

# The *Urania* (Geometrioidea: Uraniidae: Uraniinae) of Jamaica, West Indies

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**Abstract:** Three species of Uraniinae have been documented from Jamaica. These include the endemic but now extinct *U. sloanus* (Cramer), one doubtful record of the Cuban endemic *U. boisduvalii* (Herrich-Schäffer), and the subspecies *U. fulgens poeyi* (Guérin) which is considered to be an occasional stray to Jamaica from Cuba. This article documents their occurrences on the island and provides a consolidation of the fragmentary information published on Uraniidae found in Jamaica so far. The last year in which living specimens of *Uranus sloanus* were seen has also been in doubt. The last record found of observations of living specimens was in 1897.

**Key words:** Cuba, extinct, Jamaica, migratory, *Omphalea*.

## INTRODUCTION

The family Uraniidae is divided into four subfamilies and 90 genera, and includes some 700 species worldwide (Minet & Scoble, 1999). Two subfamilies are represented in the Greater Antilles, the diurnal Uraniinae with two extant, and one now extinct, species, and the nocturnal Epipleminae. The type species of *Urania* was described as *Papilio leilus* by Linnaeus (1758), who believed that the insect was a butterfly, as did Fabricius (1807) when he described the genus *Urania*.

The genus *Urania* was included in the subfamily Uraniinae by Minet & Scoble (1999). The distribution and relationships among the Neotropical members of *Urania* have recently been resolved by molecular studies (Nazari *et al.*, 2016). The *Urania* are black moths marked both dorsally and ventrally with iridescent stripes of blue and green, with *U. sloanus* also displaying coppery red iridescence. Prum *et al.* (2006), investigating iridescence in *U. fulgens*, determined that the colors are structural, originating from refraction of light from “ribbon-like scales” on the wings. Although the patterns reflected on each wing of each species and subspecies are similar in overall appearance, each species displays minor variations in the distribution of markings present on each wing of any given specimen.

Four species and two subspecies of *Urania* have been recognized in the Neotropical region (Nazari *et al.*, 2016). *Urania leilus* (Linnaeus, 1758) is present in northern South America primarily east of the Andes, with specimens recorded from Trinidad and St. Vincent in the south eastern Caribbean. Subspecies *U. leilus braziliensis* (Swainson, 1833) is restricted to eastern Brazil. *Urania fulgens* (Walker, 1854) is found in northwestern South America, including Ecuador and Colombia west of the Andes, and north to southern Mexico, with strays

to the southern United States. Long isolation of ancestors of *U. fulgens* from Central America apparently resulted in endemic species, *U. boisduvalii* on Cuba, and *U. sloanus* on Jamaica (Nazari *et al.*, 2016). A second more recent invasion of *U. fulgens* to Cuba resulted in subspecies *U. fulgens poeyi* (Nazari *et al.*, 2016). *Urania boisduvalii* and *U. fulgens poeyi* have been recorded from Jamaica but neither have become permanent residents in the island.

Cramer (1779) correctly recognized *Urania* as a genus of day-flying moths when he described *Urania sloanus*, so named in recognition of Sir Hans Sloane who first illustrated this insect in 1725 nearly three hundred years ago. Only Gosse (1851, 1880, 1881) has provided detailed observations of adult and immature stages of *U. sloanus*. The present article reviews Gosse’s information and consolidates the fragmentary notes on the presence of *U. sloanus*, *U. boisduvalli* and *U. fulgens poeyi* in Jamaica since 1881.

## MATERIALS AND METHODS

*Urania* specimens were examined from Jamaica and elsewhere in the Neotropics. We examined 131 specimens of *U. leilus* from southern Brazil, north to Trinidad and St. Vincent in the eastern Caribbean, through western Brazil, to Peru, Ecuador, Bolivia, and southern Colombia. A total of 207 specimens of *U. fulgens* were examined from across the range of this species from northern Ecuador, northwestern Brazil, and Colombia west of the Andes, north to southern Mexico. We also examined 12 *U. boisduvalii* and five *U. fulgens poeyi* from Cuba, and 48 *U. sloanus*, six *U. fulgens poeyi* and one *U. boisduvalii* from Jamaica.

These investigations were made possible with the issuance of Permit 18/27 from the National Environment



**Figure 1.** *Urania sloanus*: ♂ dorsal (left), ♂ ventral (right). Right tail digitally restored. Photos courtesy CMNH.

Protection Agency, Kingston, which allowed for the collection and examination of species of Jamaican moths in the family Uraniidae. However, no members of the genus *Urania* were collected during this study. Collections of relevant Jamaican specimens and related species were examined at the American Museum of Natural History, New York (AMNH), the Carnegie Museum, Pittsburg (CMNH), The Natural History Museum, London (NHM, UK), the Life Sciences Department at University of the West Indies, Mona, and the Natural History Museum Jamaica, Institute of Jamaica, Kingston (NHMJ, IJ).

Pinned specimens were photographed using a Canon EOS 5DSR camera with Tamron 90 mm F/2.8 lens or Sony Cyber-shot 20.4 megapixels with 30X optical zoom.

#### Family Uraniidae Leach, 1815

Subfamily Uraniinae Leach, 1815, American Swallowtail Moths

Genus: *Urania* Fabricius, 1807

#### *Urania sloanus* (Cramer, 1779) TL: Jamaica

Forty-eight specimens of *U. sloanus* were examined: four males, four females from the AMNH; four males and females from the CMNH, and seventeen males and ten females in the collection in NHMJ, IJ. A previously undescribed blue color variant from the NHMJ, IJ collection is also described. We also examined photographs of three females and two male specimens in the collection of the Muséum national d'Histoire Naturelle, Paris.

Although *U. sloanus* is now extinct and information for this species is limited, some recorded behaviors appear similar to those of the extant *U. fulgens* of Central America. In addition, considerable pink suffusion, as found in *U. sloanus*, was found in just under 3% of the forty-nine Colombian specimens of *U. fulgens* examined.

#### Brief description of the adult

Male wingspans vary between 62 mm and 66 mm, with forewing lengths between 28 mm and 40 mm (n=24). Female wingspan varies from 64 mm to 76 mm, with forewing lengths between 28 mm and 58 mm (39.75) (n=17); the tail on hindwing varies between 11 and 16 mm in length in both sexes.

Apart from a somewhat enlarged abdomen and slightly more elongated wings in the female, there are no significant differences in appearances between the sexes. The outermost green stripe on the upper dorsal forewing, characteristic of *U. sloanus*, appears slightly bolder in the female than in the male. The wing markings are otherwise similar in both sexes.

**Female:** Upper forewing marked with four to five thin transverse green-gold stripes; fifth stripe often joined at posterior part of wing to a broad, almost straight bar which crosses wing beyond end of discal cell; anterior margin of this iridescent bar often bifid, with posterior end of bar meeting hind margin just basad of tornus close to vein  $Cu_1$ . This arrangement of stripes does not differ greatly from that of *U. fulgens*, but the stripes on that species are predominantly green and much narrower. There may occasionally be the trace of green scales forming a partial stripe between outer bar and wing apex.

Outer margin of upper hindwing elongated, marked with three indentations, each edged with off-white scales, with black 'dart-shaped' markings extending from these across the first third of wing. Surrounding these darts are semicontinuous transverse bands of iridescent scales. A blue patch present near the middle of the anterior margin, followed by a yellow patch of similar size. Remainder of outer wing flushed with pinkish-red iridescence, trending to blue along part of anal margin, and toward green at base of tail. All iridescent markings display some degree of black speckling. Tails mostly black, or with basal green iridescent patches, and tipped with off-white scales.

Antennae thin, not thickened toward end; palpi with



Figure 2. *Urania sloanus*: blue form, head and antennae missing. ♂ dorsal (left), ♂ ventral (right). Photos courtesy NHMJ, IJ.

reddish iridescent scales, meeting with a red iridescent transverse bar between antennae; thorax with median and lateral golden iridescent stripes with a discontinuous median stripe extending onto anterior segments of abdomen. Ventral thorax and abdomen with long, off-white scales except for terminal segment of abdomen which is gray-black.

Lower forewing black, suffused with pale blue-green stripes and flecked markings located as on dorsum but much broader; wing predominantly iridescent gold toward anterior part, fading to pale blue-green toward hind margin.

When compared, in *U. fulgens*, the ventral stripes of the forewing are narrower and iridescent green as on the dorsum.

**Male:** Blue form: Wingspan 65 mm; forewing length 36 mm. In the collection at the NHMJ, IJ is a male in which the iridescent stripes and markings both dorsally and ventrally are of the same pattern as in the female described above but all the iridescent stripes are violet-blue. Both the dorsum of the left forewing and hindwing show a sparse partial dusting of iridescent green over the blue markings, but the right side shows no evidence of green or any color other than blue. The head and antennae are missing. There is no collection data attached.

In *The Seymour Legacy* (Vane-Wright & Hughes, 2005) Plate 20 (#25), Fig. 2, there is a painting of an unidentified “butterfly or moth, the most likely provenance, Jamaica?” along with the comment “This is quite the most puzzling image in the entire Seymour *oeuvre*”. The forewing markings of this blue and black specimen clearly represent the ventral wing-markings of an Uraniidae. The left wing has a single outermost partial stripe, and the right wing has two outermost stripes that are perhaps better defined than is usual. The antennae are shown as being clubbed, but these may have been absent on the specimen being painted. The ventral hindwings are of a general uraniid shape complete with tails, but there is a pair of small, dull red tornal markings that are reminiscent of such markings on the dorsal hindwings of the Papilionidae butterfly *Protographium*

*marcellinus* (Doubleday, [1845]). However, the distribution of the blue markings on what would be the ventral hindwings in the painting match neither this species nor those of *U. sloanus*.

#### Immature stages

Larvae of the Uraniinae are believed to sequester toxic polyhydroxy alkaloids from their larval food plants which are species of *Omphalea* (Euphorbiaceae) (Lees & Smith, 1991). Analysis of *Omphalea* seed oil (Freise, 1935) determined the presence of terpenes and sesquiterpenes, which, after sequestration during the development of the immature stages, may confer some protection from predators for both the immature stages and adults.

The documented larval food plants of this species in Jamaica are *Omphalea diandra* L. (Adams, 1968 pers. comm.), and *O. triandra* L. (Euphorbiaceae). (Gosse, 1880). *Omphalea diandra*, is a “trailing and climbing shrub reaching heights of 15 m” (Adams, 1972), and this is also the primary larval foodplant for *U. fulgens* in Central America where this plant can climb to 30 m (Smith, 1973, pers. comm.). The former records for this plant in Jamaica are only from Portland Gap just south of the Portland-St. Thomas parish boundaries at an elevation of 1,795 m below Blue Mountain Peak with an elevation of 2,256 m. (Adams, 1968, pers. comm.)

Gosse (1851) noted that abdomens of female *U. sloanus* were “quite globose” and described the eggs as yellowish-white, slightly marked with numerous perpendicular ridges, flattened at the poles. Gosse estimated the life cycle to take approximately two months, although Smith (1983a) indicated the life cycle in *Urania fulgens* in Central America to be completed in approximately thirty days.

Smith (1992, 2005) noted that the related *U. fulgens* lays one or two eggs on a single young *Omphalea* leaf which the larvae strip, or adults may lay eggs in groups of up to 20 or more at once, each female being capable of laying as many

as 450 eggs during its life. Occasionally, however, females cluster on a single plant, laying up to 2,000 eggs in combined masses with the resulting adults migrating in large numbers (Smith, 2005). It may have been a mass laying of eggs before the commencement of a migratory phase within Jamaica that Townsend (1893) referred to, as reported by Mr. Capper, the owner of a small coffee plantation at Portland Gap, St. Thomas Parish. Capper had observed adults crowded on vines, presumed by Adams (1968, pers. comm.) to be *Omphalea diandra* in July and August of 1891.

In July 1880, as reported by Gosse (1880, 1881), the Reverend J. L. Mais found larvae of *U. sloanus* on *Omphalea triandra* L. (Euphorbiaceae) on the north coast at Bogue Bay near Ocho Rios in St. Ann Parish. Locally known as Pop Nut, this is an upright tree growing to some 15 m, which is found in mesic limestone forest from sea level to elevations of at least 610 m, with some trees growing on shale up to 1,220 m (Adams, 1972).

Gosse related how he found the adults in June in perfect wing condition as if just emerged from the pupae at Beeston Springs, elevation 283 m, southeast of Bluefields and speculated that these were progeny from those adults seen in April. Gosse stated the fully grown larva had a fulvous-red head. The remaining segments were black with a blue-black mid-dorsal line and white latero-dorsal and dorsolateral lines interrupted by white transverse intersegmental bands. The lateral line was described as thin, interrupted by the spiracles, and the ventrum was black edged with cream lines. The final stage larva reached a length of approximately 44 mm and, as in other *Urania* larvae (Lees & Smith, 1991), possessed segmental whorls of long black, white-tipped, fusiform setae.

The pupa was described as reddish-brown, with a bluntly rounded head and tapered abdomen attached by the cremaster to a silken pad. Although not mentioned by Gosse in his description of *U. sloanus*, *U. fulgens* pupates within a yellow silken mesh cocoon (Smith, 1983b).

### Adult behavior

While living at Bluefields House, Bluefields, Westmoreland Parish, at an elevation of approximately 77 m above sea level in southwestern Jamaica, Gosse (1851) described *U. sloanus* as “one of the most brilliantly lovely of animal forms”, entitling “this insect to take its place in the very foremost rank of the most lovely class of animated beings”. Gosse observed single specimens during the winter months but began seeing the insect in numbers in March, with groups of six or more feeding on the blossoms of several introduced avocado trees (*Persea americana* Mill.) (Lauraceae) at the top of Bluefields Mountain, elevation 780 m, soon after sunrise with others dashing between and over lofty trees. In the first week of April, they appeared “in scores” at lower elevations feeding on blossoms of avocado and mango trees (*Mangifera indica* L.) (Anacardiaceae) at Bluefields Great House. Gosse estimated that some specimens flew at heights of up to 150 m and mentioned their head-down pose when settled on leaves with wings open. When the temperature increased between 0800 h and 0900 h they disappeared, only to appear once more after afternoon rains to feed on the avocado flowers, with this behavior continuing for about two weeks.

### Distribution

Most examined specimens of *U. sloanus* have no collection data. One male specimen in the NHMJ, IJ is dated, “31<sup>st</sup> August 1885”, and another notes “St. Andrew [Parish], Newcastle, 6<sup>th</sup> July 1891”, while other labels, when present, indicate “Jamaica”. Scoble (1986, pers. comm.) notes one of thirty specimens of *U. sloanus* at the NHM has a label stating, “Road to Blue Mountain Peak”, and a second was collected at Bath, St. Thomas Parish in southeastern Jamaica.

Early accounts by Gosse (1851), Townsend (1893), Walter (1943), Lewis (1944), and Perkins (1945) also mention additional localities where the insect was observed, but this fast-flying species was undoubtedly present island-wide in those years when it was common. Studies of *U. fulgens* (Smith, 1983b) document periods when the insect was sedentary, followed by migratory phases with an approximately six to eight-year periodicity. Unfortunately, there are only sparse records from Jamaica extending from Sloane in 1725 to Fawcett in 1897 (Fawcett, 1898) which are insufficient to determine if such behavior also applied to *U. sloanus*. The insect appeared to be abundant between 1881 and 1885 in western Jamaica, and in the Blue Mountains of eastern Jamaica the insect was common in 1891, declining again by 1893 (Townsend, 1893). Townsend (1893) also noted that at Portland Gap the insect was known locally as the “Christmas Fly” because adults appeared during the Christmas season, appearing again between July and August suggesting a bivoltine life history (Fawcett & Rendle, 1926).

Another observation of what must have been *U. sloanus* appears in *Reminiscences of the Blue Mountains* written by Margaret Walter (1943). In her account, Walter recalled staying with the Cappers in a “four-roomed hut in the remoteness of Portland Gap”. Walter related, “Not far from the hut was a fine tree of the Solanum family” (*Solanum punctulatum* Dunal, Solanaceae) (Adams 1994, pers. comm.). “Once when we arrived from the plain we found it strung with beautiful swallowtail butterflies, hanging head downwards in all parts of the tree. The tree was covered in pale purple sweet-scented flowers and we supposed these beautiful creatures had been intoxicated and poisoned by their juice. We never saw these butterflies up there again”.

The head-down position is a favored pose of *Urania* and no Jamaican swallowtail butterflies exhibit the behaviors described. There is no indication of the month these sightings were made. The account was written in 1942 and published in January 1943 and Walker noted that this sighting was “some fifty years ago”, or possibly in 1893.

Another account in *Natural History Notes of the Institute of Jamaica* written by naturalist Lilly Perkins (1945) records that, in 1894 or 1895, a specimen of *U. sloanus* was collected at York Castle School on the hill east of the school buildings where *Eupatorium odoratum* L. (Asteraceae), was growing, and that the insect was common for the next few years. Other localities mentioned by Perkins (pers. comm. in Lewis, 1944) were Walton and Claremont, where the high-flying insects visited mango blossoms. Perkins also noted that early collectors referred to the insect as the “Jamaican Emperor” (Lewis, 1944).

Lees & Smith (1991) noted that the last documented living specimen of *Urania sloanus* was supposedly between 1894 and 1895. However, Fawcett (1898) documented

sightings of individuals in flight at Cinchona in 1897. This is the last reference to the existence of living specimens so far found. William Fawcett was Director of Public Gardens and Plantations between 1887 and 1908, including Cinchona Gardens, located west northwest of Portland Gap in St. Andrew Parish at elevations between 1,372 m and 1,676 m in the Blue Mountains. Domagala *et al.* (2015) note that some museum specimens have been found with labels dated years later, as also noted by Vinciguerra (2009), but there are no records from Jamaica that would indicate the insect was still present after 1897.

Fawcett, in *Flora of Jamaica* by Fawcett & Rendle (1926), noted that the insect nectared on the white flowers of *Miconia theaezans* (Bonpl.) (Melastomataceae) at Cinchona. The flowering periods of this plant between December and February and again between June and August happen to coincide with the two known flight periods for this insect in the Blue Mountains. Adams (1968, pers. comm.) speculated that the *O. diandra* vines at Portland Gap were cut down, noting that since 1926 there have been no records for the presence of this plant in Jamaica.

The clearing and fragmentation of the once contiguous mesic broadleaf forest across Jamaica for lumber, agriculture, and settlements by the Spanish, expanded by British settlement beginning in 1655 and especially up to the mid 1850s, also resulted in losses of *Omphalea triandra*, which is now restricted to scattered localities within the interior forests. The simultaneous loss of the larval food plant *O. diandra*, together with significant reduction of *O. triandra* in the late 1800s, presumably contributed to the extinction of this species (Turner, 1986). There is one unverified record of a stray *U. sloanus* collected in Cuba (Sagra, 1857).

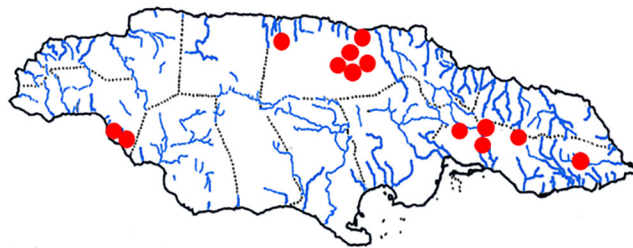


Figure 3. Historical distribution map of *Uranus sloanus*.

***Urania boisduvalii* (Guérin, 1829) TL: Cuba**

There is one specimen of this species reportedly from Jamaica in the NHM, UK. The specimen data label just states “*Urania boisduvalii* Jamaïque”, but without further proof of provenance (Lees, 1987, pers. comm.). This strong-flying species occurs across Cuba but appears to be most abundant in eastern Cuba, and it is not unreasonable to suppose this specimen could have been a stray visitor to the island. A male from the Institute of Jamaica collection collected at Sabanilla, Matanzas Province, Cuba, in November 1960 is illustrated in figure 4.

**Brief description of the adult**

Male wingspan 70 mm; forewing length 40 mm. Female wingspan 80 mm; forewing length 42 mm.

**Male:** wings and body black; forewing black with five bold transverse basal bands; fifth band sometimes joining slightly broader sixth band at hind margin. Three additional finer transverse bands distad of broadest band, with short green markings between each longer band along costal margin. Outer margin finely edged with off-white scales between major vein endings.



Figure 4. *Urania boisduvalii*. ♂ dorsal (left), ♂ ventral (right). Sabanilla, Matanzas Prov., Cuba. Photos courtesy NHMJ, IJ.



**Figure 5.** *Urania fulgens poeyi*: ♀ dorsal (left), ♀ ventral (right), Grange Hill, Westmoreland, Jamaica. 19 September, 1955, G. B. Whitlocke.

Dorsal hindwings with iridescent green markings positioned not greatly dissimilar to that of *U. fulgens* but with finer submarginal markings extending to base of 17 mm long tail, and with a broad green median longitudinal stripe. Hind margin marked with another less well-defined elongate stripe.

Head with an iridescent green transverse band between base of filiform antennae. Antennae slightly thickened before curved apical tip; thorax with a bold iridescent green-gold median and lateral iridescent stripes marked with blue scales on thorax, all extending to end of abdomen. Ventral head and thorax with long gray-black hair-like scales but anterior edges of all appendages edged with blue gold scaling and abdomen covered in short green-gold scales.

Ventral forewing with nine green transverse stripes of approximately equal width, the ninth bifid toward anterior margin. Distad of this, three narrow transverse stripes not fully crossing wing, alternating with three short marginal markings; green stripes toward base of wing suffused with iridescent blue.

Ventral hindwing with dorsal markings repeated but without bold median stripe. Basal and median area suffused with golden-green scales; more blue-green marginally.

**Female:** Dorsal markings essentially similar to those of male but transverse bars slightly bolder and all stripes suffused with golden-green iridescence. Abdomen larger with narrower mid-dorsal iridescent line.

#### **Distribution**

This Cuban endemic species is frequently encountered in eastern Cuba where it can be seen patrolling back and forth in a linear fashion over distances of approximately 700 m at a height of approximately 5 m in localities such as the Minas Amores Road near Baracoa in Guantanamo Province (Turner, pers. obs.) or near the coast at Sabanilla further west in Matanzas Province. The species is also found commonly in far western Cuba (Nuñez-Penichet *et al.*, 2019).

#### ***Urania fulgens poeyi* (Herrich-Schäffer, 1866)**

This insect was originally described from Cuba by Herrich-Schäffer (1866) (as the species *Cydimon poeyi*), but recent DNA studies of Caribbean *Urania* have determined that this taxon should be recognized as a subspecies of the Central American *U. fulgens* (Nazari *et al.*, 2016). In Cuba, *U. fulgens poeyi* is found primarily in eastern localities where the immature stages have been observed on *Omphalea triandra* L. *Urania fulgens* is well-documented as a strongly migratory species in certain years (Smith, 1972), so it is no surprise to find strays of the Cuban subspecies at intervals in Jamaica. This may also be the subspecies documented from Okaloosa County, Florida by a single worn individual reported by V. J. Farkas in September 1973 (Emmel & Farkas, 1974), and on October 19, 2011, in both South Pasadena, Pinellas County, and Cedar Key, Levy County, Florida, as reported by John Calhoun and Miklos Lorant at Texas Entomology <https://texasento.net/Urania.html> (Quinn, 2017, compiler).

#### **Brief description of the adult**

Male average wingspan 71 mm; forewing length 37.5 mm (n=2). Female larger, with a wingspan of 80 mm; forewing length 43 mm (n=1). Most Jamaican specimens exhibit extensive hindwing damage. The sexes are similar in appearance.

**Male:** Upper forewing black, elongate, with a basal green iridescent marking followed by four additional narrow green transverse stripes basad of a bolder iridescent green bar that crosses wing; somewhat variable from wing to wing on same specimen; bar may or may not be divided at anterior wing margin.

Dorsal hindwing, black. Two narrow green iridescent parallel lines extend from near wing-base toward tail terminating in a series of two irregular transverse iridescent green bars above tail. Outer submargin with an irregular series of five short, bold

yellowish-green, iridescent markings; last marking terminating at base of tail; anal margin with two additional series of blue-green iridescent scales above tail; tail black, tapered tail 18-20 mm in length, with or without short iridescent green basal bars. Outer margin with three well defined indentations above tail, all edged with off-white scales except where black vein endings reach outer margin.

Dorsal thorax and abdomen, black, with fine longitudinal median and lateral iridescent green to rosaceous longitudinal stripes, though muted in female. Ventrally, dull gray-brown, but with bright turquoise color laterally on palps, base of head, on dorsal edges of legs and with segmental banding ventrally on abdomen.

Ventral forewing black with seven to eight fine iridescent green transverse lines followed by a bold broad iridescent bar which is usually but not always bifid where it joins costa. Lower hindwing black with six fine iridescent basal lines curving across wing. Distad and ventrad of these basal lines are a series of iridescent rectangular markings extending from outer to inner wing margins to base of the black tail. Outer margin accentuated by four indentations edged with off-white scales which are more visible than those of dorsum.

The green iridescent dorsal markings of both forewing and hindwing in *U. fulgens poeyi* are similar in distribution to those found on *U. fulgens* and show similar variation in the arrangement of the boldest green forewing bar. Ventrally, the iridescent blue markings of the hindwing appear to be slightly finer on *U. fulgens poeyi*. The hindwing tails in each taxon are also similar and are approximately 8 mm in length. In both taxa there is a transverse iridescent bar on the head between the filiform antennae.

**Female:** Wing markings similar to those of the male but females of both *U. fulgens* and *U. fulgens poeyi* with an additional faint partial line of green scales distad of boldest green bar; outer margin finely edged with off white scales, divided by black vein endings.

Too few Jamaican specimens are available to make statistical analyses possible, but three male *U. fulgens* from Colombia have an average wingspan of 54.3 mm, and a female a wingspan of 62 mm, while two male *U. fulgens poeyi* mm from Jamaica had an average wingspan of 71 mm and that of a female 80 mm, suggesting the *U. fulgens poeyi* might prove to be a slightly larger insect.

### Distribution

There are six records of this subspecies in Jamaica; the first, a male, on 17 October 1944 from southwestern Jamaica at Malvern, St. Elizabeth Parish, was fifty-seven years after the last recorded sighting of *U. sloanus*. This was followed by a second male specimen collected in Kingston after being knocked down by a vehicle in 1950 by Lord R. Graham and given to the Natural History Museum of the Institute of Jamaica. The third, a female specimen, was collected while nectaring at *Lantana camara* L. (Verbenaceae), by G. B. Whitelocke at Grange Hill, Westmoreland Parish, in southwestern Jamaica. Another male specimen was collected, in Kingston after being struck by a vehicle, by D. Reynolds in 1987. In July 1995 two specimens presumed to be *U. fulgens poeyi* were observed

flying together high along the edge of forest at Pantrepant (M. Lockwood pers. obs.) on the northern side of the Cockpit Country, Trelawny Parish. The Cockpit Country is one of the areas where *Omphalea triandra* still occurs, but at present time there is no evidence suggesting that this subspecies is a permanent resident in Jamaica.

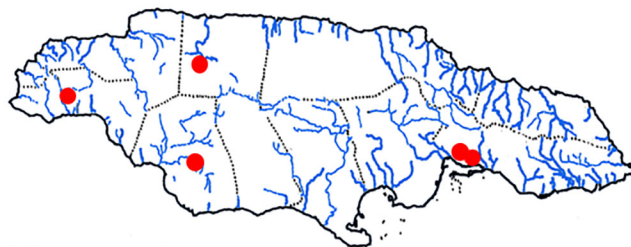


Figure 6. Distribution map of *Urania fulgens poeyi*.

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