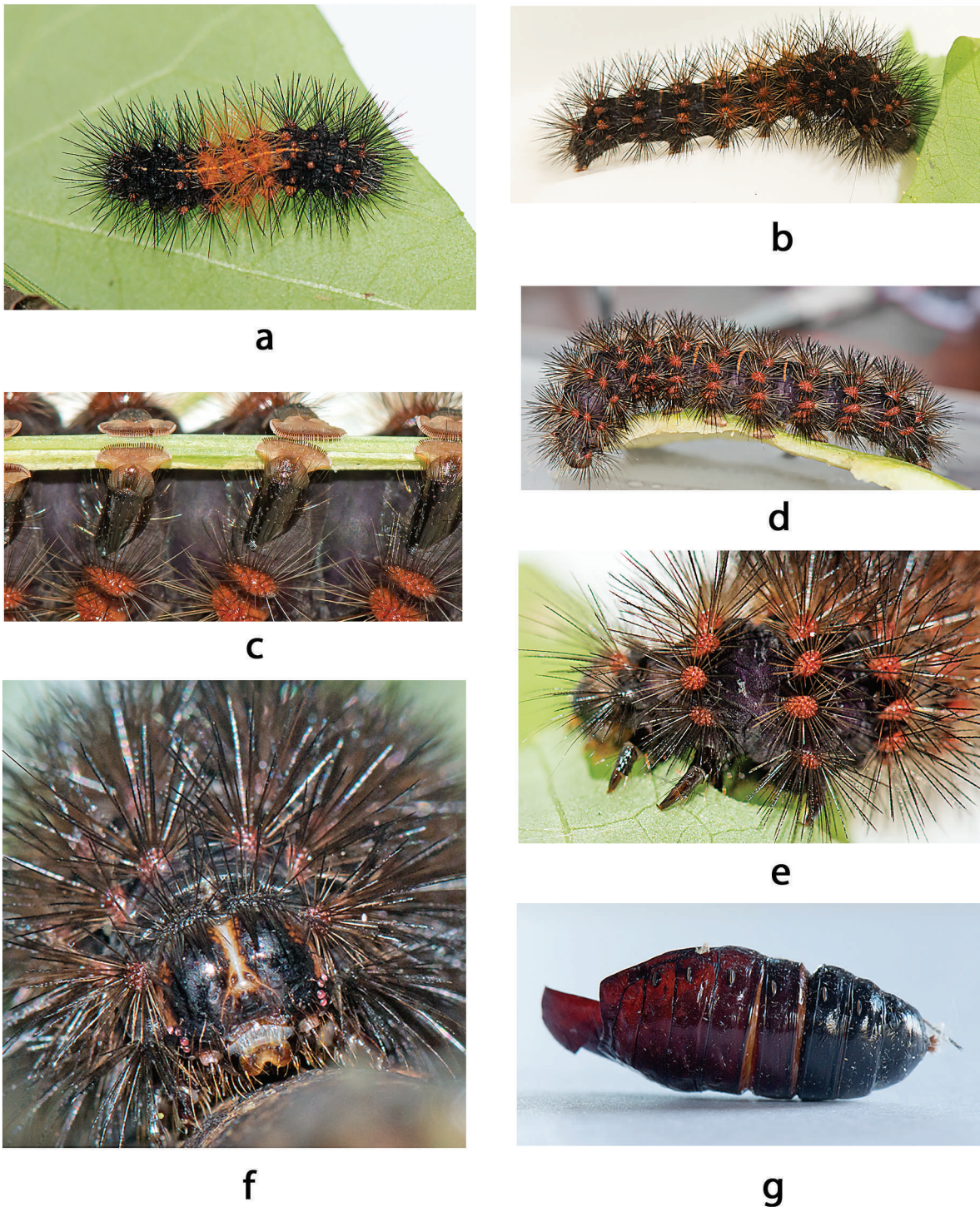


Fig. 2: Late larval stages of *Hypercompe cunigunda* in Suriname. **a**: antepenultimate instar, 3 March 2014; **b**: antepenultimate instar, 8 March 2014; **c**: penultimate instar, 12 March 2014, ventrolateral view of abdomen; note nonbarbed setae on subventral verrucae; **d**: ultimate instar, 19 March 2014; **e**: penultimate instar, 11 March 2014, left lateral view of thorax; **f**: ultimate instar, 26 March 2014, frontal view; **g**: pupal shell, 27–28 April 2014.



Fig. 3: Enclosed female of *Hypercompe cunigunda* (Stoll, 1781) from Suriname. **a**: dorsal view; **b**: ventral view.

row of black pinacula, notch to 37% of its length (Fig. 2f); first segment of antennae translucent-light gray, second segment black, elongated, with long seta (Fig. 2f). Thorax and abdomen black, middle third of body red with an abdominal middorsal black stripe (Fig. 1) or, depending on amount and angle of light, an orange longitudinal interrupted stripe from A2 to A8 (Fig. 2a). After two days, the red color disappeared without molt (Fig. 2b). On thorax and abdomen black or red verrucae, each with numerous black or red, sharp, unbranched setae, bearing paired barbs. On thorax, middorsally a light gray, irregular longitudinal stripe, anteriorly continuous with gray line over coronal sulcus, caudally ending at T3. Intersegmental membranes gray. Prothoracic plate gray, anterior margin concave. Lateral to prothoracic plate a small subdorsal gray verruca with short, unbarbed gray setae. Furthermore on T1, a red verruca laterally and a black verruca above and slightly anterior to the coxa. T2 and T3 each with five verrucae, one subventrally (above and slightly anterior to the coxa), two laterally, one subdorsally and one dorsally; verrucae on T2 all red, on T3 the subdorsal and lateral ones black. Abdomen with orange intersegmental membranes and prolegs on A3–A6 and A10 (Fig. 2b). Prolegs have an elongated black base with numerous soft setae on pinacula, the planta is gray without setae; crochets heteroideois, arranged in mesoserries (Fig. 2c). A1 has on either side ventrally two small black verrucae with soft non-barbed setae; subventrally two red ones, laterally one red and one black one, subdorsally a black one and dorsally one red and one black verruca, all with stiff barbed setae. A2 as A1, but

with all verrucae red. A3–A6 each have seven red verrucae on either side; two are located dorsally, two subdorsally, two laterally and one subventrally, the latter just above the proleg; the subventral verruca has stiff, non-barbed setae; the setae directed downward from the lower lateral verruca are non-barbed, the other verrucae have barbed setae (Fig. 2b–d). A7 has ventrally two pinacula and one dark red to black small verruca with soft, non-barbed setae, other verrucae as A3–A6. A8 as A7 but with one ventral pinaculum. A9 has subventrally one pinaculum and an elongated black verruca with soft, non-barbed setae; laterally, subdorsally and dorsally one red verruca with barbed, stiff setae. Anal plate black.

Larva found on 3 March 2014, length 38 mm (Fig. 1, 2a). On 8 March 42 mm (Fig. 2b). The larva was inactive and did not eat on 9 and 10 March. It molted in the night of 10–11 March.

Penultimate instar (Fig. 2c, e). Similar to previous instar, but all verrucae on A1 and A2 red. On 11 March, the larva consumed its exuviae, including all barbed setae. It measured 36 mm and ate voraciously the next days, producing large amounts of frass. It molted during the night of 16–17 March.

Ultimate instar (Fig. 2d, f). Similar to previous instar, but head capsule (Fig. 2f) with gray line over coronal sulcus wide, irregularly bordered by dark yellow, extending unto upper part of frons and over the upper half of the adfrontal sulci; in the obtuse angle between the coronal and adfrontal sulci on both sides an oval black area, each with one black seta, bordered laterally by a narrow slightly irregular yellow line, which

runs between the coronal sulcus gray line and the lateral end of the clypeus; basal antennal segment gray.

On 17 March, the larva did not eat the exuviae and moved about actively for a few hours. On 2 April it stopped eating, became inactive and on 4 April it had pupated.

Larval behavior. When found, the solitary larva was fully exposed on the host plant. Generally, it stayed on the food provided, alternating periods of feeding with periods of inactivity. There were no bouts of restlessness other than a few hours at the start of the last instar. When molested, it curled itself head to tail, exposing the orange intersegmental membranes and barbed setae on all sides.

Pupa (Fig. 2g). Similar to the pupa of *H. scribonia*: very dark brown to black, oval, rounded, smooth, shiny, no setae on pupa; abdomen has a somewhat corrugated aspect due to constrictions between segments, the ones between A4 and A5 and between A5 and A6 orange-brown colored; exuviae attached to pupa at caudal end; no cocoon; length about 40 mm.

Imago (Fig. 3a, b). A female *H. cunigunda* eclosed on 27 or 28 April 2014. Forewing length about 27 mm, wingspan about 56 mm.

Duration of stages. Antepenultimate instar at least 9 days, penultimate instar 6 days, ultimate instar 18 days, pupa 23–24 days.

Melothria pendula is a new host plant record for *H. cunigunda*, the only previously known being the palm *Syagrus romanzoffiana* (Robinson et al 2010). *Hypercompe* spp. generally are polyphagous, in some species extremely so: in Costa Rica, *H. albescens* is reported to feed on 81 spp. from 31 families and *H. icasia* on 91 spp. from 40 families (Janzen & Hallwachs 2009). *H. cunigunda* is known from Ecuador, Venezuela, Suriname, French Guiana, Brazil and Bolivia (De Toulgoët & Navatte 2000). Therefore, other host plants are likely to be found. Another aspect of arctiine larval biology is individual polyphagy: a particular larva feeds on several individual plants and often on different species, even on the same day (Singer & Bernays 2009). For *H. cunigunda*, we had no evidence for this, although the short activity boost of the newly-molted last instar could be a sign that it normally would leave its host plant to forage at ground level, a behavior associated with polyphagy. Additional studies are required to understand more about the early instars and possible larval variation.

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LITERATURE CITED

- DE TOULGOËT, H & J. NAVATTE. 2000. Catalogue systématique et illustré des Lépidoptères Arctiidae, Arctiinae et Pericopinae de Guyane Française se trouvant dans la collection du Muséum National d'Histoire Naturelle. Available from: http://www7.inra.fr/papillon/arct_guy/arct_guy.htm (accessed 10 Aug 2015).
- DYER, L.A., J.S. MILLER, S.B. RAB GREEN, G.L. GENTRY, H.F. GREENEY & T.W. WALLA. 2004. Caterpillars and parasitoids of the Eastern Andes in Ecuador. Available from: <http://caterpillars.unr.edu/lscat/ecuador/index.htm> (accessed 9 Sept 2015).
- JANZEN, D.H. & W. HALLWACHS. 2009. Dynamic database for an inventory of the macrocaterpillar fauna, and its food plants and parasitoids, of Area de Conservacion Guanacaste (ACG), north-western Costa Rica (nn-SRNP-nnnnn voucher codes). Available from: <http://janzen.sas.upenn.edu> (accessed 8 Sept 2015).
- MORI, S.A., G. CREMERS, C. GRACIE, J.J. DE GRANVILLE, S.V. HEALD, M. HOFF & J.D. MITCHELL. 2002. Guide to the vascular plants of central French Guiana. Part 2. Dicotyledons. Memoirs of the New York Botanical garden, New York, vol 76, part 2. 776 pp.
- ROBINSON, G.S., P.R. ACKERY, I.J. KITCHING, G.W. BECCALONI & L.M. HERNÁNDEZ. 2010. HOSTS - A Database of the World's Lepidopteran Hostplants. Natural History Museum, London. Available from: <http://www.nhm.ac.uk/hosts> (accessed: 8 Sept 2015).
- SINGER, M.S. & E.A. BERNAYS. 2009. Specialized generalists: behavioral and evolutionary ecology of polyphagous woolly bear caterpillars, pp. 103–114. In Conner, W.E. (ed.), Tiger Moths and Woolly Bears. Behavior, ecology, and evolution of the Arctiidae. Oxford University Press, New York.
- STOLL, C. 1781. pp. 104–105 and Plate CCCXLIV Fig D and E. In Cramer P. 1782. De Uitlandsche Kapellen voorkomende in de drie Waereld-deelen Asia, Africa en America [Papillons Exotiques des Trois Parties du Monde l'Asie, l'Afrique et l'Amérique]. S.J. Baalde, Amsterdam/ B. Wild, Utrecht.
- VAN ANDEL, T.R. & S. RUYSSCHAERT. 2011. Medicinale en rituele planten van Suriname. KIT Publishers, Amsterdam. 528 pp.
- VINCENT, B. & M. LAGUERRE. 2014. Catalogue of the Neotropical Arctiini Leach, [1815] (except Ctenuchina Kirby, 1837 and Euchromiina Butler, 1876) (Insecta, Lepidoptera, Erebidae, Arctiinae) Zoosys. 36: 37–533.
- WAGNER, D. 2005. Caterpillars of Eastern North America: A guide to identification and natural history. Princeton University Press, Princeton NJ, 512 pp.

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