

# A contribution to the Oiketinae fauna of Mexico with the description of *Naevipenna mexicana* Sobczyk, sp. n. (Lepidoptera: Psychidae)

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## Abstract

Four species of Psychidae are reported from Mexico. While *Astala confederata* (Grote & Robinson, 1894) and *Cryptothelea symmicta* (Dyar, 1914) was already known, *Lumacra hyalinacra* Davis, 1964 was recorded for the first time in Mexico. For the first time, the larval cases of *Cryptothelea symmicta* (Dyar, 1914) and *Lumacra hyalinacra* Davis, 1964 are described and depicted. *Naevipenna mexicana* Sobczyk, sp. n. is described from the state of Chiapas and compared with the two already known species of the genus.

KEY WORDS: Lepidoptera, Psychidae, *Naevipenna*, new species, Mexico.

## Una contribución a la fauna de Oiketinae de México con descripción de *Naevipenna mexicana* Sobczyk, sp. n. (Lepidoptera: Psychidae)

## Resumen

Se mencionan cuatro especie de Psychidae de México. Mientras que *Astala confederata* (Grote & Robinson, 1894) y *Cryptothelea symmicta* (Dyar, 1914) ya eran conocidas, *Lumacra hyalinacra* Davis, 1964 se registra por primera vez para México. Se describen y representan, por primera vez, los estuches larvarios de *Cryptothelea symmicta* (Dyar, 1914) y *Lumacra hyalinacra* Davis, 1964. Se describe *Naevipenna mexicana* Sobczyk, sp. n., del Estado de Chiapas y se compara con las dos especies conocidas del género.

PALABRAS CLAVE: Lepidoptera, Psychidae, *Naevipenna*, especie nueva, México.

## Introduction

Only 14 species of Psychidae have been reported from Mexico (HEPPNER, 1984; SOB CZYK, 2011). DAVIS (1964) last dealt extensively with the Psychidae in the context of the treatment of the Nearctic fauna. Since then, no new species have been described from Mexico, and even faunistic treatises are rare. The author received individual Psychidae specimens for examination through friends and colleagues. The results are presented below.

## Material and methods

The Genitalia slides were made for all species (mostly only one specimen). The genitalia slides were made according to standard procedures. After examination the genitalia and antennae were mounted separately on a microscope slide and were embedded in Euparal. Photograph of specimen were taken with a Canon EOS 600D and objective Canon MP-E 65 mm f/2.8 1-5x Macro.

The terminology of morphological characters follows SAUTER (1956) and SAUTER & HÄTTENSCHWILER (1999).

Label data of type specimens are quoted verbatim. The month of capture of the adults is given in roman numerals.

Interocular index: vertical eye diameter divided by interocular distance measured just above the level on the tentorial pits.

Forewing index: forewing length divided by the forewing width (perpendicular to the measurement length).

Epiphysse index: distance between the epiphysis and the end of the tibia through the length of the tibia (after DIERL, 1964).

## Abbreviations

CTS	- Collection Thomas Sobczyk (Germany)
DC	- discal cell; r - radial vein; m - media vein; A - anal vein; sc - subcosta; cu - cubital vein
e. l.	- ex larvae
GU	- genital preparation
UNAM (CNIN)	- National Insect Collection of the National Autonomous University of Mexico City, Mexico

## Results

*Astala confederata* (Grote & Robinson, 1868) (Figs 1-2)

*Psyche confederata* Grote & Robinson, 1868. *Trans. Am. ent. Soc.*, **2**: 191, pl. 3, figs 66-67

Type locality: Belfrage, Texas, USA

Material: 1 ♂ (Fig. 1), MEXICO, Veracruz, Papantla, 165 m, 19-V-2010, e. l. 06-VI-2010, leg. Riefenstahl (UNAM (CNIN)).

Genital GU-142-2019 Sobczyk (Fig. 2): See DAVIS (1964). Total length 1.1 mm, 0.6 mm wide. Sacculus with 5-6 spines. Phallus slightly curved. Eighth sternite furcations slender, distally divergent.

Discussion: A wingspan of 16-20 mm is given for *A. confederata* (Davis, 1964). The present specimen is still somewhat smaller (15.5 mm wingspan). *A. confederata* is the most densely scaled species of the genus. The other species have hyaline or translucent wings or completely lightened wing fields. The number of antennal segments (22-24) cited by DAVIS (1964) is clearly exceeded by the specimen mentioned here with 28 segments. The species was known for Mexico from Nayarit (description by *Pachythelia lepidopteris* Dyar, 1926 a synonym for *A. confederata*).

*Cryptothelea symmicta* (Dyar, 1914) (Figs 3-5)

*Platoeceticus symmicta* Dyar, 1914. *Proc. U. S. natn. Mus.*, **47**: 254

Type locality: Canal Zoe, Ancon, PANAMA

Material: 2 ♂♂ (Fig. 3), MEXICO, Veracruz, Papantla, 165 m, 19-V-2010, e. l. 06-VIII-2010, leg. Riefenstahl (UNAM (CNIN), CTS).

Wingspan: 13.5 mm, respectively 13.0 mm.

Genital GU-143-2019 Sobczyk (Fig. 4): See DAVIS (1964). Total length 1.5 mm, 0.4 mm wide. Sacculus with 3-4 spines. Phallus 1.2 mm, thinly and slightly curved. Eight sternite narrow, furcation elongate diverging distally.

Larval case: Male 11.5 x 4.5 mm respectively 12.5 x 5.0 mm (Fig. 5), very densely covered with slightly protruding small leaf fragments.

Discussion: The genus *Cryptothelea* Duncan, 1841 comprises eight species, of which *C. gloverii* (Packard, 1869), *C. congregatus* (Jones, 1945) and *C. symmicta* are known from Mexico. While the other two species have a wingspan of over 14 mm, in *C. symmicta* it is only 8-14 mm (original

description 12 mm). The structure of the larval cases is similar to that of the other two species, but they are also significantly smaller (11.5-12.5 mm in length compared to 15.0-23.0 mm in *C. gloverii* and 15.0-20.0 mm in *C. congregata* Dyar, 1914, see DAVIS, 1964), no indications of the shape of the larval cases could be found and it is possible that this is the first time they are described and illustrated.

*Lumacra hyalinacra* Davis, 1964 (Figs 6-9)

*Lumacra hyalinacra* Davis, 1964. *Bull. U. S. natn. Mus.*, **244**: 69, figs 17, 207, 260, 332

Type locality: Juayua, EL SALVADOR

Material: 1 ♂, MEXICO, Chiapas, Palenque, N 17°29'0" / W 92°3'0", 05-25-II-2019, e. l. 05-VII-2019, leg. W.-H. Liebig (UNAM (CNIN)).

Additional description: Medium-sized moths with sparsely scaled wings (Figs 6, 7). Wingspan 19 mm, body length 7.7 mm, forewing length 9.5 mm, forewing index 1.9, antennae length 4.0 mm.

Head: Antennae 26 segments black brown, densely scaled. Comb teeth bipectinate, densely scaled, long ciliate ventrally. Reaching the greatest length on the third and fourth antennae (eight times the antennae length), decreasing evenly in length towards the apex. Scapus thickened, pedicellus disc-shaped. Head thickly covered with long hair-shaped, whitish-grey scales, these somewhat darker around the eyes. Eyes small, blackish grey, interocular index 1.5. Labial palps reduced to a fused segment. Tentorial pits and tentorium clearly pronounced.

Thorax: Tibia of all legs with remarkably long grey hairs. Anterior tibia with a long, narrow epiphysis (index 0.9). Mid and hind legs without tibial spurs. Tarsi with sparsely black-grey scales. Thorax with long black hair. Wings elongated, with rounded apex, ten veins from DC, r3 + r4 stalked one third, m2 + m3 short stalked. DC with divided media stem. No branches from A1 + A2 to the inner edge. Hind wing with five veins from the DC, m1 absent, m2 + m3 short-stalked, media stem not bifurcated, sc and rr almost parallel, in 2/3 DC with a bridge.

The outer third of the wing hyaline, covered only with individual, short, curved scales. Basal part with broad, distally rounded scales, some scales also with notches. Occasionally there are narrow, elongated whitish scales between the dark scales. Fringes very broad, distally rounded, multi-pointed. Hind wing scales narrower than fore wing scales. Scale shape rather lanceolate. Fringes, broadly spatulate, multi-pointed.

Abdomen: Dorsally and ventrally covered with black-grey, hair-like scales.

Genital GU-146-2019 Sobczyk (Fig. 8): Total length 1.75 mm. When closed, valva not protrude beyond the rear edge of the tegumen. Tegumen rounded, slightly indented medianally. Sparsely covered with fine short setae. Vinculum elongated, broad, heavily sclerotized median, ending in distally notched short saccus. Valve elongated, distally rounded. The short, curved saccule has 6-8 small thorn cones distally. The slightly curved phallus about length of genital (1.35 mm, largest diameter 0.27 mm).

Larval case: 19 mm long, made of whitish silk, about 3.5 mm in diameter in the front third, decreasing in diameter to the distal end (Fig. 9). The larval case is very stable and can hardly be pressed in.

Discussion: *Lumacra hyalinacra* is hereby reported for the first time from Mexico and the previously unknown larval case is shown and described.

### *Naevipenna mexicana* Sobczyk, sp. n. (figs 10-13)

Type material: Holotype 1 ♂, MEXICO, Chiapas, Palenque, N17°29'0" / W92°3'0", 05-25-II-2019, e. l. 04-VII-2019, leg. W.-H. Liebig, deposited in UNAM (CNIN).

Paratype (Fig. 11). 1 ♂, same data, but e. l. 12-VII-2019 and 12 larval cases, partially with exuviae (CTS).

Description: (n=4): Medium-sized moth with evenly densely scaled wings. Wingspan 14.0 mm, body length 6.0 mm, forewing length 7.0 mm, forewing index 1.75, antennae length 2.5 mm. Head thickly covered with long hair-like, black-brown scales. Eyes small, blackish grey, eye index 1.3. Labial palps reduced to a fused segment. Tentorial pits and tentorium clearly pronounced. Antennae

black brown, densely scaled, with 21 segments. Pecten bipectinate, densely scaled, long ciliate ventrally. Reaching the greatest length on the third and fourth segments of the antennae (four times the length of the antennae segment), decreasing evenly in length towards the apex. Scapus thickened, pedicellus disc-shaped. Tibia of all legs remarkably long, with black-brown hair-like scales. Anterior tibia with a long, narrow epiphysis (index 0.9). Middle and hind legs with tiny spurs distally on the tibia. Tarsi with distinct yellowish-brown scales. Thorax long haired black brown. Wings elongated, with rounded apex, ten veins from DC, r3 + r4 stalked one third, m2 + m3 short stalked. DC with simple media stem. Without branches from A1 + A2 to the inner edge. Hind wings with five veins from the DZ, m1 absent, media stem simple, not bifurcated, sc and rr in the basal third with a bridge. Scales broadly lanceolate, pointed distally. Fringes very broad, distally rounded, multi-pointed. Hind wing scales narrower than fore wing scales. Scale shape rather lanceolate. Fringes, broadly spatulate, multi-pointed. Abdomen dorsally and ventrally covered with black-grey, hair-like scales.

Male genital GU-147-2019 Sobczyk (Fig. 12): Total length 1.75 mm, 0.6 mm wide. When closed, the valves reach approximately the rear edge of the tegumen. Rounded tegumen, set with individual fine short setae. Vinculum elongated, wide, laterally heavily sclerotized, saccus basal wide and ends in a needle-shaped process that makes up more than a third of the genital length. Valva elongated, distally rounded. The broad, curved sacculus distally occupied with 10-12 small thorn cones. The slightly curved phallus significantly shorter than the length of the genital (0.95 mm, largest diameter 0.2 mm). Eight sternite broader than long, with a broad, heavy base.

Larval case male (Fig. 13): 15-17 mm long, in the front third about 2.5-3.0 mm in diameter, females: 21-24 mm long, in the front third about 4-5 mm in diameter narrowing distally. Larval case dense spun silk covered with lichen particles and very occasional fragments of bark or other plant materials mixed together, dyed black-grey.

Females: Not examined. Only two larval cases with exuvia could be included in the study.

Biology: The male is probably nocturnal (eye index).

Diagnosis: The genus *Naevipenna* Davis, 1964 previously comprised only two species: *Naevipenna apaidropha* (Dyar, 1914) and *Naevipenna cruttwellae* Davis, 1975. For *N. apaidropha* the distribution is given as: "Known from the Panamanian Arc, south to the Guiana Coastal Plain of French Guiana and the Brazilian Highland of Southern Brazil" (DAVIS, 1964). The wingspan is 17-20 mm and the forewing scales are of two types: thinly scattered, hair-like scales and denser, broadly lanceolate scales with blunt, rounded tips. Both scale types mix evenly over both wings (DAVIS, 1964). The main distinguishing feature of *A. apaidropha* is a distinctive sclerotized spot on the anterior margin of the forewings, which is absent in *N. cruttwellae*. This species is significantly smaller (wingspan 12.5-13 mm) and the fore wing scales are uniformly broadly lanceolate, distally pointed to rounded. The species is reported from Panama and Trinidad (DAVIS, 1975). The male-genital is very narrow and elongated (four times as long as it is wide), the vinculum only gradually becomes narrower and merges into a long but relatively wide sacculus. In *N. mexicana*, the genital is more compact (only three times as long as it is wide) and the sacculus is angular at the base and then needle-shaped. The eight sternite is broader than long (*N. cruttwellae* longer than broad).

The larval cases of both species have the following dimensions: *N. apaidropha* (males 15-19 mm x 3-4 mm, females: 19-24 mm x 5-6 mm) and *N. cruttwellae* (males 12-15 mm x 2-2, 5 mm, females: 12-16 mm x 2-3 mm).

With a wingspan of 14-15 mm, the values of *N. mexicana* Sobczyk, sp. n. between these two species. The sclerotized spot on the front edge of the forewings typical of *N. apaidropha* is missing and the scales of the wings are more similar to *N. cruttwellae*. The genital of *N. cruttwellae*, on the other hand, is significantly narrower (four times as long as it is wide), whereas the saccus is significantly wider.

The pupae of this genus differ in the dorsal chaetotaxia of the abdomen in both sexes. *N. mexicana* Sobczyk, sp. n. has significantly more thorns than the other two species. In the males of *N. cruttwellae* and *N. mexicana* Sobczyk, sp. n. the dorsal posterior row of spines in the seventh segment is missing (or is exceptionally reduced to a maximum of 6 spines in *N. mexicana* Sobczyk, sp. n.),

which is present in *N. aphaidropa*. On the 8th segment there are 7-10 spines in *N. aphaidropa*, 5-8 in *N. crutwellae* and 11-16 in *N. mexicana* Sobczyk, sp. n.

**Table 1.**– *Naevipenna* male pupa, dorsal abdominal spines (anterior / posterior).

Segment	<i>Naevipenna aphaidropa</i> Davis, 1914 (DAVIS, 1975)	<i>Naevipenna crutwellae</i> Davis, 1975 (DAVIS, 1975)	<i>Naevipenna mexicana</i> Sobczyk, sp. n. n=5
I	0 / 0	0 / 0	0 / 0
II	0 / 0	0 / 0	0 / 0
III	12-16 / 26-34	10-13 / 23-27	6-10 / 46-55
IV	11-16 / 27-33	15-20 / 23-28	26-30 / 50-56
V	11-14 / 24-29	14-18 / 22-30	23-28 / 50-54
VI	14-17 / 20-25	12-15 / 21-23	18-21 / 30-52
VII	8-11 / 8-12	9-12 / 0	17-21 / 0-6
VIII	7-10 / 0	5-8 / 0	11-16 / 0

**Table 2.**– *Naevipenna* species, female pupa, dorsal abdominal spines (anterior / posterior).

Segment	<i>Naevipenna aphaidropa</i> Davis, 1914 (DAVIS, 1975)	<i>Naevipenna crutwellae</i> Davis, 1975 (DAVIS, 1975)	<i>Naevipenna mexicana</i> Sobczyk, sp. n. n=2
I	0 / 0	0 / 0	0 / 0
II	0 / 0	0 / 0	0 / 0
III	23-28 / 32-37	0-5 / 30-38	0-11 / 32-40
IV	22-28 / 30-35	12-21 / 27-42	8-22 / 37-51
V	20-28 / 26-29	12-16 / 25-38	8-22 / 39-48
VI	18-21 / 17-24	13-21 / 28-33	10-20 / 10-14
VII	15-17 / 0	9-17 / 0	10-18 / 0
VIII	2-5 / 0	0 / 0	7-8 / 0

Distribution: Currently *N. mexicana* Sobczyk, sp. n. is only known from the type locality. Its occurrence is also expected in other parts of the Yucatan Peninsula in Mexico. This small species that fly during the night can easily be overlooked.

Etymology: The species is named after Mexico, the country where the specimens were collected.

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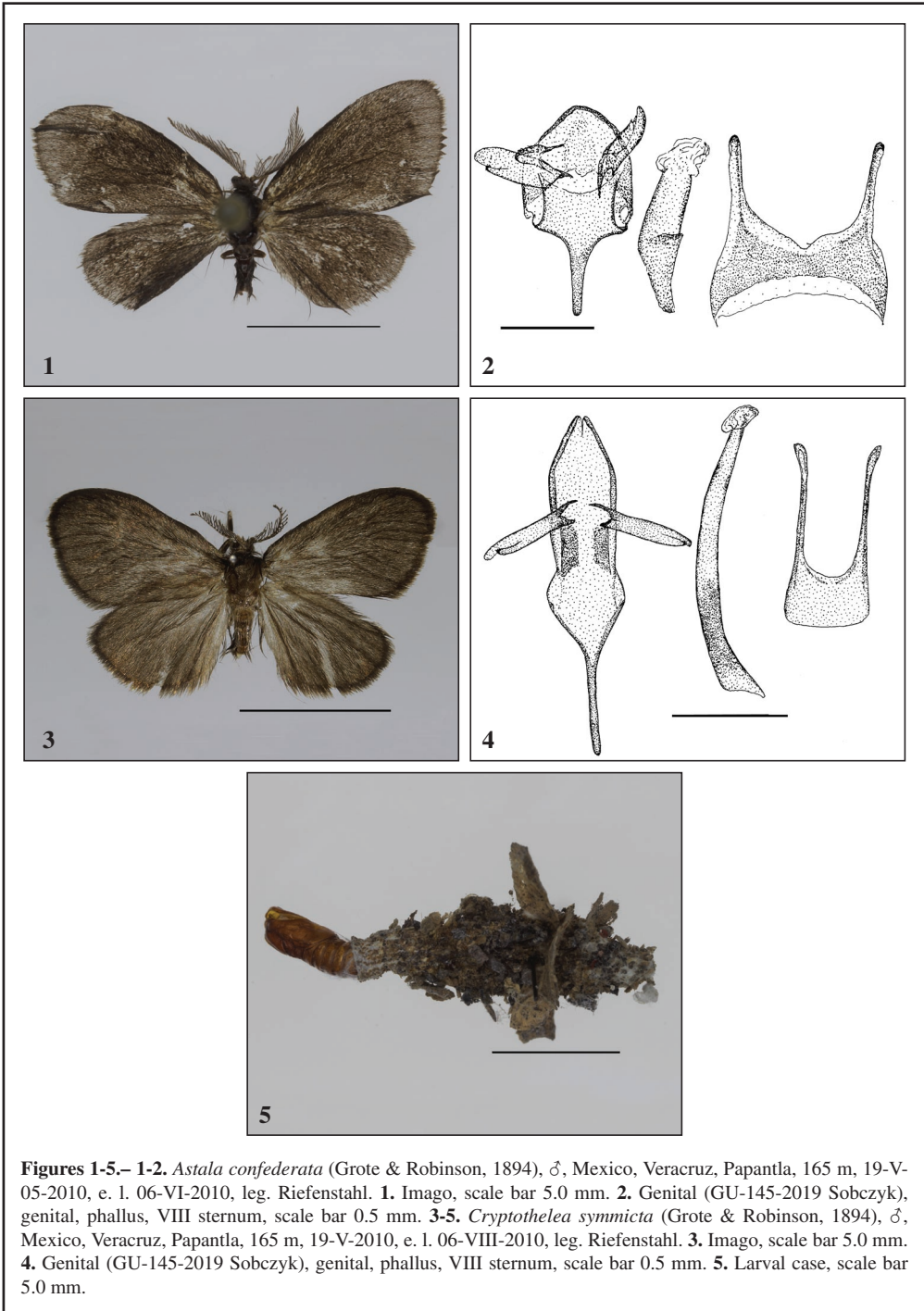
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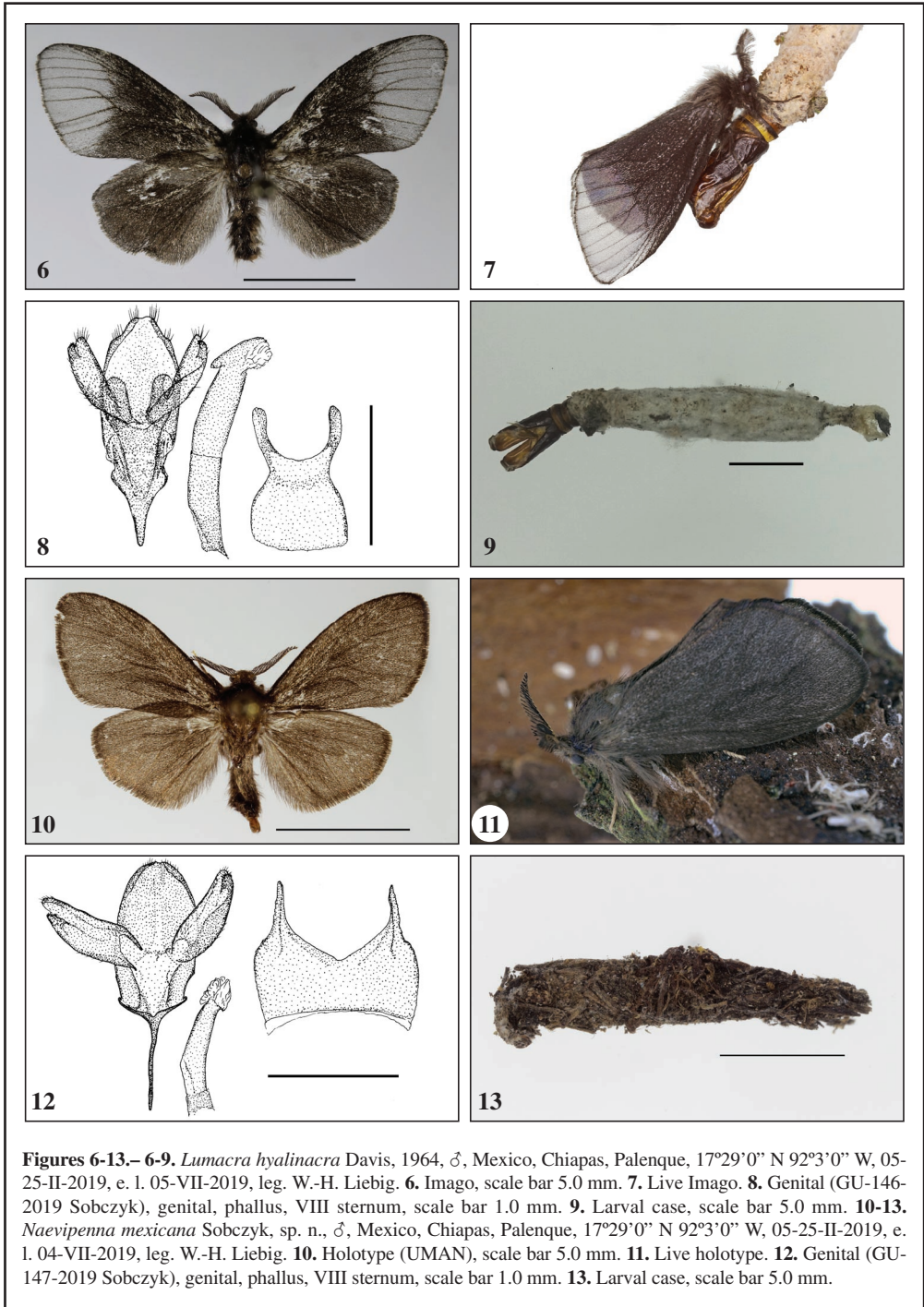
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**Figures 1-5.**— **1-2.** *Astala confederata* (Grote & Robinson, 1894), ♂, Mexico, Veracruz, Papantla, 165 m, 19-V-05-2010, e. l. 06-VI-2010, leg. Riefenstahl. **1.** Imago, scale bar 5.0 mm. **2.** Genital (GU-145-2019 Sobczyk), genital, phallus, VIII sternum, scale bar 0.5 mm. **3-5.** *Cryptothelea symmicta* (Grote & Robinson, 1894), ♂, Mexico, Veracruz, Papantla, 165 m, 19-V-2010, e. l. 06-VIII-2010, leg. Riefenstahl. **3.** Imago, scale bar 5.0 mm. **4.** Genital (GU-145-2019 Sobczyk), genital, phallus, VIII sternum, scale bar 0.5 mm. **5.** Larval case, scale bar 5.0 mm.



**Figures 6-13.**– **6-9.** *Lumacra hyalinacra* Davis, 1964, ♂, Mexico, Chiapas, Palenque, 17°29'0" N 92°3'0" W, 05-25-II-2019, e. l. 05-VII-2019, leg. W.-H. Liebig. **6.** Imago, scale bar 5.0 mm. **7.** Live Imago. **8.** Genital (GU-146-2019 Sobczyk), genital, phallus, VIII sternum, scale bar 1.0 mm. **9.** Larval case, scale bar 5.0 mm. **10-13.** *Naevipenna mexicana* Sobczyk, sp. n., ♂, Mexico, Chiapas, Palenque, 17°29'0" N 92°3'0" W, 05-25-II-2019, e. l. 04-VII-2019, leg. W.-H. Liebig. **10.** Holotype (UMAN), scale bar 5.0 mm. **11.** Live holotype. **12.** Genital (GU-147-2019 Sobczyk), genital, phallus, VIII sternum, scale bar 1.0 mm. **13.** Larval case, scale bar 5.0 mm.