

**PODALIA BOLIVARI (LEPIDOPTERA: MEGALOPYGIDAE): A HIGHLY
SEXUALLY DIMORPHIC NEOTROPICAL PEST**

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Abstract.—*Podalia bolivari* (Heylaerts) is unusual among the Megalopygidae in its extreme sexual dimorphism, as well as the male habitus. Association of the sexes is confirmed and the species is redescribed to allow its identification. Observations on the natural history of *P. bolivari* are given. Problems of generic concepts in Megalopyginae are discussed.

Key Words: Megalopygidae, Zygaenoidea, *Megalopyge*, palms, ferns

Podalia bolivari is unusual among the Megalopygidae in its extreme sexual dimorphism, as well as the male habitus. This has caused confusion in its classification and identification. Because this species can be a pest of cultivated palms and ferns in Colombia, we redescribe it here. The taxonomic portion of this paper was prepared by SEM and VOB, the natural history observations are by RVA.

The male was described by Heylaerts (1884) as *Pentophora bolivari*, but the female has been named three times (*Megalopyge pellucens* Dognin, 1912; *Unduzia gistinda* Dyar, 1914; and *U. phaule* Dyar, 1914). Dognin (1916) recognized the synonymy of *pellucens* and *phaule*, and Joicey and Talbot (1922, based on unpublished information from Dyar) synonymized *pellucens* and *gistinda*. Hopp (1926, 1935) recognized the association of the male and female, but other workers (unpublished notes in USNM) doubted the association because of the extreme dimorphism. We can now confirm the association, based on males and females reared together.

The sexual dimorphism of *Podalia bolivari* is the most extreme that we are aware of in Megalopygidae, both in size and wing shape (similar to, but more extreme than, dimorphism in *Phobetron* in the Limacodidae). Forewing lengths in male *bolivari* are 7–9 mm; female lengths are 17–22 mm. The usual dimorphism in megalopygids is that the largest males are slightly smaller than the smallest conspecific females. In addition to size, *bolivari* is strongly dimorphic in habitus. The females are fairly typical *Podalia* in appearance (although the wings are semitranslucent), but the males are very unusual for Megalopygidae. The males have narrow, hyaline wings, yielding the appearance of Zygaenidae, Psychidae, or Arctiidae such as small species of *Paracles* (Becker and Miller 1991); *Podalia bolivari* can be distinguished from most of these by the stalking of forewing veins R4 and R5.

This species can be a pest of palms and ferns in the vicinity of Medellín, Colombia. Gallego (1946) recorded *Podalia bolivari* as a pest of *Washingtonia* palms, and it is quite common on the introduced palm *Chrysal-*



Figs. 1, 2. *Podalia bolivari* wings: 1 (upper), male wing (USNM) (forewing length 9 mm); 2 (lower), female wing (USNM) (forewing length 19 mm); same specimen illustrated against both black and white backgrounds. Both sexes figured at same scale to show dimorphism.

idocarpus lutescens H. Wendl. (= areca palm or bamboo palm). It is also found on an ornamental fern, *Pteridium* sp., and *Cyperus diffusus* Vahl (Cyperaceae) on the Universidad Nacional de Medellín campus. Larvae develop much more slowly on *Cyperus* than *Pteridium*. Genty et al. (1978: 382–

383) noted *P. bolivari* as a secondary pest of oil palms.

All the species of Megalopyginae are currently placed in either *Megalopyge* Hübner or *Podalia* Walker (Hopp 1935), except for the enigmatic genus *Psychagrapha* Walker (transferred to Megalopyginae by Epstein

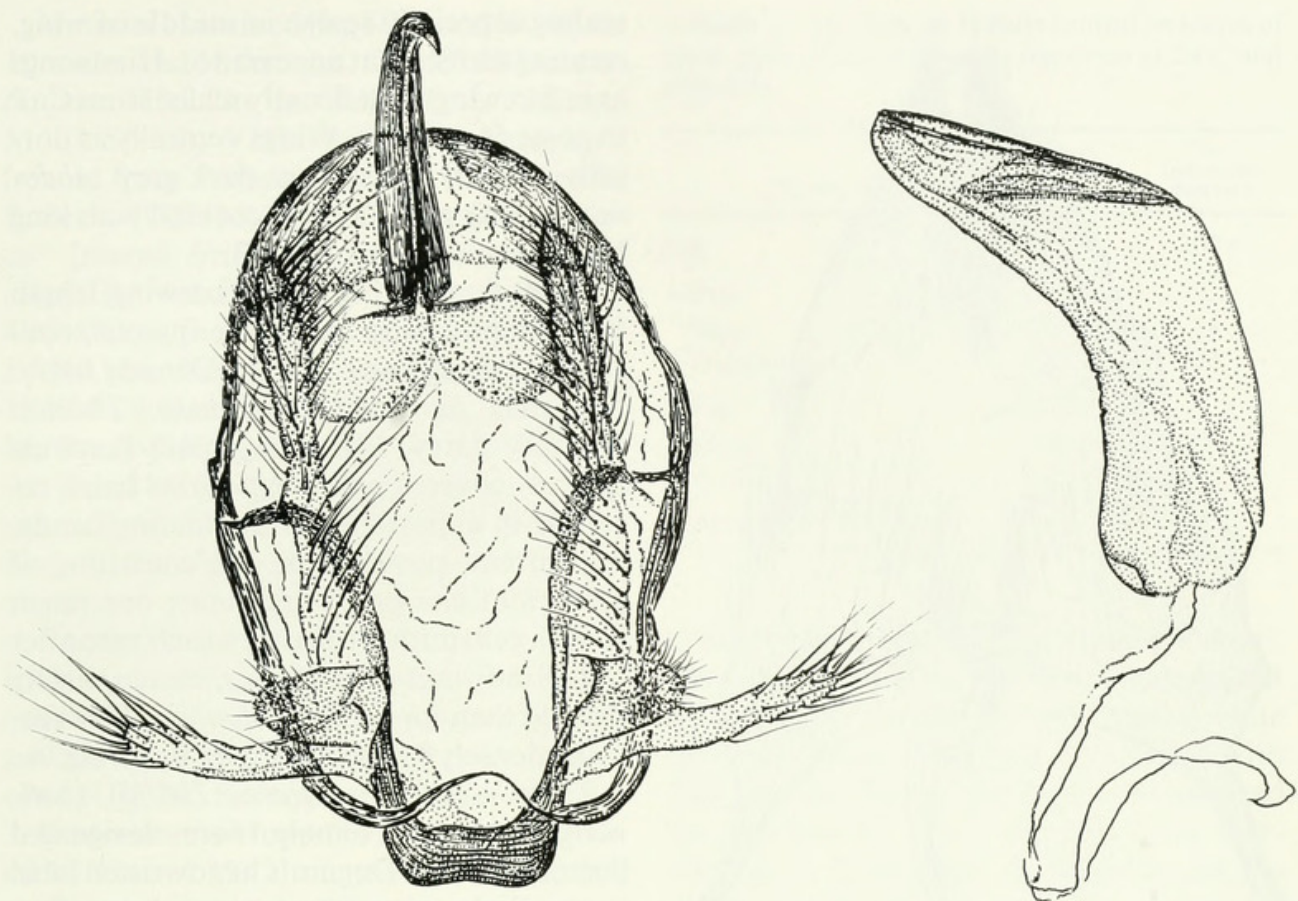


Fig. 3. *Podalia bolivari*, male genitalia (USNM 28024).

and Becker 1994: 313, Becker 1994). The generic classification of the subfamily needs revision (Miller 1994). Such a revisionary study may result in the lumping of all species into *Megalopyge* or the splitting of the subfamily into additional genera. The generic name *Unduzia* was proposed by Dyar (1914: 252), with *U. gistinda* as type species. We follow Hopp (1935) and Forbes (1942) in placing *bolivari* in *Podalia* until the generic classification of the subfamily can be revised.

REDESCRIPTION

Podalia bolivari (Heylaerts)
Figs. 1–4

Pentophora bolivari Heylaerts, 1884: xli.

Hypogymna bolivari: Kirby, 1892: 490.

Unduzia bolivari: Hopp, 1926: 193.—Gallego, 1946: 455.—Morales, 1982: 168.

Podalia bolivari: Hopp, 1935: 1098, pl. 163g.—Forbes, 1942: 404.—Genty et al., 1978: 382–383.

Megalopyge pellucens Dognin, 1912: 171.

Unduzia pellucens: Dognin, 1916: 22.

Unduzia gistinda Dyar, 1914: 252.

Unduzia phaule Dyar, 1914: 252.

Diagnosis.—Male dark grey, with narrow, hyaline wings, yielding the appearance of Zygaenidae or Psychidae (Fig. 1). Female fairly typical of *Podalia* in appearance, but with semitranslucent wings; forewing with postmedial white spots (Fig. 2).

Adult male (Fig. 1).—Forewing length 7–9 mm. **Head:** Pale fuscous, densely hairy. Antennae dark grey, broadly bipectinate. **Thorax:** Dark grey dorsally, slightly paler ventrally. Densely covered with long hairs. Forewings sparsely covered with long narrow scales, dense only along wing margins;

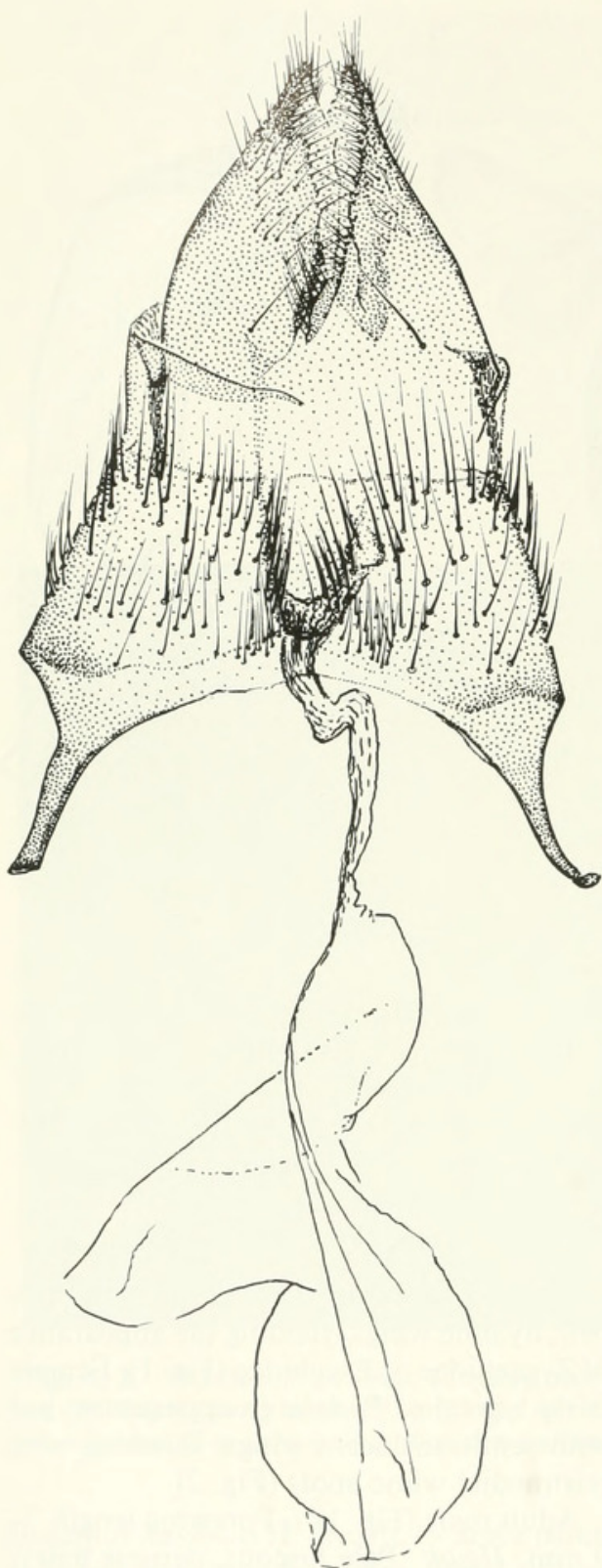


Fig. 4. *Podalia bolivari*, female genitalia (USNM 28162, paralectotype of *pellucens*).

scaling especially sparse in middle of wing, creating translucent appearance. Hindwings as in forewings, but densely scaled from CuP to posterior margin. Wings ventrally as dorsally, slightly paler. Legs dark grey. *Abdomen*: Dark grey, densely covered with long hairs. Genitalia as in Fig. 3.

Adult female (Fig. 2).—Forewing length 17–22 mm. Entire moth pale fuscous, covered with long hairs. *Head*: Densely hairy. Antennae narrowly bipectinate. *Thorax*: Densely hairy. Forewings pale fuscous, sparsely covered with long, curled hairs, resulting in appearance of undulating bands, translucent; postmedian line consisting of patches of elongate white hairs, one patch in each cell, midway between each vein after M2. Hindwings pale fuscous, more sparsely clothed than forewing. *Abdomen*: Pale fuscous, densely hairy. Genitalia as in Fig. 4.

Types.—Holotype male, ZMHB (*bolivari*); Lectotype female, here designated [lectotype bears Dognin's handwritten label "type," three paralectotypes bear "co-type"], USNM 29855 (*pellucens*); Lectotype female, here designated, USNM 16097 (*gistinda*); Holotype female, USNM 16098 (*phaule*). [all examined]

Type localities.—Venezuela, Mérida (*bolivari*); Venezuela, Mérida (*pellucens*); Panamá, Río Trinidad (*gistinda*); Venezuela, Mérida (*phaule*).

Hosts.—*Washingtonia filifera* (L. Linden) H. Wendl. (Gallego 1946: 455); *Elaeis guineënsis* Jacq. (Genty et al. 1978); *Cyperus diffusus* Vahl; *Chrysalidocarpus lutescens* H. Wendl. (USNM); *Pteridium* sp. (USNM). Gallego (1946: 455) also recorded *Washingtonia comunis* and *Washingtonia erecta*, but we have been unable to identify these taxa; they are not valid species of *Washingtonia*.

Immature stages.—Larvae densely hairy, reddish, up to 30 mm long (see below).

Flight period.—March, May, August, and December (in Panamá).

Distribution.—Panamá, Colombia, and Venezuela.

Material examined [by SEM and VOB].—10 males and 18 females. COLOMBIA: *Antioquia*: Medellín, [no date], F. L. Gallego M. (USNM), VIII-1985, “ex helecho” [reared from *Pteridium* sp.], J. A. Quiroz & F. Serna (USNM), X-1985, “en palma areca” [reared from *Chrysalidocarpus lutescens*], R. Velez (USNM); *Boyacá*: Muzo, 400–800 m, [no date], A. H. Fassl (USNM); PANAMA: Barro Colorado Island, 5-VIII-1940, N. S. Scrimshaw (MCZ), 10-XII-1934, M. Bates (MCZ); *Cabima*, 16–30-V-1911, A. Busck (USNM); *Cano Saddle*, V-[no year], R. C. Shannon (USNM); *Río Trinidad*, 15–31-III-1912, Busck (USNM, lectotype of *gistinda*), same but III-1912 (USNM, paralectotype of *gistinda*); VENEZUELA: *Mérida*: Mérida, [no date] (USNM, lectotype and 3 paralectotypes of *pellucens*), 1890 (USNM), [no date], S. Briceno (USNM, holotype of *phaule*).

Discussion.—Hopp (1926, 1935; repeated by Forbes 1942) mentions México, but we have not seen any specimens to confirm this distribution record. We have seen a single female from Perú ([Valle de] Canchamayo, I-VII-1901, W. Hoffmanns, BMNH), evidently the specimen noted by Hopp (1935), which might be *P. bolivari* but it differs slightly in coloration and venation.

We have examined the “type” male of *Podalia bolivari* in ZMHB, as did Hopp (1926). The original description implies that Heylaerts had only one specimen, so we consider this specimen the holotype. It is in good condition, except for lacking the abdomen (as noted in the original description) and right antenna. It bears a handwritten locality label “Merida/Hahnel.” Paul Hahnel collected in Venezuela from 1875–1879 (Horn and Kahle 1935: 102).

Podalia bolivari is most similar to *P. dyari* (Joicey and Talbot 1922: 302), known only from the female holotype (BMNH) from Ecuador (specific locality not known). The holotype of *dyari* is much larger than *bolivari*, with a forewing length of 27 mm. The wing shape is more pointed in *dyari*, with the

Table 1. Life cycle of *Podalia bolivari* on leaves of areca palm (*Chrysalidocarpus lutescens*) at 24°C and 67% R.H.

Life stage	Mean life span (days)	No. individuals observed
Egg	9	200±
Larvae		
Males	49–50	34
Females	65–70	33
Pupae		
Males	25–28	24
Females	21–26	23
Adults (males & females)	7	47

outer margin more oblique than in *bolivari*. The wings of *dyari* are also more transparent and the forewings lack the postmedial white spots, although this is hard to evaluate with only one specimen. We have not dissected the genitalia of *dyari*, as there is no morphological knowledge of megalopygid female genitalia for comparative evaluation (Fig. 4 in this paper is the first published illustration of a megalopygid female genitalia).

NATURAL HISTORY

Adult and eggs: Adults eclose at night under laboratory conditions. After emerging, both sexes show slow movements during the day but fly actively after dark. About 3 days after mating, the female lays a mass of eggs (close to 200 in each group), frequently deposited on its old cocoon. The eggs are very small, spherical and surrounded by masses of web. In the field, the egg masses are covered completely with pili-form scales from the female abdomen. Adults live about 7 days when fed on absorbent cotton soaked in a solution of honey (30%) and water (see Table 1).

Larvae and pupae: The larvae, soon after hatching from the eggs, start feeding on foliage of the host plants reported. The larvae are covered with a dense coat of fine, long, reddish hairs (figured by Genty et al. 1978:

382), show slow movements and prefer the underside of the leaves they feed on. The larvae have urticating setae beneath the long hairs that cause skin irritation. Last instar larvae reach about 3.0 cm long. Mature larvae seek hidden pupation sites on walls or similar surfaces close to their feeding site. The pupae can be easily sexed by the clearly larger size of the females.

Natural enemies: Egg parasites, *Telenomus* sp. (Hymenoptera: Scelionidae), were observed emerging from an egg mass collected on *C. diffusus*. A fly (possibly Tachinidae) was seen after emerging from a dead larva. Signs and symptoms similar to those of affliction with a viral disease have also been noticed in larvae.

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