Mexicantha oaxacana gen. et sp. n., a new hemileucine moth from Oaxaca, Mexico (Lepidoptera: Saturniidae)

Stefan Naumann, Wolfgang A. Nässig[1] and Guillermo Nogueira G.

Dr. Stefan Naumann, Hochkirchstrasse 11, D-10829 Berlin, Germany; sn@saturniidae.com

Dr. Wolfgang A. Nässig, Entomologie II, Forschungsinstitut Senckenberg, Senckenberganlage 25, D-60325 Frankfurt am Main, Deutschland; wolfgang.naessig@senckenberg.de

Guillermo Nogueira G., c/o Escuela de Biologia, Universidad Autónoma de Guadalajara, Av. Patria No. 1201, Lomas del Valle 3ra. Seccion, Zapopan, Jalisco, México, C.P. 44100

Abstract: A new genus and a new species of the subfamily Hemileucinae is described from Oaxaca, Mexico: ***Mexicantha oaxacana* gen. et sp. n.** The taxon is described, a male of the new species, the male genitalia and, additionally, a recently described female of a second species (*Mexicantha garciorum* (Brechlin & Meister, 2012), **comb. n.**) which also belongs to this genus are figured. *Mexicantha,* which is known only from Mexico so far, is related to a South American complex of genera including *Ancistrota* Hübner, [1819]. The male holotype of *M. oaxacana* will be donated to the IBUNAM collection at the Universidad Nacional Autónoma de México, Instituto de Biología, in Ciudad de México.

***Mexicantha oaxacana* gen. et sp. n., eine neue Hemileucine aus Oaxaca, Mexico (Lepidoptera: Saturniidae)**

Zusammenfassung: Eine neue Gattung und eine neue Art aus der Unterfamilie Hemileucinae werden von Oaxaca, Mexiko, beschrieben: ***Mexicantha oaxacana* gen. et sp. n.** Die Taxa werden beschrieben, ein Männchen (der Holotypus) der neue Art, die männlichen Genitalien sowie ein Weibchen einer zweiten kürzlich beschriebenen Art aus derselben Gattung (*Mexicantha garciorum* (Brechlin & Meister, 2012), **comb. n.**) werden farbig abgebildet. *Mexicantha,* bisher nur aus Mexiko bekannt, gehört offenbar zu einer Gruppe von Gattungen aus Südamerika aus der Verwandtschaft von *Ancistrota* Hübner, [1819]. Der männliche Holotypus von *M. oaxacana* wird in die IBUNAM-Sammlung der Universidad Nacional Autónoma de México, Instituto de Biología, in Mexiko-Stadt gelangen.

***Mexicantha oaxacana* gen. et sp. n., una nueva especie de Hemileucinae de Oaxaca, México (Lepidoptera: Saturniidae)**

Resumen: Se describen un nuevo género y una nueva especie de la subfamilia Hemileucinae de Oaxaca, México: ***Mexicantha oaxacana* gen. et sp. n.** El taxón se describe, vienen ilustrados un macho de la nueva especie, los genitales del macho y, adicionalmente, una hembra recién descrita de una segunda especie que igualmente pertenece a este género (*Mexicantha garciorum* (Brechlin & Meister, 2012), **comb. n.**). La *Mexicantha* que a día de hoy se ha hallado sólo en México está emparentada con el complejo de géneros suramericano alrededor de la *Ancistrota* Hübner, [1819]. El holotipo macho de *M. oaxacana* será donado a la colección del Instituto de Biología de la Universidad Nacional Autónoma de México (IBUNAM) en Ciudad de México.

Introduction

In 2004, a first ♂ specimen of a new, totally unknown species of Hemileucinae was collected in Mexico: Oaxaca by one of the authors (G.N.G.). This specimen came into the hands of the second author (W.A.N.) in late 2005 and prompted a lot of subsequent studies. It remained a singleton for some years until G.N.G found a second ♂ at a locality nearby to the first specimen. For a long time we discussed intensively the correct generic and phylogenetic placement of these specimens. Rather soon we came to the conclusion that they most likely belong to the genus group of *Ancistrota* Hübner, [1819], containing also *Catacantha* Bouvier, 1930, and *Perigopsis* Bouvier, 1932 and a few other genera. A revision of this entire group is in preparation and will be published in near future.

Now, in late January 2012, a publication came out in which a ♀ of an obviously closely related species, also from Mexico: Oaxaca, was described as "*Automeris*" *garciorum* Brechlin & Meister, 2012. These authors state that they placed the new species into the genus *Automeris* Hübner, [1819] because of the (as they interpreted it) "shape of the forewing upperside discoidal patch typical for that genus".

This forewing upperside discoidal patch (as far as it can be seen on the rather poor illustration, see also Fig. 6) is, indeed, of a rather remarkable shape, but such a special shape is not only found in some *Automeris* species, but quite similar shapes are also found in some other, not closely related hemileucine genera. We believe, in contrast to Brechlin & Meister, that the shape and structure of the ♂ genitalia as well as the general morphology suggest an inclusion in another, separate genus (which is described here) belonging to the *Ancistrota* group of genera.

The single ♀ described by Brechlin & Meister (2012) appears to be closely related to the 2 ♂♂ which we have at our disposal. Details of the wingpattern, however, suggest that the two populations likely represent two different species. The genitalia of the ♀ holotype have not been studied by Brechlin & Meister to allow comparison with other groups. However, a new genus in Hemileucinae should preferably be based on and defined by the structure of the ♂ genitalia, but not alone on the external morphology of a ♀, only rather poorly described and illustrated (without genitalia) in the original description.

[1] 79th Contribution to the knowledge of the Saturniidae (78th contribution: Nässig, W. A., & Treadaway, C. G. (2011): Revisional notes on the *luzonica*-group of the genus *Cricula,* with the description of new taxa from Panay and Mindoro (Philippines; Lepidoptera: Saturniidae). – Nachrichten des Entomologischen Vereins Apollo, Frankfurt am Main, N.F. **31** (4): 187–196).

Systematic part

Mexicantha gen. n.

Type species: *Mexicantha oaxacana* sp. n. – Gender: female.

Etymology: The new species is evidently a member of the *Ancistrota* group of genera (possibly its most plesiomorphic member?); we first intended to describe it as a new species of the genus *Catacantha*. Both known species of the new genus are living in Mexico. This in combination results in the generic name *Mexi-* + *cantha*.

The new genus currently contains two species, both occuring in Mexico:

- *Mexicantha oaxacana* sp. n., described below, only known from the ♂ sex; and
- *Mexicantha garciorum* (Brechlin & Meister, 2012), **comb. n.** (Brechlin & Meister 2012: 109, fig. 1; type locality at ca. 2480 m elevation at ca. 16°10′ N, 96° 30′ W, collected on 4. vi. 2011), only known from a single ♀.

Description and differential diagnosis

Antennae of the ♂ quadrupectinate (terms following Scoble 1995) with long rami; rami of neighbouring antennal segments very close to each other along the intersegmental border (resulting in a broad gap in the mid of the antennal segment), the upper, more dorsal ones being slightly shorter than the lower, more ventral ones. The sensory hairs of the longer rami, placed in two rows along the lower rami and longer than those of the shorter rami, and those of the shorter dorsal rami (also in two rows and shorter) are pointing in opposite directions. Antennae of the ♀ probably fasciculate or very shortly bipectinate, neither described nor visible in the original description of *M. garciorum*. Clypeus and labium broad, covered with long hair.

♂ legs without apical tibial spines and without ventral spines; number of tibial spurs and ♀ legs not examined.

♂ forewing generally small for Saturniidae, not elongated, apex almost rectangular with short apical tip. Colouration quite homogenous, the postmedian band almost straight or little curved. The forewing bears a unique zig-zag discoidal patch consisting of a lighter area which is bordered by several darker spots. ♂ hindwing almost triangular, without major ornamentation, hindwing spot only slightly indicated. Ventral side more homogenous, the only pattern elements of the ♂ are a dark postmedian line in the same position as on upperside, and a white round discal spot on both fore- and hindwings.

♀ forewing round, also with homogenous colouration, postmedian band of forewing little curved, ending costal to the apex. The discoidal patch elliptic, but generally of same structure as in ♂. Hindwing round, without ornamention. Underside details not provided in the description.

♂ forewing with veins R5 and M1 (cf. Michener 1952: 351) widely separated, R5 arising from apex of discoidal cell, veins M1, 2 & 3 with almost same distance to each other. Hindwing vein M1 widely separated from R5, veins M2 & 3 arising almost from same position of discoidal cell. Veins of ♀ almost in same manner as far as can be judged from the figure (Brechlin & Meister 2012: 111).

♂ genitalia: 8th abdominal segment without any prominently sclerotised structures. Uncus simple, rounded, strongly sclerotised, with lateral protuberances. Valves with one large round lobe and an inner sclerotised spine. Median plate of the transtilla rounded, lateral arms fused with inner margin of the valves. Juxta present, with two symmetric processes, saccus long and tall. Phallus very long, tall, vesica without any structures emerging to ventral side.

♀ genitalia were not studied and described by Brechlin & Meister (2012).

Generally, with all those details (homogenous colouration, wing venation and pattern, small size, details of ♂ genitalia; also the barcode results did not show any proximity to different species-groups of *Automeris*), it is clear that *M. garciorum* cannot be placed in the genus *Automeris* but should better be placed in a separate genus which appears to be rather closely related to the group of neotropic genera around *Ancistrota* which comprises the following genera:

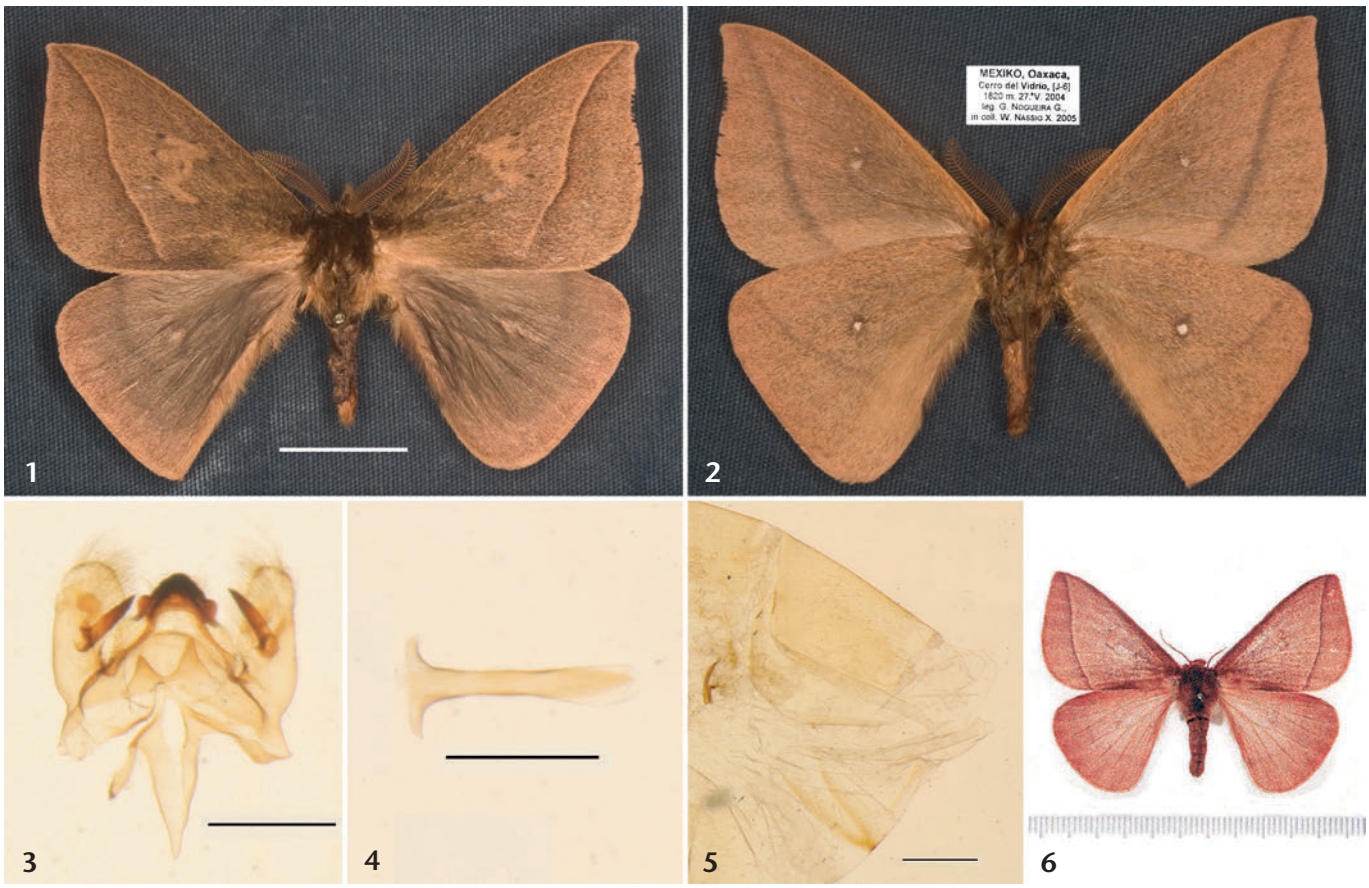
- *Ancistrota* Hübner, [1819],
- *Cinommata* Butler, 1882,
- *Catacantha* Bouvier, 1930,
- *Perigopsis* Bouvier, 1932 and
- *Parancistrota* Bouvier, 1933.

The latter two genera are currently (following Lemaire 2002) buried in synonymy of *Catacantha,* respectively *Ancistrota*. Within the revisional work the position of all included taxa will be discussed critically. So far, members of the involved genera were known only from the continent of South America, with the northwesternmost known species occuring in Colombia. After discovery of the new genus *Mexicantha* in Mexico, an interesting distributional gap in Central America is found, which may explain the obvious long isolation of the *Mexicantha* species from all other taxa. However, this can also be an artificial gap of collecting because the two taxa appear to be ecologically quite specialized in their biotopes and with only a short, restricted flight period, and generally appear to be rare.

In addition to the already described *M. garciorum,* we here describe a second taxon, also from Oaxaca, Mexico, of which only 2 ♂♂ are known so far. The type localities of both taxa are only approximately 70 km apart, but, in addition to the differences in wing pattern, the biotopes appear to be different, being located on the eastern and western side of the southern slopes of the Sierra Madre del Sur.

Mexicantha oaxacana sp. n.

Holotype ♂ (Figs. 1–5): Mexico, Oaxaca, Cerro del Vidrio, [J-6], 1820 m, 27. v. 2004, leg. G. Nogueira G., in coll. W. Näs-



Figs. 1–5: *Mexicantha oaxacana* gen. & sp. n. , holotype ♂. **Figs. 1–2:** holotype specimen, dorsal view (**Fig. 1**), ventral view (**Fig. 2**). **Figs. 3–5:** ♂ genitalia (**Fig. 3:** genitalia apparatus, **Fig. 4:** phallus, **Fig. 5:** abdominal pelt without sclerotisations on preabdominal sternite or tergite 8; GP Nässig/SMFL no. 1961/05). — **Fig. 6:** ♀ HT of "*Automeris" garciorum;* copied from Brechlin & Meister (2012: fig. 1).

sig x. 2005. Dissection no. 1961/05 W. Nässig/SMFL; Barcode Nässig B3218-wn-A05. — The holotype (including the genitalia slide) will be donated to the IBUNAM collection at the Universidad Nacional Autónoma de México, Instituto de Biología, in Ciudad de México (= Mexico City).

Paratype (1 ♂): Mexico, Oaxaca, Cerro del Vidrio, [N-9], 1935 m, 3. vii. 2008, leg. G. Nogueira G., in coll. W. Nässig x. 2008; in SMFL, Frankfurt am Main, Germany. Barcode Nässig B3218-wn-A06.

Etymology: The new species is named after its origin in the federal state of Oaxaca of Mexico.

The barcode sequences of the 2 types will be published in GenBank in due course, and the sequence analyses will, for comparison, be published within the forthcoming revision of the *Ancistrota* group.

Description and diagnosis

♂**:** Ground colour dark ochreous to greyish brown. Frons and dorsal thorax covered with darker chocolate brown hair, antennae quadrupectinate up to the last two apical segments, 7.8–8.0 mm (2nd number from holotype) long, with 30 segments in total, longest dorsal rami 0.8 mm, longest ventral ones 1.2 mm. Length of forewing from basis to apex 23.0–24.5 mm (2nd number from holotype), on dorsal side completely in the ground colour. Markings there are the typical, somewhat zig-zag-like discoidal patch which is somewhat lighter ochre and bordered with dark brown spots at its edges, plus an almost straight (or bent between veins M3 and Cu1a) postmedian line with basal ochreous and marginal darker brown portion; this line ends apically exactly in the tip of the apex. Forewing tornus somewhat rounded. The basal and median part of the hindwing somewhat darker brown, postmedian area again in ground colour. Both hindwing ocellus and a postmedian line are slightly indicated as dark shadow. Both fore- and hindwing have an outer margin of ochreous yellow fringes. Thorax, abdomen with legs and both fore- and hindwings on ventral side are completely in ground colour, both fore- and hindwing show a central round white spot surrounded with darker brown scales, and a dark greyish brown postmedian line in the shape of the upperside lines. The abdomen is of darker brown colour on dorsal side and in ground colour on ventral side.

♂ **genitalia:** See generic description.

♀ **and preimaginal instars** remain unknown.

Discussion

It was indeed quite a surprise to find such unique undescribed specimens in a rather well-explored area in Mexico in our days, of which the probable closest relatives are known from Colombia, about 3000 km away. This gap may be explained by different reasons:

- The Central American isthmus is geologically rather young, and there is no uninterrupted mountain chain connecting the two continents; there is a broad belt of lowlands (below 100 m) interrupting the hills in

Panama. As the known localities of the two species are all from between 1800 and 2500 m elevation, such highland species will probably not be able to regularly cross lowlands. *Mexicantha* is obviously the offspring of a very early invasion of an ancestor belonging to the *Ancistrota*-group from South America into North America.

- At least *M. oaxacana* is obviously much restricted to a special microclimate inside the local cloud forest and has a restricted flight period. During several expeditions to the type locality by two of the authors (G.N.G. & S.N.) no further material could be collected, and the more open area around the type locality (with different microclimate) did not bring any results.
- Of course, for such evidently local and rare species there might also exist a real "collecting gap", with other specimens just not having been found by accident so far.

It is also somewhat unexpected that two closely related taxa could be found in Oaxaca, which on the other hand could confirm a narrow specialization to a certain biotope; the higher type locality of *M. garciorum* at San José del Pacífico shows a different vegetation with more oak and pine trees than the dense cloud forest at Cerro del Vidrio ca. 70 km further West.

Although *M. garciorum* is known only from the ♀ holotype, and we have only ♂♂ of *M. oaxacana* in our hands, we decided to describe a separate species, as we see sufficient differences to separate the specimens not only from the usual sexually dimorphic characters: *M. oaxacana* shows a different forewing discoidal patch, and its forewing postmedian line ends nearly into the tip of the acute apex whereas it ends more into the costal margin in *M. garciorum*.

In case that it can be doubtlessly decided on basis of the mtDNA barcode of the CO-I genome (the barcode sequence of the holotype of *garciorum* with no. BC-RBP-6017, as published by Brechlin & Meister, is not yet publically available) that the two taxa are inexpectedly conspecific, the new species described here as *Mexicantha oaxacana* would sink as a junior synonym of *M. garciorum* (ICZN 1999).

References

Brechlin, R., & Meister, F. (2012): Zwei neue Arten der Gattung *Automeris* Hübner, 1819 („1816") aus Mexiko (Lepidoptera: Saturniidae). — Entomo-Satsphingia, Pasewalk, **4** (5): 109–111 [„2011"].

ICZN [International Commission on Zoological Nomenclature, ed.] (1999): International Code of Zoological Nomenclature, fourth edition, adopted by the International Union of Biological Sciences. — London (International Trust for Zoological Nomenclature, BMNH), xxix + 306 pp. — *The Code can also be found in the WWW under iczn.org.*

Lemaire, C. (2002): The Saturniidae of America. Vol. **4.** Hemileucinae. — 3 parts; parts A + B: 1388 pp., 199 genitalia pls., 185 maps; part C: plates volume with 140 col. pls.

Michener, C. D. (1952): The Saturniidae (Lepidoptera) of the western hemisphere. Morphology, phylogeny, and classification. — Bulletin of the American Museum of Natural History, New York, **98** (5): 337–501, pl. V.

Scoble, M. J. (1995): The Lepidoptera. Form, function and diversity. (Reprint edition with corrections.) — Oxford (Oxford Univ. Pr.), xi + 404 pp., 4 col. pls.

 ISSN 0723-9912