

THE LARGE MOTHS OF GUANA ISLAND, BRITISH VIRGIN ISLANDS: A SURVEY OF EFFICIENT COLONIZERS (SPHINGIDAE, NOTODONTIDAE, NOCTUIDAE, ARCTIIDAE, GEOMETRIDAE, HYBLAEIDAE, COSSIDAE)

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*"Good boys go to heaven, but the bad boys go everywhere"**

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ABSTRACT. An illustrated and annotated list of large moths of Guana, a 297 ha island located on the north side of the Caribbean island of Tortola, British Virgin Islands, is presented. Of the 148 species listed, 98 are distributed throughout the neotropics, 41 throughout the Antilles, with some ranging into Florida, and 9 endemic to the Puerto Rican Bank, two of them described here: *Catabenoides lazelli*, **new species**, and *Perigea gloria*, **new species**. The following new synonyms and new combinations are recognized: *Leucania solita* Walker, **new synonym** [= *L. humidicola* Guenée], *Kakopoda cincta* Smith, **new synonym** [= *K. progenies* (Guenée)], *Drepanopalpia polycyama* Hampson, **new synonym** [= *D. lunifera* (Butler)], **new combination**, *Sphacelodes fusilineatus* Walker, **revised status**, *Idaea fernaria* (Schaus), **new combination**, *Ptychopoda curtaria* Warren, **new synonym** [= *Idaea minuta* (Schaus)]. *Pterocypha defensata* Walker, **revised status**, is recognized as the senior synonym of *P. floridata* (Walker), **new synonym**, reversing a recently published synonymy. A new genus, *Catabenoides* Poole, **new genus**, type-species: *Laphygma vitrina* Walker, is described in an appendix, including *C. divisa* (Herrich-Schäffer), **new combination**, *C. seorsa* (Todd), **new combination**, and *C. terens* (Walker), **new combination**, all by Robert W. Poole. The palatability to birds of two species, *Diphthera festiva* and *Calidota strigosa*, was observed and the species were shown to be distasteful.

Additional key words: Caribbean, West Indies, biogeography, taxonomy, palatability.

Guana is a small island on the north side of Tortola in the British Virgin Islands (18°28'N, 64°35'W) (Fig. 1). While it is small, only 297 ha, and the maximum elevation is 266 m, it supports a relatively rich vegetation and has sustained less damage by feral animals and humans than have many adjacent islands (Lazell 1996). It has most of the floristic associations of the larger Virgin Islands, with the notable exception of the "aridulate rain forest" of Tortola (D'Arcy 1967). Despite its small size, Guana has a diverse insect fauna (Davies & Smith 1997). For example, Guana has 31 species of butterflies (Becker & Miller 1992), compared to the larger islands of Anegada (3872 ha) (Smith et al. 1991) with 24 species and Tortola (5444 ha) with 31 species, and St. Thomas (7660 ha) with 32 species (Miller 1994). Alminas et al. (1994) review the geographical setting of the Virgin Islands.

This is the first survey of the moth fauna of this island. John F. G. Clarke was on Guana briefly in 1956 and 1958 (see Schmitt 1959), but was unable to collect at lights there. Most of the species reported herein are known from Puerto Rico (e.g., Forbes 1930, 1931,

Schaus 1940, Wolcott 1951), but most have not been recorded from the British Virgin Islands due to lack of previous sampling. The faunal similarity to Puerto Rico is expected, given that the principal islands of the Virgin Islands (except Saint Croix) lost their connection with each other and with Puerto Rico only about 8000 to 10,000 years ago, due to eustatic rise in sea level (Heatwole et al. 1981). Only scattered records exist in the literature for moths of the Virgin Islands, with two of the longest lists being Beatty (1948) for St. Croix and Greenwood and Greenwood (1971) for Peter Island.

We are treating the Lepidoptera of Guana Island in parts. Becker and Miller (1992) reported 31 species of butterflies. The present paper reports 148 species of large moths (Macrolepidoptera, including the unrelated Cossidae and Hyblaeidae for convenience), represented by 1390 specimens. The manuscript was prepared using the classification of Noctuidae by Poole (1989), before extensive recent changes in higher classification of Lepidoptera (Kristensen 1998, Holloway et al. 2001). Future papers will treat Pyraloidea and Microlepidoptera.

The moth fauna of Guana is composed primarily of species with wide distributions in the New World tropics (Table 1). Of the 148 species listed, 50 are endemic to the Caribbean Islands, many of them reaching the

*We often pejoratively regard widespread species as "weed species" or "pests". Parodying the citation above: "Bad" species go everywhere, "good" species [may] go to Heaven [extinct]. But is it fair to consider them bad simply because they are able to get everywhere? Perhaps "efficient colonizers" is a better term?

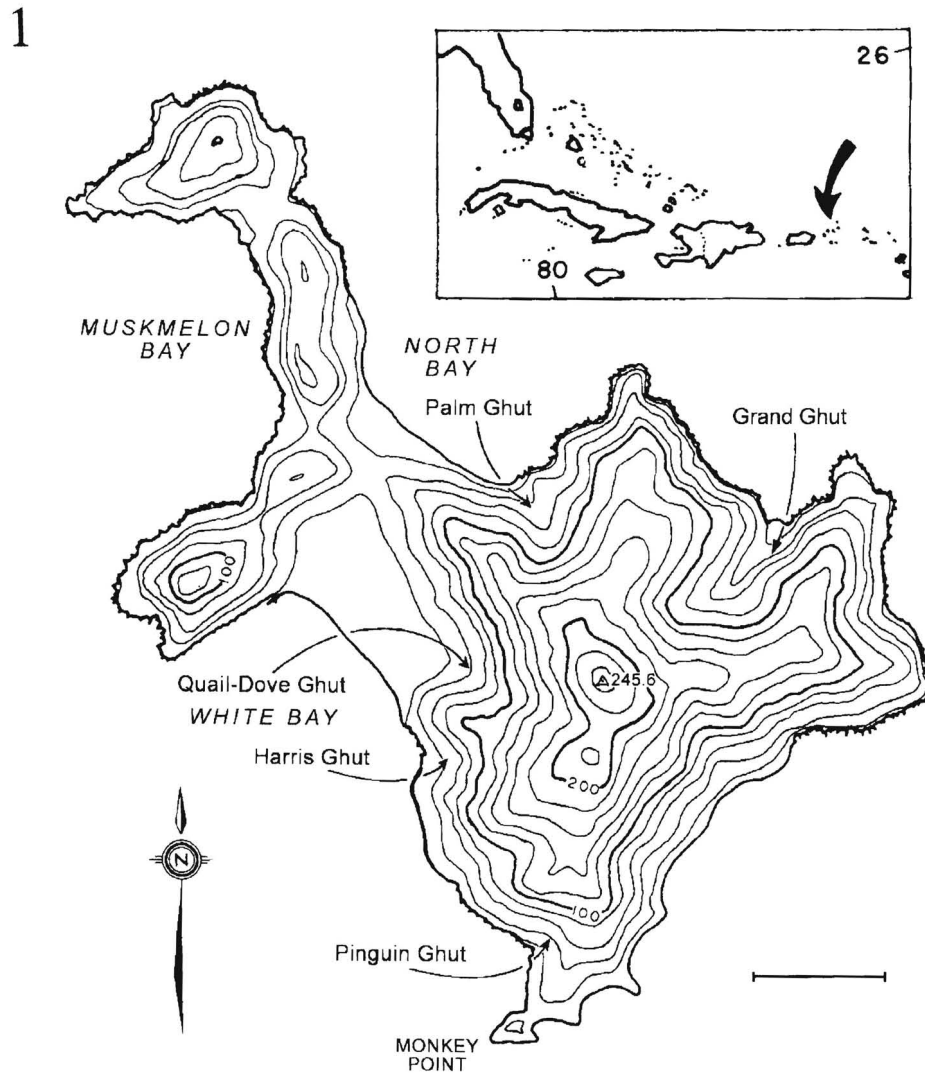


FIG. 1. Map of Guana Island. Contours are 20 m. Bar, bottom right, is 400 m. Inset shows the position of the Virgin Islands in the Antilles.

Florida Peninsula, and only nine apparently are restricted to the Puerto Rican Bank. These proportions, however, are not the same for the different families. The highest degree of endemism occurs in the Geometridae and Arctiidae, whereas the lowest occurs in the Sphingidae. This is presumably because of the powerful flying capacity of sphingids, while geometrids and arctiids are clumsy flyers.

Holloway and Nielsen (1998, following Ferguson et al. 1991) presented a chart of 12 moth genera that are widely recorded from remote islands worldwide. Of these, nine genera (including 20 species) are present on Guana (counting *Leucania* as *Mythimna*). It is likely that the remaining three genera, especially *Agrotis*, may be found on Guana in the future. Many of the species whose ranges include the southern United

States (especially Sphingidae) also occur as vagrants in the Northeast United States and into Canada (e.g., Forbes 1954, 1960). Species recorded from the Galapagos Islands by Hayes (1975) are noted as indication of their dispersal ability (note that none of the Geometridae recorded from Galapagos are also known from Guana).

MATERIALS AND METHODS

The material upon which this list is based was collected in July 1984 and 1985 (by S. E. Miller & P. M. Miller), July 1986 (S. E. Miller & M. G. Pogue), July 1987 (S. E. Miller & V. O. Becker), July 1988 (S. E. Miller & C. O'Connell), October 1989 (V. O. Becker), and October–November 1990 (S. E. Miller & T. M. Kuklenski). Collections from 1984–1986 are deposited

TABLE 1. Geographic range of the species of moths collected at Guana Island.

Family	Number of species			Total
	Neotropical*	Antilles	Puerto Rican Bank	
Sphingidae	20	2	0	22
Notodontidae	1	0	0	1
Noctuidae	63	16	3	82
Arctiidae	6	5	4	15
Geometridae	6	18	2	26
Hyblaeidae	1	0	0	1
Cossidae	1	0	0	1
Total	98	41	9	148

* Includes Cosmopolitan and Pantropical species.

at the National Museum of Natural History (USNM), Washington, those of 1987–1990 are split between first author (VOB), Bishop Museum, Hawaii (BPBM), and USNM. The largest collections were made by both authors 9–23 July 1987, with over 2200 specimens representing about 300 morphospecies, and by the first author in October 1989, with over 2000 specimens representing over 350 morphospecies.

The list of species by family collected during the 1989 trip (Table 2) gives an impression of the overall fauna, especially the diversity of Microlepidoptera, still under study. Of the 359 species recorded, 243 species (two thirds) are Microlepidoptera and pyraloids, and 163 (nearly one half) are pyraloids and gelechioids.

The number of specimens listed in this work under each species does not reflect relative abundance, as our objective was only to list the species occurring on the island. Therefore, in the case of species that are common in other parts of the neotropics only one or a few specimens were collected to voucher the record, independent of their abundance. In contrast, in the case of endemic or rare species, usually all specimens were caught.

The results obtained by the first author during the 1989 trip were a surprise, as it was made 20–40 days after Hurricane Hugo had devastated the island on 18 September. The damage was still evident: all buildings without roofs and without most of their doors and windows, and fallen trees and torn branches scattered all over the island. According to people who were on the island the day Hugo hit, not a single leaf remained on the trees. At the time of arrival (9 October) the island was completely green again. That same night the collecting was fantastic, as were most nights during the next 20 days. Not only the quantity, but also the quality of the material was impressive. It seemed that all specimens had emerged that day. Certainly all caterpillars that had reached development had to pupate

TABLE 2. Moth species collected on Guana Island between 10 and 20 October 1989.

Family	Number of species
Sphingidae	10
Notodontidae	1
Noctuidae	69
Arctiidae	12
Geometridae	24
Hyblaeidae	1
Crambidae	51
Pyralidae	36
Pterophoridae	4
Oecophoridae	2
Blastobasidae	13
Gelechiidae	45
Scythrididae	1
Cosmopterigidae	15
Psychidae	1
Tineidae	35
Gracillariidae	13
Yponomeutidae	1
Argyresthiidae	1
Heliodinidae	2
Choreutidae	1
Cossidae	1
Tortricidae	19
Opostegidae	1
Total	359

immediately after the hurricane, and they were all emerging together. Leaf mines were also abundant. As these tiny species usually have shorter life cycles, they had time to emerge and lay eggs in the 20 days that preceded the field work. Torres (1992) documented the impact of Hurricane Hugo on Lepidoptera populations on Puerto Rico.

A synoptic collection, containing at least one specimen representing each form, was taken to the Smithsonian Institution (USNM), Cornell University (CU), and most importantly, to the Natural History Museum (BMNH), London, by the first author. The list below is a result of the identifications made by comparing this synoptic collection with identified material, especially type specimens (including important voucher specimens and types from Forbes 1930, 1931, Schaus 1940). The first author has compiled a synonymic list of Antillean Lepidoptera (Becker in prep.), which has provided further taxonomic background.

This report is aimed not only at lepidopterists, but also at biologists and students interested in the fauna of the Virgin Islands. For this reason we give a brief synopsis of each species to provide a context and to suggest what kind of observations should be undertaken. Information on each species is provided under the following headings: ID: Diagnostic characters allowing identification of the species in the context of

the other species known from Guana Island; DIST: General distribution of the species, as represented in the literature and VOB and USNM collections; GUANA: The Guana Island specimens seen by us in preparing the manuscript (see the introduction for the dates sampled each year); BIO: Known host records, sometimes including notes on immature stages; COM: Any other comments.

SPECIES ACCOUNTS

SPHINGIDAE

Eighty five species of sphingids have been recorded from the Antilles (Becker in prep.), 22 (25%) of them were collected by us in Guana. Color illustrations of adults can be found in Hodges (1971) and D'Abbrera (1986); color illustrations of larvae can be found in Moss (1912, 1920).

Sphinginae

Agrius cingulatus (Fabricius, 1775)

(Sweetpotato hornworm, Pink spotted hawk moth)

ID: Separated from other hawk moths by the pink dots on the abdomen.

DIST: United States south to Argentina, including Galapagos.

GUANA: 1 specimen, 1989.

BIO: The variable larvae (green to dark brown) feed on various plants belonging to Convolvulaceae, including sweet potato.

Cocytius antaeus (Drury, 1773)
(Giant sphinx)

ID: Distinguished from other sphingids on the island by the dark green wings and three pairs of yellow dots on the abdomen.

DIST: Southern United States to Argentina; not in Galapagos.

GUANA: 1 specimen, 1989.

BIO: Green larvae feed on various *Annona* species (Annonaceae) such as custard apple.

Manduca sexta (Linnaeus, 1763)
(Tobacco hornworm, Carolina sphinx)

ID: Distinguished from other sphingids on the island by the gray wings and six pairs of yellow dots on the abdomen.

DIST: Widespread in the New World, including Galapagos.

GUANA: 5 specimens, 1984, 1988, 1989.

BIO: Pest of cultivated solanaceous plants, such as tobacco, tomato, potato, etc. Mature larvae are green-

yellow with seven pairs of white lateral bands, and red anal horn.

Manduca rustica (Fabricius, 1775)
(Rustic sphinx)

ID: Distinguished from other sphinx moths on the island by the dark grayish-brown forewing with transverse grayish-white waving bands, and three pairs of yellow dots on the abdomen.

DIST: Widespread New World species, present in Galapagos.

GUANA: 2 specimens, 1984, 1989.

BIO: Larva is greenish-gray, distinguished by its small white nodules on the thoracic segments, mainly on dorsum. They feed on various species of Bignoniaceae, Verbenaceae and Boraginaceae (Hodges 1971).

Manduca brontes (Drury, 1773)

ID: Distinguished from other species in the genus occurring on the island by the absence of yellow dots on the abdomen.

DIST: Antillean species occurring northward to Central Florida.

GUANA: 1 specimen, 1989.

BIO: The larva is similar to that of the tobacco hornworm but feeds on *Tecoma* (Bignoniaceae) (Hodges 1971).

Macroglossinae

Pseudosphinx tetrio (Linnaeus, 1771)
(Frangipani hornworm)

ID: The largest sphinx on the island; pale gray with irregular darker markings.

DIST: United States throughout the Antilles to Argentina.

GUANA: 7 specimens, 1988, 1990.

BIO: The conspicuous bright caterpillars—banded black and yellow with reddish brown head and orange legs—are frequently seen defoliating frangipani (*Plumeria* spp., Apocynaceae) on the island.

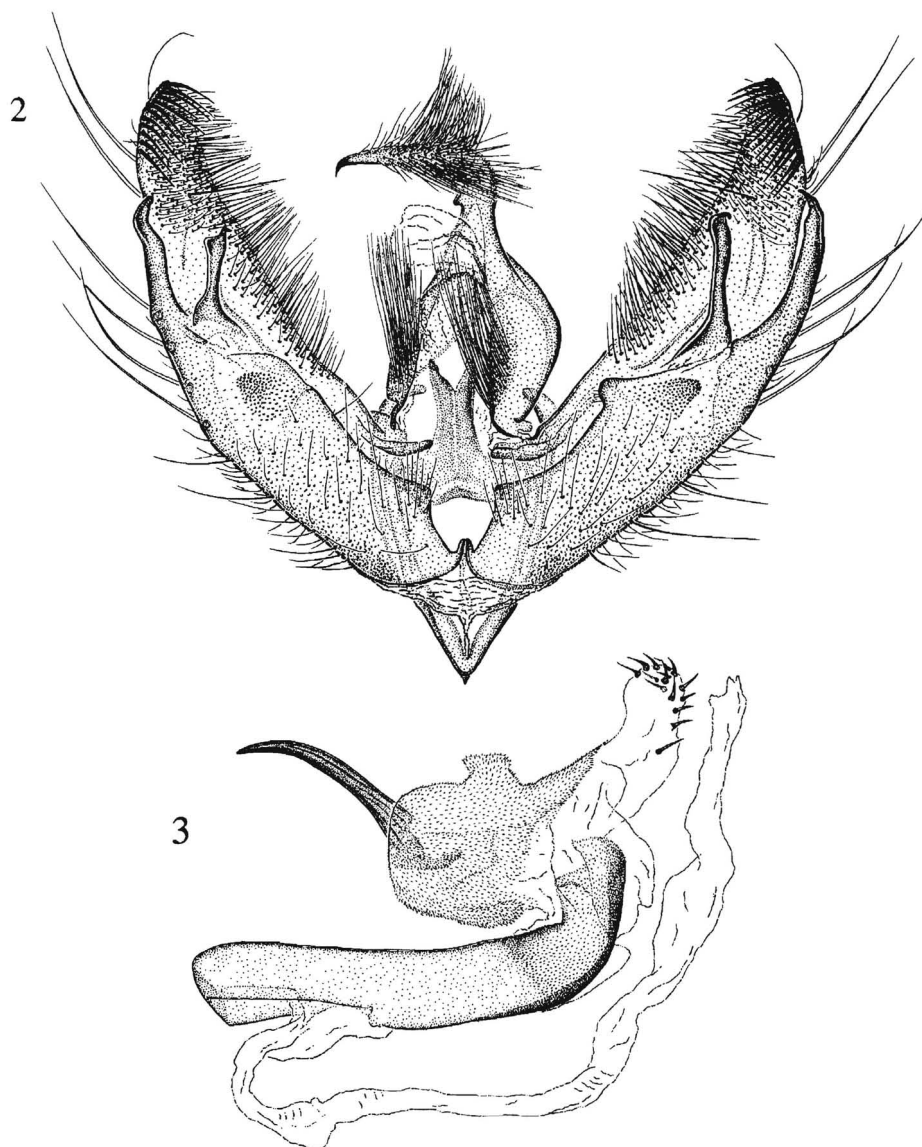
Erinnyis alope (Drury, 1773)
(Papaya hornworm)

ID: Distinguished from other sphingids on the island by the combination of yellow basal half of hindwing and alternate pairs of light gray and black dots on the abdomen.

DIST: Widespread in the New World, including the Galapagos.

GUANA: 1 specimen, 1989.

BIO: Larvae on a variety of plants with milky sap, such as papaya (*Carica papaya* L., Caricaceae), *Jatropha* (Euphorbiaceae), and *Alamanda* (Apocynaceae).



FIGS. 2-3. Genitalia of *Catabenoides terminellus*. 2, male, ventral view, aedeagus removed; 3, aedeagus, lateral view.

Erinnyis ello (Linnaeus, 1758)
(Cassava hornworm)

ID: Sexually dimorphic. Male forewing dark gray with a blackish irregular band along the wing from near base to apex. Female forewing light gray with almost no markings. Abdomen with pairs of alternate light gray and black dots dorsally.

DIST: The most common species of the genus in tropical America; also in Galapagos.

GUANA: 5 specimens, 1984, 1990.

BIO: Larvae varying in color from yellowish to green and to brownish have been serious pests of cassava (*Manihot*) in tropical America; feeds on various Euphorbiaceae.

Erinnyis crameri (Schaus, 1898)

ID: Forewing more brownish than those of *E. ello*; basal area reddish brown and abdomen with indistinct markings.

DIST: Southern United States, through the Caribbean south to Brazil.

GUANA: 1 specimen, 1989.

BIO: Grayish brown larva, figured by Moss (1920: pl. 7, figs. 3a, b), has been reared on various members of the Apocynaceae (Hodges 1971).

Erinnyis domingonis (Butler, 1875)

ID: Same size as *E. obscura* (see below) but forewing mostly dark gray.

DIST: Same as *E. obscura*, except for Galapagos.

GUANA: 2 specimens, 1987.

BIO: Unknown.

COM: It is very likely that *E. obscura* and *E. domingonis* are only forms of the same species (Hodges 1971:102, Kitching and Cadiou 2000: note 162). This could be verified by rearing.

Erinnyis obscura (Fabricius, 1775)

ID: Similar to *E. ello*, which is also dimorphic, but easily distinguished by its smaller size and absence of dots on abdomen.

DIST: Southern United States throughout the Caribbean south to Brazil, including Galapagos.

GUANA: 4 specimens, 1984, 1987.

BIO: The pale yellowish or pale green larvae have been reared on various milk plants such as *Philibertia* and *Cynanchum* (Asclepiadaceae).

Pachylia ficus (Linnaeus, 1758)
(Large fig hornworm)

ID: Large, dull brown with stout body, quite distinct from other sphingids on the island. Easily recognized by the pale, inverted trapezoidal mark on costa near apex.

DIST: Widespread throughout the New World, but absent from Galapagos.

GUANA: 1 specimen, 1987.

BIO: Moss (1912) figured in color the several forms of the caterpillars, which feed on various species of *Ficus* (Moraceae). Some are green, banded yellow dorsally, while the others are gray brown ventrally and orange, banded black, dorsally.

Callionima falcifera (Gehlen, 1943)

ID: Recognized by the orange brown color and the metallic silvery mark near center of forewing.

DIST: Southern United States to Argentina.

GUANA: 4 specimens, 1987, 1990.

BIO: Unknown. Other species in the genus have been reared on some apocynaceous plants (Hodges 1971).

COM: Similar to, and frequently confused with, *C. parce* (Fabricius) (Kitching and Cadiou 2000: note 91). The specimen illustrated as *C. parce* in Hodges (1971: pl. 10, fig. 8) represents this species.

Perigonia lusca (Fabricius, 1777)

ID: Medium size dull brown sphinx, recognized by the bright orange area along the middle of hindwing.

DIST: Southern Florida to Argentina.

GUANA: 27 specimens, 1987, 1988, 1989, 1990.

BIO: Bluish green larva, figured in color by Moss

(1912), was reared by him on coffee (Rubiaceae).

Recorded from *Gonzalagunia spicata* (Lam.) Maza and other Rubiaceae in Puerto Rico by Torres (1992).

COM: Kitching and Cadiou (2000: note 448) review names associated with *P. lusca*.

Enyo lugubris (Linnaeus, 1771)

ID: Medium size, dark brown; distinguished from other hawk moths on the island by the dentate borders of both wings.

DIST: Southern United States, throughout the Antilles, south to Uruguay and Argentina, including Galapagos.

GUANA: 3 specimens, 1987, 1989.

BIO: Larvae on *Ampelopsis* spp., *Cissus* spp., and *Vitis* spp. (Vitaceae) (Hodges 1971).

Aellopos tantalus (Linnaeus, 1758)

ID: Small, dark gray, diurnal, sphinx moth distinguished by the conspicuous white bar across base of abdomen.

DIST: New York south to Argentina.

GUANA: One specimen captured in a Malaise trap, 1990.

BIO: Larvae on *Ixora venulosa* Benth. (Rubiaceae) (Biezanko et al. 1949).

Eumorpha vitis (Linnaeus, 1758)
(Vine sphinx)

ID: Forewing dark green crossed with grayish bands and dashes, and hindwing with anal margin pink. A beautiful and showy species.

DIST: United States throughout the Caribbean to Argentina (not in Galapagos).

GUANA: 2 specimens, 1987, 1990.

BIO: The larvae vary in color; some are dark pink, others are pale green or yellow green (Moss 1912). They feed on grape leaves (*Vitis* spp.).

Cauthetia noctuiformis (Walker, 1856)

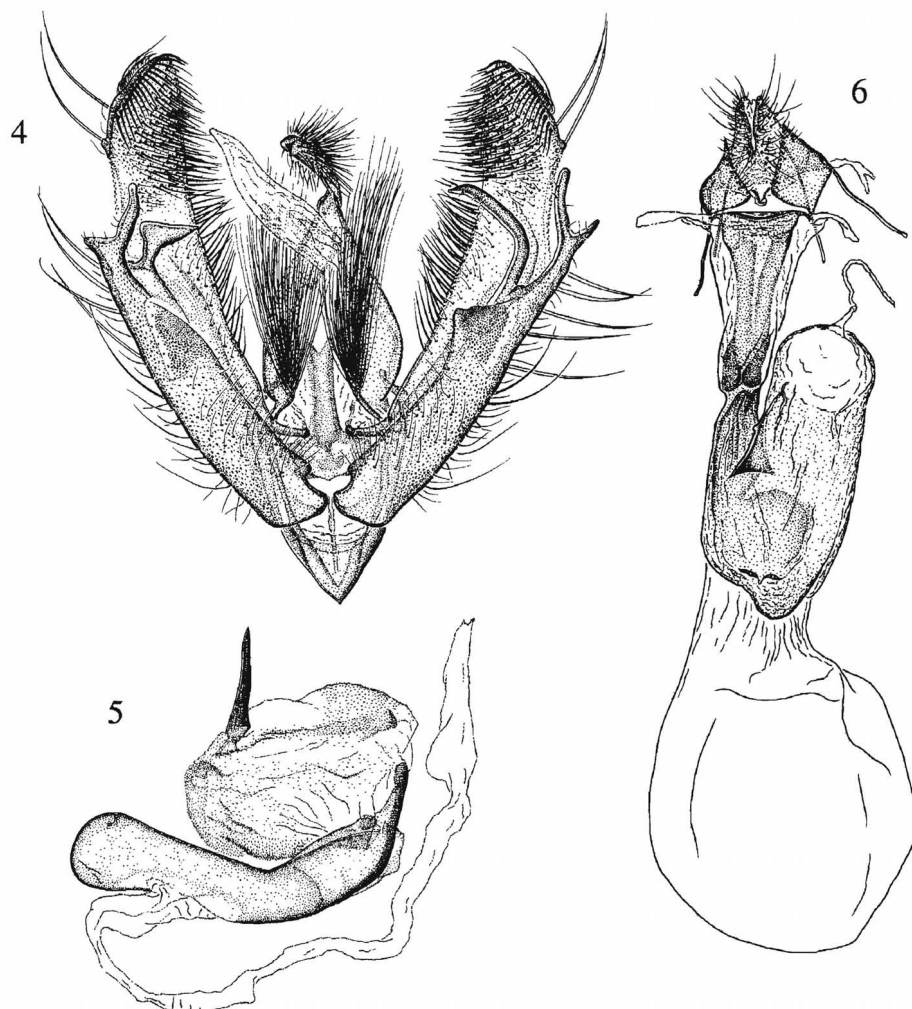
ID: The smallest sphingid in the New World, with a wing span slightly over 3 cm. Gray, with basal half of hindwing orange yellow.

DIST: Caribbean.

GUANA: 166 specimens, 1984, 1986, 1987, 1988, 1989, 1990.

BIO: Unknown, but larvae of *C. grotei* have been reared on *Chiococca alba* (L.) Hitch. (Rubiaceae) (Hodges 1971).

COM: Kitching and Cadiou (2000: note 96) discuss the taxonomy and place the Guana population in the subspecies *C. noctuiformis bredini* Cary, 1970.



FIGS. 4-6. Genitalia of *Catabenoides lazelli*, new species. 4, male, ventral view, aedeagus removed; 5, aedeagus, lateral view; 6, female, ventral view.

Xylophanes chiron (Drury, 1770)

ID: Green with an oblique grayish brown irregular band on the forewing looking like a leaf with dead areas.

DIST: Mexico, throughout the Antilles to Argentina.

GUANA: 1 specimen, 1987.

BIO: The showy caterpillar, illustrated in color by Moss (1920: pl. 8, figs. 6a-f), was reared by him on *Palicourea*, *Psychotria*, and *Spermacoce* (Rubiaceae). They are glossy green, bearing pairs of red or white red-ringed eye spots on the first two abdominal segments.

Xylophanes pluto (Fabricius, 1777)

ID: Green with irregular transverse light and dark bands. Recognizable by the wide orange band on the hindwing.

DIST: Southern United States to Brazil.

GUANA: 8 specimens, 1987, 1988, 1989, 1990.

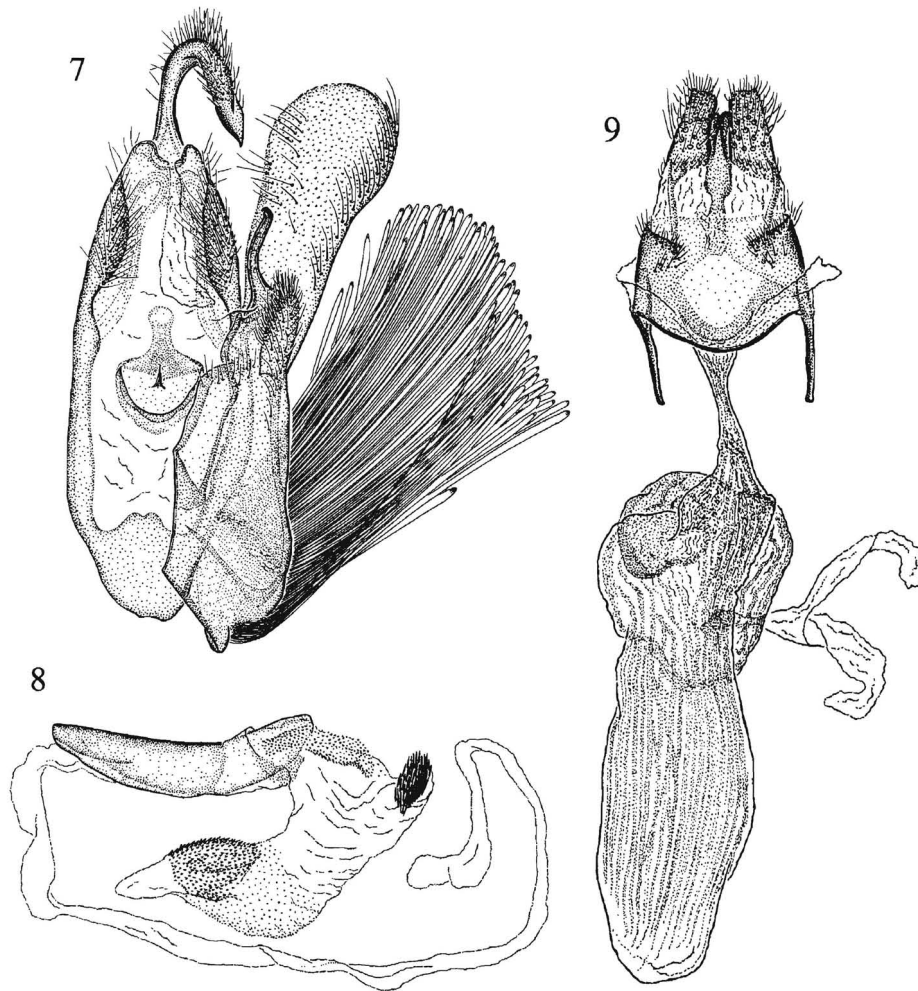
BIO: Torres (2000) described larvae from Puerto Rico, reared from *Hamelia patens* Jacq. (Rubiaceae). Gundlach (1881), mentioned by Hodges (1971), also described the larvae, which are of two color forms: one is basically green, the other is black, dark violet and red. Gundlach (1881) recorded the hosts as *Chiococca* (Rubiaceae) and *Erythroxylum* (Erythroxylaceae).

Xylophanes tersa (Linnaeus, 1771)

ID: Distinguished from its congeners on the island by the pale greenish gray forewing with several ill-defined, nearly parallel, longitudinal lines, running from base to apex; hindwing black with pale yellow marks in the vein interspaces parallel to the external margin.

DIST: Ontario, across the Antilles down to Argentina, including Galapagos.

GUANA: 4 specimens, 1986, 1987, 1989.



FIGS. 7-9. Genitalia of *Perigea gloria*, new species. 7, male genitalia, ventral view, aedeagus removed; 8, aedeagus, lateral view; 9, female genitalia, ventral view.

BIO: The larvae, beautifully illustrated by Moss (1912: pl. 14, figs. n-q), are yellowish brown with a pair of eye spots laterally on abdominal segments 1-7. The larvae feed on *Psychotria berteriana* DC, *Borreria verticillata* (L.) Meyer and *Diodia sarmentosa* Sw. (Rubiaceae) in Puerto Rico (Torres 1992).

Hyles lineata (Fabricius, 1775)
(White-lined sphinx)

ID: Resembles *E. vitis*, but is distinguished by its smaller size, shorter, clubbed antennae, and single wide fascia running from near base of dorsum to apex of forewing, crossed by whitish lines following the veins.

DIST: This powerful flyer, almost diurnal, has reached all continents, as well as remote islands such as Galapagos and Hawaii.

GUANA: 1 specimen, 1988.

BIO: Polyphagous. Most commonly used plants are

species of *Portulaca* (Portulacaceae), but includes others such as *Fuchsia* (Onagraceae), *Boerhavia* and *Mirabilis* (Nyctaginaceae), *Xanthium* (Asteraceae), and others. Larvae are highly variable in coloration and somewhat in maculation. Some specimens basically are black with a pattern of yellow; others are mainly yellow with some black pattern (Hodges 1971).

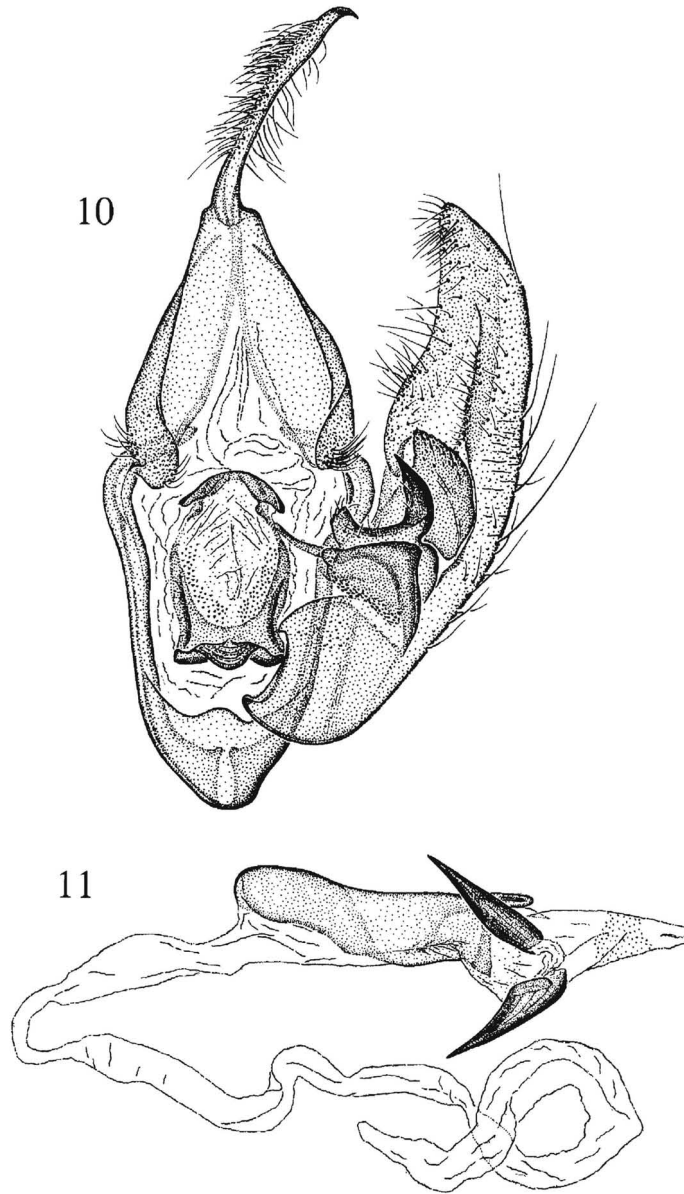
NOTODONTIDAE

Nystalea nyseus (Cramer, 1775)
(Fig. 15)

ID: Narrow winged, light gray, mottled with dark brown and black scales; recognized by the long scales on the base of antennae that forms a crest on top of the head when resting.

DIST: Mexico, throughout the Caribbean south to Brazil.

GUANA: 3 specimens, 1989.



FIGS. 10, 11. Male genitalia of *Anateinoma affabilis*. 10, ventral view, left valva and aedeagus removed; 11, aedeagus, lateral view.

BIO: Larvae feed on various Myrtaceae especially on species of *Psidium* (Todd 1973:271).

COM: This is the only notodontid present on the island; less than 30 species have been recorded from the Antilles (Becker in prep.). Notodontidae typically occur in moister forests.

NOCTUIDAE

Heliothinae

Heliothis subflexa (Guenée, 1852)
(Fig. 16)

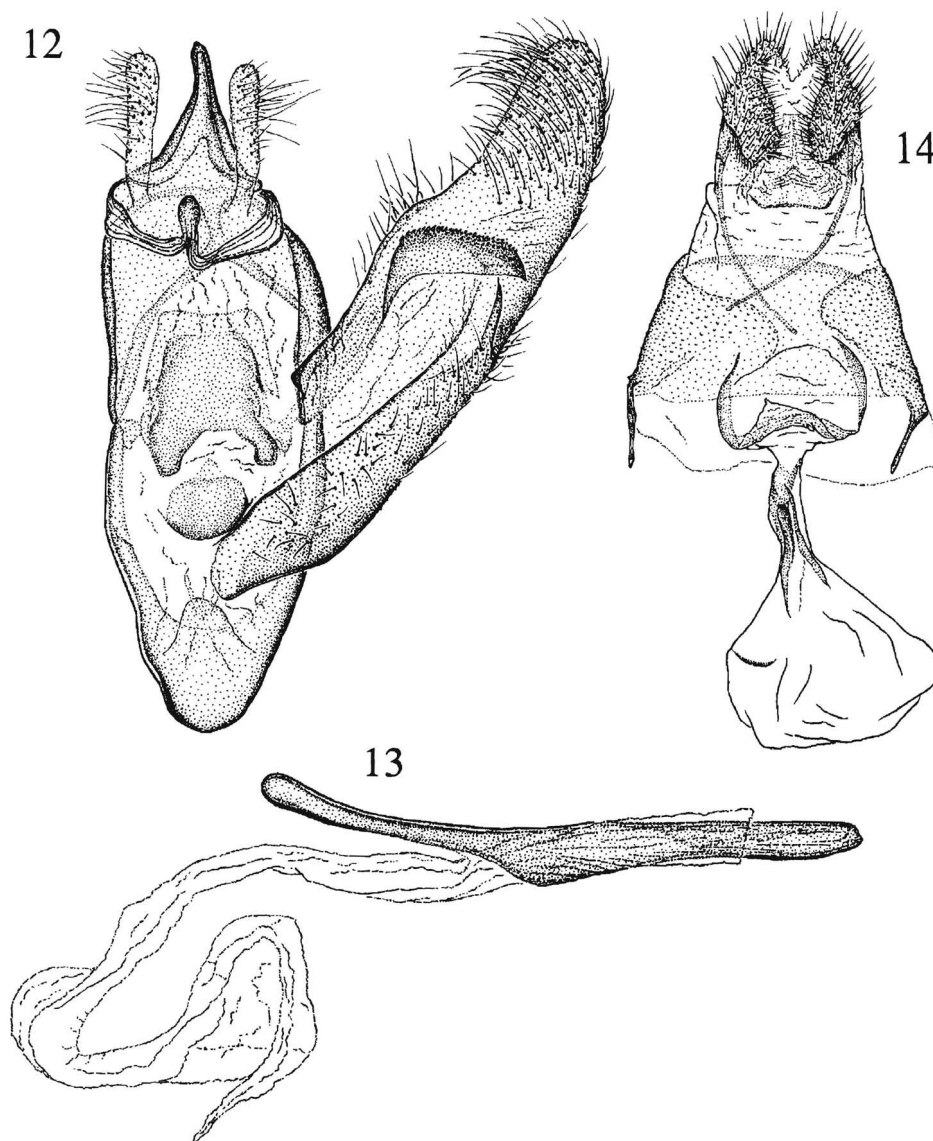
ID: Medium sized, pale olive green; forewing crossed with three olive bands, edged pale basad.

DIST: North America, throughout the Antilles, south to Argentina.

GUANA: 2 males, 1989.

BIO: Larvae on *Solanum nigrum* L., *Physalis* spp. (Solanaceae) (Poole et al. 1993).

COM: Easily confused with the tobacco budworm, *H. virescens* (Fabricius), not collected but certainly occurring on the island. Male *H. subflexa* have white hindwing, while in *H. virescens* they are bordered olive-gray. More details on both species can be found in Poole et al. (1993). Haile et al. (1975) discuss movement of *Heliothis* spp. among the Virgin Islands.



FIGS. 12–14. Genitalia of *Eueana simplaria*. 12, male, ventral view, left valva and aedeagus removed; 13, aedeagus, lateral view; 14, female, ventral view

Noctuinae

Anicla infecta (Ochsenheimer, 1816)

(Fig. 17)

ID: Gray, with forewing reddish brown along external margin; hindwing hyaline. Recognized by blackish anterior border (patagia) of thorax.

DIST: Argentina through Central United States, including Galapagos and Bermuda.

GUANA: 6 specimens, 1986, 1989, 1990.

BIO: General feeder, cut worm. The larvae reach nearly 3 cm when fully grown. They are variable in color from gray to yellowish ferruginous, olivaceous yellow and bright green, to a sordid brown, usually flecked with black.

COM: At least three other cut worms should be present in the island: *Agrotis ipsilon* (Hufnagel), *A. subterranea* (Fabricius) and *Peridroma saucia* (Hübner).

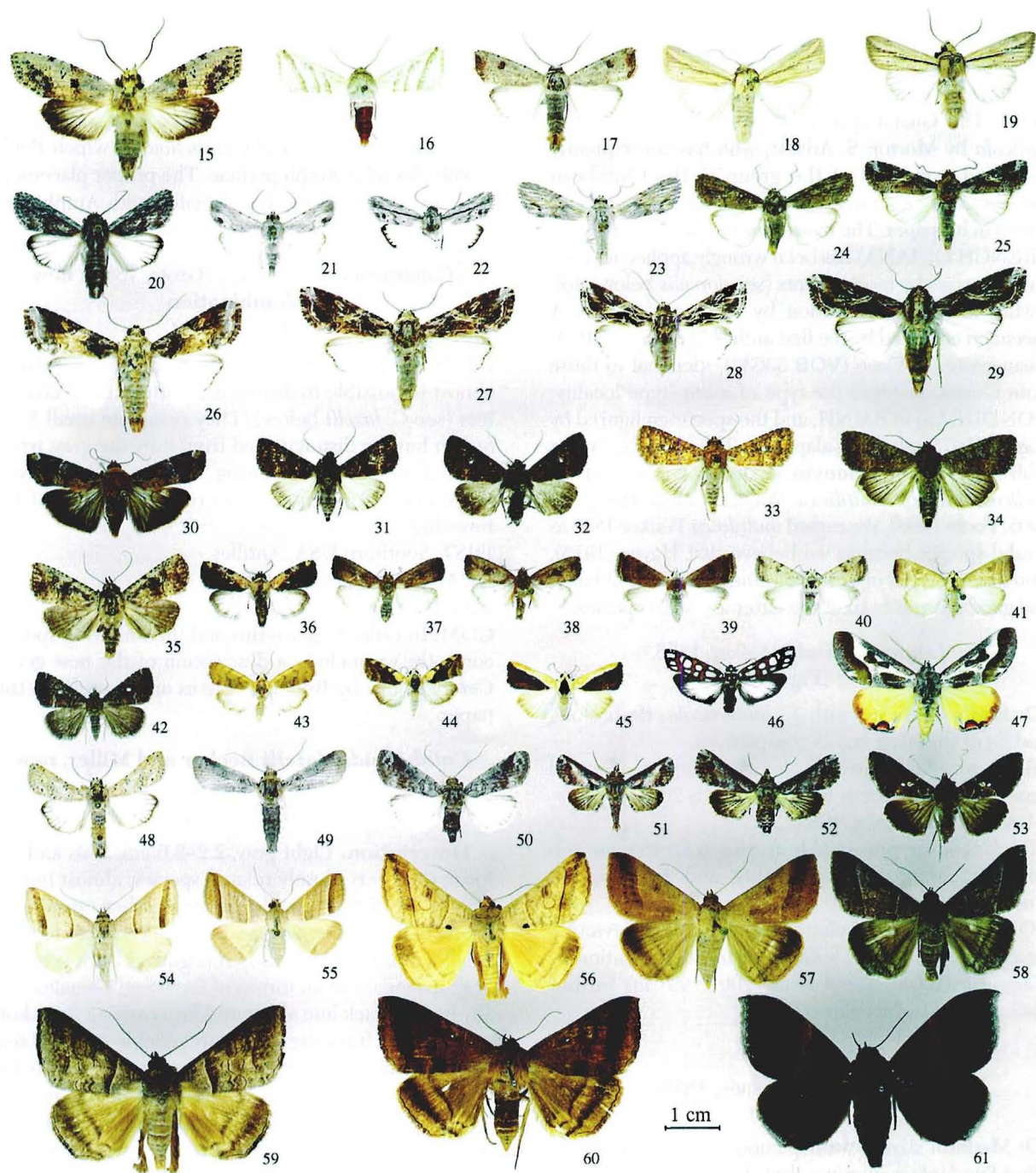
Hadeninae

Leucania humidicola Guenée, 1852

(Fig. 19)

ID: Medium sized, pale moth. Distinguished from other noctuids on the island by its forewing pattern: a long dark dash delimited above by a white line, running from base to middle.

DIST: Antilles to Brazil and probably Galapagos; the limits of the distribution of the species remain to be determined (Adams 2001).



FIGS. 15–61. Natural size (1:1). Notodontidae (15) and Noctuidae (16–61) (species from Guana, unless stated otherwise). 15, *Nystalea nyseus*, male; 16, *Heliothis subflexa*, male (USA); 17, *Anicla infecta*, male; 18, *Leucania dorsalis*, female (Cuba); 19, *L. humidicola*, male; 20, *Neogalea sunia*, male; 21, *Catabenoides lazelli*, holotype male; 22, *C. terminellus*, female; 23, *Spodoptera albulum*, male; 24, *S. frugiperda*, female (Puerto Rico); 25, *S. frugiperda*, male (Brazil); 26, *S. latifascia*, male; 27, *S. latifascia*, female (Cuba); 28, *S. pulchella*, male; 29, *S. dolichos*, male (Mexico); 30, *Magusa orbifera*, female; 31, *Condica albiger*a, male; 32, *C. albiger*a, female; 33, *C. mobilis*, male (Brazil); *C. sutor*, male (Brazil); 35, *Perigea gloria*, holotype male; 36, *Elaphria agrotina*, male; 37, *E. nucicolora*, female; 38, *E. nucicolora*, male (Cuba); 39, *Micrathetis triplex*, female; 40, *M. triplex*, male; 41, *Bagisara repanda*, female; 42, *Anujna axis*, female; 43, *Ponometia exigua*, male; 44, *P. exigua*, female; 45, *P. exigua*, female (Mexico); 46, *Cydosia nobilitella*, male (Cuba); 47, *Caularis undulans*, male; 48, *Motya abseuzalis*, male; 49, *Collomena filifera*, male; 50, *C. filifera*, female (Cuba); 51, *Paectes obrotunda*, male; 52, *P. obrotunda*, female; 53, *Pseudoplusia includens*, female; 54, *Ptichodis immunis*, male (Cuba); 55, *P. immunis*, female; 56, *Mocis antillesia*, male; 57, *M. antillesia*, female; 58, *M. latipes*, male; 59, *M. repanda*, male (Cuba); 60, *M. repanda*, female (Puerto Rico); 61, *Ophisma tropicalis*, male.

GUANA: 2 specimens, 1989.

BIO: Hayes (1975) [as *L. solita*, see below] gives *Sporobolus virginicus* (L.) Kunth. (Poaceae) as food-plant.

COM: The Guana specimens were identified as *humidicola* by Morton S. Adams, who has subsequently published a revision of the group in the Caribbean (Adams 2001) although our specimens are not mentioned in his paper. The name *humidicola* (type-locality: FRENCH GUIANA) has been wrongly applied to a different species by most authors (see *dorsalis* below), following the misidentification by Hampson (1905). A specimen collected by the first author in COSTA RICA: Guanacaste, El Coco (VOB 33636), identical to those from Guana, matches the type of *solita* (type-locality: HONDURAS) in BMNH, and the specimen figured by Hayes (1975), from Galapagos. Therefore *L. solita* Walker 1856, **new synonym**, is a junior synonym of *humidicola*, not of *multilinea* Walker (sensu Hampson 1905, Poole 1989). We regard *multilinea* Walker 1856 as a valid species because we believe that Hayes (1975), who had the types of both *multilinea* and *solita* at hand, had good reasons to treat the latter as a valid species.

Leucania dorsalis Walker, 1856

(Fig. 18)

ID: Easily confused with *L. humidicola*; dash along middle of forewing not as conspicuous.

DIST: Antilles, northern South America, Central America, and southern Florida (Adams 2001).

GUANA: 1 specimen, 1988.

BIO: Unknown; presumably grasses as for its close relatives *L. infatuans* Franclemont and *L. extenuata* Guenée.

COM: This species belongs to a complex previously treated as *humidicola*, following a misidentification by Hampson (1905). See Adams (2001:199) for further discussion of the species complex.

Amphipyridae

Neogalea sunia (Guenée, 1852)

(Fig. 20)

ID: Medium sized, inconspicuous gray moth resembling *Spodoptera albulum*, but darker. Usually distinguished from *S. albulum* by the dark marked veins and, for males, by the abdomen thickly clothed with long scales.

DIST: Florida to Argentina, including Galapagos.

GUANA: 6 specimens, 1987, 1989, 1990.

BIO: Larvae on *Lantana* (Verbenaceae) (Comstock and Dammers 1935). Introduced to Hawaii and Australasia to control *Lantana* (Riotte 1991, Holloway 1996:148).

COM: Immature stages described by Comstock and Dammers (1935, as *Catabene esula*). Although this genus was placed in Cuculliinae by Poole (1989), we place it in Amphipyridae following the comments by Todd (1972b) and Poole (appendix to this paper) placing it with *Catabena* and *Catabenoides*, which Poole (1989) placed as Amphipyridae. The proper placement of many genera formerly associated with Amphipyridae and Cuculliinae requires review.

Catabenoides terminellus (Grote, 1883), **new**

combination

(Figs. 2, 3, 22)

ID: This and the following species are closely related, almost impossible to distinguish with external characters (see *C. lazelli* below). They resemble small *S. albulum* but are distinguished from it by the gray, irregular dot on tornus of forewing. Females usually have a black line along middle, covering the length of the forewing.

DIST: Southern USA, Antilles.

GUANA: 4 specimens, 1984.

BIO: Unknown.

COM: In order to place this and the following species correctly, we include a description of the new genus *Catabenoides* by Robert Poole as an appendix to this paper.

Catabenoides lazelli Becker and Miller, **new**

species

(Figs. 4–6, 21)

Description. Light gray, 2.2–2.6 cm. This and the former are very closely related species, almost impossible to be distinguished from each other on external characters (see *terminellus* above). They resemble a small *S. albulum* but easily recognized from it by the gray, irregular dot on tornus of forewing. Females usually have a black line along middle, covering the whole extension of forewing. The only reliable external feature that distinguishes *lazelli* from *terminellus* is the color of patagia. In *terminellus* there is a transverse line of blackish scales, dividing the patagia along the middle, while in *lazelli* the line is ochreous. The genitalia are also distinct. In *terminellus* the distal processes of the sacculus are simple, nearly straight rods (Fig. 2), while those in *lazelli* are complex, branched (Fig. 4).

DIST: Guana, Anegada, St. Croix.

GUANA: 35 specimens, 1984, 1985, 1989, 1990.

MATERIAL EXAMINED: Holotype male: BVI: Guana Id., 1–14.vii.1984 (S. E. & P. M. Miller) (USNM). Paratypes: 13 males, 12 females: Same data as holotype (USNM, BMNH, BPBM, MCZ, VOB); 1

female: Same locality and collector, 5–23.vii.1985 (USNM); 2 males, 1 female: Same locality, x.1989 (V. O. Becker, 70710) (VOB); 2 males, 3 females: Same locality, 24.x–5.xi.1990 (S. E. Miller & T. M. Kuklenski) (BPBM). ANEGADA: 2 males, 1 female: 17–19.vii.1985 (S. E. & P. M. Miller) (USNM). ST. CROIX: 2 males, 2 females, Kingshill, x, xi.1944, v, vi.1945 (H. A. Beatty) (CU); 1 female, same locality, 6–16.vii.1967 (E. L. Todd) (USNM); 1 female, Christiansted, 19. xi.1941 (H. A. Beatty) (USNM); 1 male, 2 females, Mt. Eagle, 6–16.vii.1967 (E. L. Todd) (USNM); 4 males, 1 female, 1 mi W Airport, 6–16.vii.1967 (E. L. Todd) (USNM); 2 males, 1 female, Orangegrove, W End, 6–16.vii.1967 (E. L. Todd) (USNM); 1 male, Blue Mtn., 6–16.vii.1967 (E. L. Todd) (USNM); 2 males, Rust Up Twist, 6–16.vii.1967 (E. L. Todd) (USNM); 1 male, 1 mi N Great Pond, 6–16.vii.1967 (E. L. Todd) (USNM).

BIO: Unknown.

COM: This species belongs to a complex formerly considered the single species, *C. vitrinus* (Walker), a species not found in the Lesser Antilles. The genitalia of *C. lazelli* (Fig. 4, 5) are very similar, but show consistent differences, the most evident is the vesica armed with a single, strong cornutus, whereas in *vitrinus* the vesica bears a series of smaller cornuti. The complex will be treated in a forthcoming revision (Becker in prep.). This species is dedicated to our friend Dr. James “Skip” Lazell, who gave us the opportunity to study this interesting fauna.

Spodoptera albulum (Walker, 1857)
(Fig. 23)

ID: Plain, pale gray, medium sized species, readily distinguished by the presence, on the forewing, of a very fine black line running along the middle from base to one-fourth. Hindwing almost totally translucent whitish. DIST: United States, throughout the Antilles, south to Argentina, but not including Galapagos and Bermuda. GUANA: 5 specimens, 1989, 1990.

BIO: Larvae on *Amaranthus* sp. (Amaranthaceae) (Kimball 1965) and cotton (Bruner et al. 1975). Recorded from many crops in Puerto Rico by Armstrong (1994a).

COM: “This is the species previously identified as ‘*Spodoptera sunia* Guenée’. The real *Xylopermyges sunia* Guenée 1852 is actually the species [formerly] known as *Neogalea esula* Druce” (Poole 1989) (see *N. sunia* above). *Spodoptera albulum* is easily confused with *S. eridania*, which has not been collected on Guana, but is likely to occur on the island. *Spodoptera eridania* is dusted brownish, and lacks the forewing line mentioned above. Todd and Poole (1980) give an

illustrated key to the New World species of *Spodoptera* and distributions of *Spodoptera* species in the Caribbean are reviewed in Cock (1985:92).

Spodoptera frugiperda (J. E. Smith, 1797)
(Fall armyworm)
(Figs. 24, 25)

ID: Medium sized, sexually dimorphic, gray species. Males have an oblique whitish dash from middle of costa across the cell. Females have indistinct pattern, looking almost plain gray.

DIST: Widespread in New World, including Galapagos and Bermuda.

GUANA: 8 specimens, 1986, 1990.

BIO: Polyphagous on herbaceous plants and regarded as a serious pest of maize and other crops (Andrews 1980). In Puerto Rico, it has been recorded as a pest of various crops (Armstrong 1994b) and *Eucalyptus* seedlings (Myrtaceae) (Torres 1994).

Spodoptera latifascia (Walker, 1856)
(Figs. 26, 27)

ID: Medium sized, sexually dimorphic species. Male forewing with a diffuse pattern of reddish brown and gray on a whitish gray background. Female forewing darker, easily confused with *S. dolichos* and bearing an oblique elongate whitish mark from middle costa to end of cell, followed by three short whitish lines along veins.

DIST: Gulf States of the United States, throughout the Antilles, south to Costa Rica. The population from Costa Rica south to Argentina, previously included under *S. latifascia*, belongs to *S. cosmioides* (Walker), a closely related but distinct species (Silvain & Lalanne-Cassou 1997, M. Pogue pers. com.).

GUANA: 1 specimen, 1989.

BIO: Polyphagous on herbaceous plants, sometimes becoming a pest of vegetables and nursery seedlings.

Spodoptera pulchella (Herrich-Schäffer, 1868)
(Fig. 28)

ID: Wing pattern similar in both sexes; easily confused with the females of the former. It can be separated from similar species by the curved whitish line along dorsum, below the anal vein, from basal fourth to just before tornus.

DIST: Florida, Greater Antilles.

GUANA: 1 specimen, 1989.

BIO: Unknown.

COM: This seems to be the first record of this species to the Puerto Rican Bank. It has either been overlooked because of rarity, or because it was mistaken for the similar *S. latifascia*, a more common species.

Spodoptera dolichos (Fabricius, 1794)
(Fig. 29)

ID: About the same size as *S. latifascia*; both sexes showing similar pattern to that of female *S. latifascia*. Easily distinguished from the previous two species by the two conspicuous, parallel, dark gray bands along thorax.

DIST: Sympatric with *S. latifascia*, including in Galapagos.

GUANA: 1 specimen, 1989.

BIO: Larvae on a wide variety of plants, both crops and weeds (Ferguson et al. 1991).

Magusa orbifera (Walker, 1857)
(Fig. 30)

ID: An extremely polymorphic, medium sized (3–4 cm), gray to brown species. In the Guana population, some males have a wide pale area along dorsum of forewing, others have a very complex and contrasting maculation, while the females tend to be less marked and more brownish. One constant feature is the conspicuous round pale dot near the apex of forewing and the very broad dark fuscous hindwing. *Anateinoma affabilis* and *E. agrotina* also have the pale mark at end of apex of forewing but are at most half the size of *M. orbifera*.

DIST: Widespread throughout the New World, from Canada to Argentina (not reported from Galapagos, but *M. erema* Hayes (1975) may be a local variety of this species).

GUANA: 57 specimens, 1989, 1990.

BIO: Larvae on various legumes, including *Karwinskia* and *Condalia* (Fabaceae) (Kimball 1965).

Condica albigera (Guenée, 1852)
(Figs. 31, 32)

ID: Medium sized (2.5–3 cm wing span), dark fuscous; forewing with an irregular small white dot at end of cell, followed by a paler, almost straight transverse line.

DIST: Mexico, throughout Antilles, south to Paraguay.

GUANA: 3 specimens, 1989, 1990

BIO: Unknown.

COM: Easily confused with *C. circuita* (Guenée), not collected but likely to occur on the island. In *C. circuita* the white dot on forewing is round and has a white lunule just under it.

Condica mobilis (Walker, [1857])
(Fig. 33)

ID: About same size as *C. albigera*, but more reddish brown and orange; white dot on cell usually larger than in *C. albigera*.

DIST: Southern United States, throughout Antilles, south to Argentina.

GUANA: 1 specimen, 1989.

BIO: Unknown.

COM: Commonly referred to in the literature as *Perigea apameoides* Guenée, which is a synonym of *C. sutor* (Guenée) (Hayes 1975).

Condica sutor (Guenée, 1852)
(Fig. 34)

ID: Same size as *C. albigera* and *C. mobilis*; fuscous with forewing showing little contrasting pattern. Distinguished from *albigera* and *mobilis* by the absence of the whitish mark on cell.

DIST: Southern United States, throughout the Antilles, south to Argentina, including Galapagos.

GUANA: 1 specimen, 1990.

BIO: Larvae on several species of herbaceous plants including *Wedellia*, *Tagetis* (Asteraceae), and celery (Kimball 1965).

***Perigea gloria* Becker and Miller, new species**
(Figs. 7–9, 35)

Description. Medium sized (3 cm wing span), pale moth; forewing shaded dark fuscous, with a series of small dark marks along costa and small black dots along termen, in the spaces between veins. Similar to *C. sutor* but with more contrasting pattern, and readily separated by the series of black dots along termen.

DIST: Guana, Tortola.

GUANA: 2 specimens, 1989.

MATERIAL EXAMINED: Holotype male: BVI: Guana Id., x.1989 (V. O. Becker, 70722) (USNM); Paratypes, 1 female, same data as holotype (VOB); 1 male Tortola, Mt. Sage, 460m, 13–15.vii.1987 (V. O. Becker & S. E. Miller, 66865) (VOB).

BIO: Unknown.

COM: Very similar in appearance to *P. berinda* (Druce), a species from the Greater Antilles and Central America, but with genitalia (Figs. 7–9) very different from those of *berinda*, being very similar to those of *P. glaucoptera* (Guenée). This species is dedicated to Ms. Gloria Jarecki, for her and her family's support of The Conservation Agency's biodiversity research on Guana Island over the years.

Elaphria agrotina (Guenée, 1852)
(Fig. 36)

ID: Small (2–2.5 cm wing span); forewing dark fuscous with a paler area along costa and a conspicuous pale dash near apex. Similar to *A. affabilis* (see below), but larger and with hindwing bordered whitish.

DIST: Florida, throughout the Antilles, south to Argentina.

GUANA: 5 specimens, 1987, 1989, 1990.

BIO: Larvae on cotton and beans (*Phaseolus*) (Fabaceae) (Silva et al. 1968).

Elaphria nucicolora (Guenée, 1852)
(Figs. 37, 38)

ID: Same size as *E. agrotina*; forewing dark fuscous, with a broad, ill-defined, darker triangular mark with base on middle of dorsum and vertex at end of cell. Hindwing whitish.

DIST: Throughout New World tropics including Bermuda. Immigrant to Hawaii.

GUANA: 1 specimen, 1989.

BIO: Larvae on various herbaceous plants (Ferguson et al. 1991).

Anateinoma affabilis Möschler, 1890
(Figs. 10, 11, 151, 152)

ID: Small (15 mm wing span); forewing reddish brown with transverse sinuate lines alternating pale and dark, and with a conspicuous whitish dash on apex. Similar to *E. agrotina* (see above) but smaller, and forewing lacking pale area along costa. *Magusa orbifera* also has a pale mark on apex, but is almost three times the size of *affabilis*.

DIST: Puerto Rico and Virgin Islands.

GUANA: 22 specimens, 1987, 1989, 1990.

BIO: Unknown.

COM: Despite the accurate color illustration presented by Möschler (1890), who described this species from Puerto Rico, Hampson (1910) treated *A. affabilis* as an unrecognized taxon in the Erastrinae [=Acontiinae], where it has remained. One of the reasons for this situation is because no material except for the types, which are supposed to be in MNHU, Berlin, has been available to subsequent authors working on the New World noctuid fauna. No material of this species was found in the BMNH or USNM; for this reason vouchers from the series studied here have been deposited there.

This species does not belong in Acontiinae, but is related to some species currently placed in *Elaphria* Hübner. However, at present we prefer not to synonymize *Anateinoma* under *Elaphria* as the group needs revision. The male genitalia is illustrated in Figs. 10, 11.

Micrathetis triplex (Walker, 1857)
(Figs. 39, 40)

ID: Small (1.5–2.2 cm wing span), slightly dimorphic, variable in color. Males have pale forewing speckled with darker small dots, termen dark brown, and a conspicuous dark brown dot at end of cell. Females are

darker than males. Hindwing whitish, slightly bordered with dark gray. Easily recognized by the dot at the end of the cell and by the two rows of small blackish dots forming two arches, almost parallel to each other, from costa to dorsum.

DIST: Southern United States through South America.

GUANA: 14 specimens, 1987, 1989, 1990.

BIO: Unknown.

Agaristinae

Caularis undulans Walker, [1858]
(Fig. 47)

ID: Undoubtedly the most attractive noctuid on the island. Forewings white bordered and marked olive; hindwing golden yellow bordered reddish-brown with a lunular blackish mark on tornus. Male genitalia illustrated by Kiriakoff (1976).

DIST: Hispaniola, Jamaica, Puerto Rican Bank (Kiriakoff 1976).

GUANA: 9 specimens, 1989.

BIO: Unknown.

Bagisarinae

Bagisara repanda (Fabricius, 1793)
(Fig. 41)

ID: Small, 2–2.5 cm wing span, pale yellow, dusted gray. Easily identified by the three pale lines crossing the forewing, more or less equidistant, parallel to each other, and bent basad near costa.

DIST: Widespread from Southeast United States to Paraguay, including Galapagos (Hayes 1975, Ferguson 1997).

GUANA: 4 specimens, 1987, 1989.

BIO: Larvae on *Sida glomerata* Cav. (Malvaceae) (Hayes 1975).

COM: Very common in disturbed areas where malvaceous weeds often occur.

Acontiinae

Amyna axis (Guenée, 1852)
(Fig. 42)

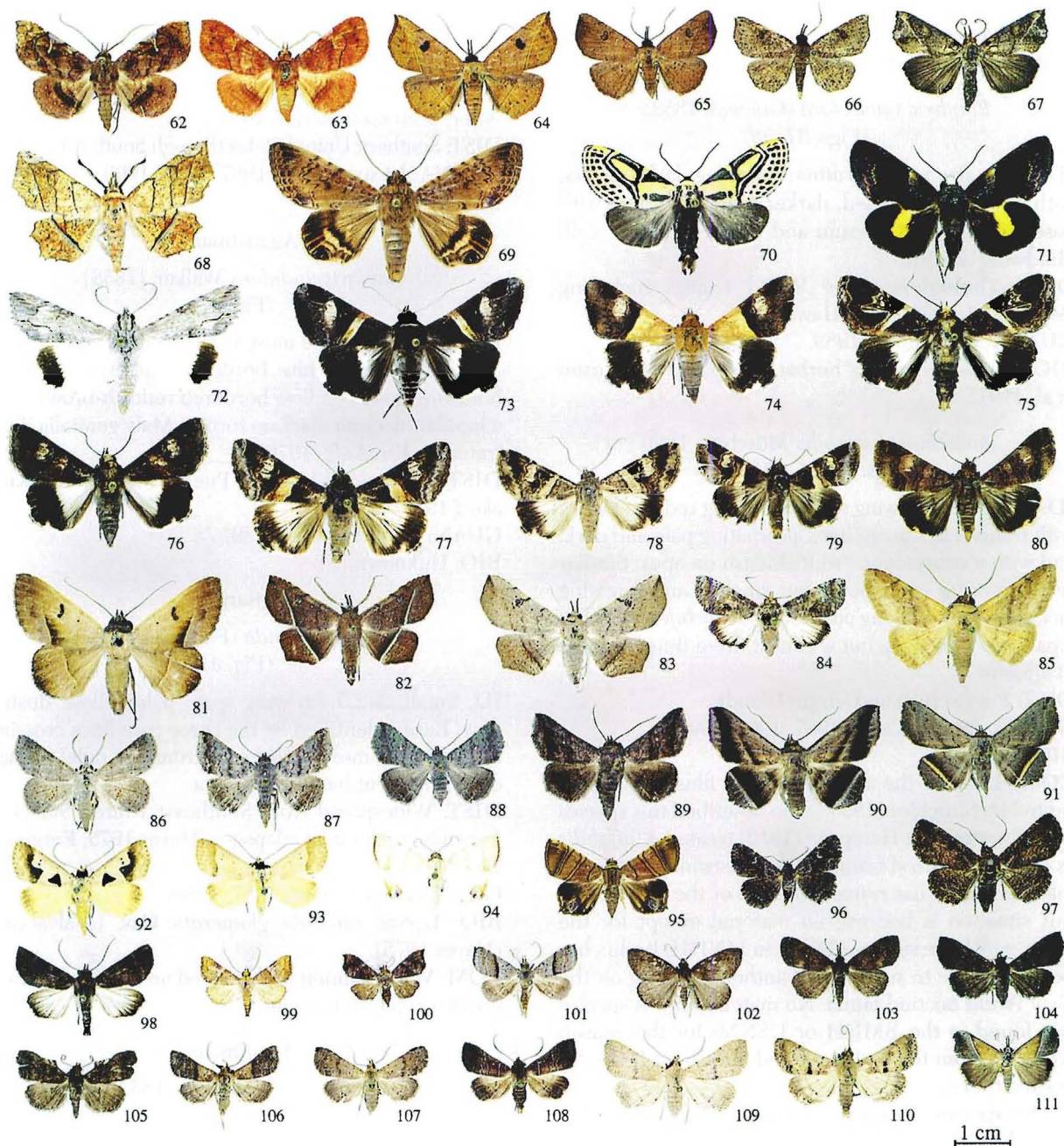
ID: Small, fuscous species, easily confused with some small *Condica* species. Males are distinguished from *Condica* by the presence of a round, semitranslucent area near base of forewing.

DIST: Pantropical, including Tahiti and Hawaii.

GUANA: 2 specimens, 1989.

BIO: Larvae on *Chenopodium* (Chenopodiaceae), *Cardiospermum* (Sapindaceae), *Parasponia* (Ulmaceae), and *Amaranthus* (Amaranthaceae) (Ferguson 1991).

COM: The large distribution and obscure pattern have contributed to long synonymy: it has been described



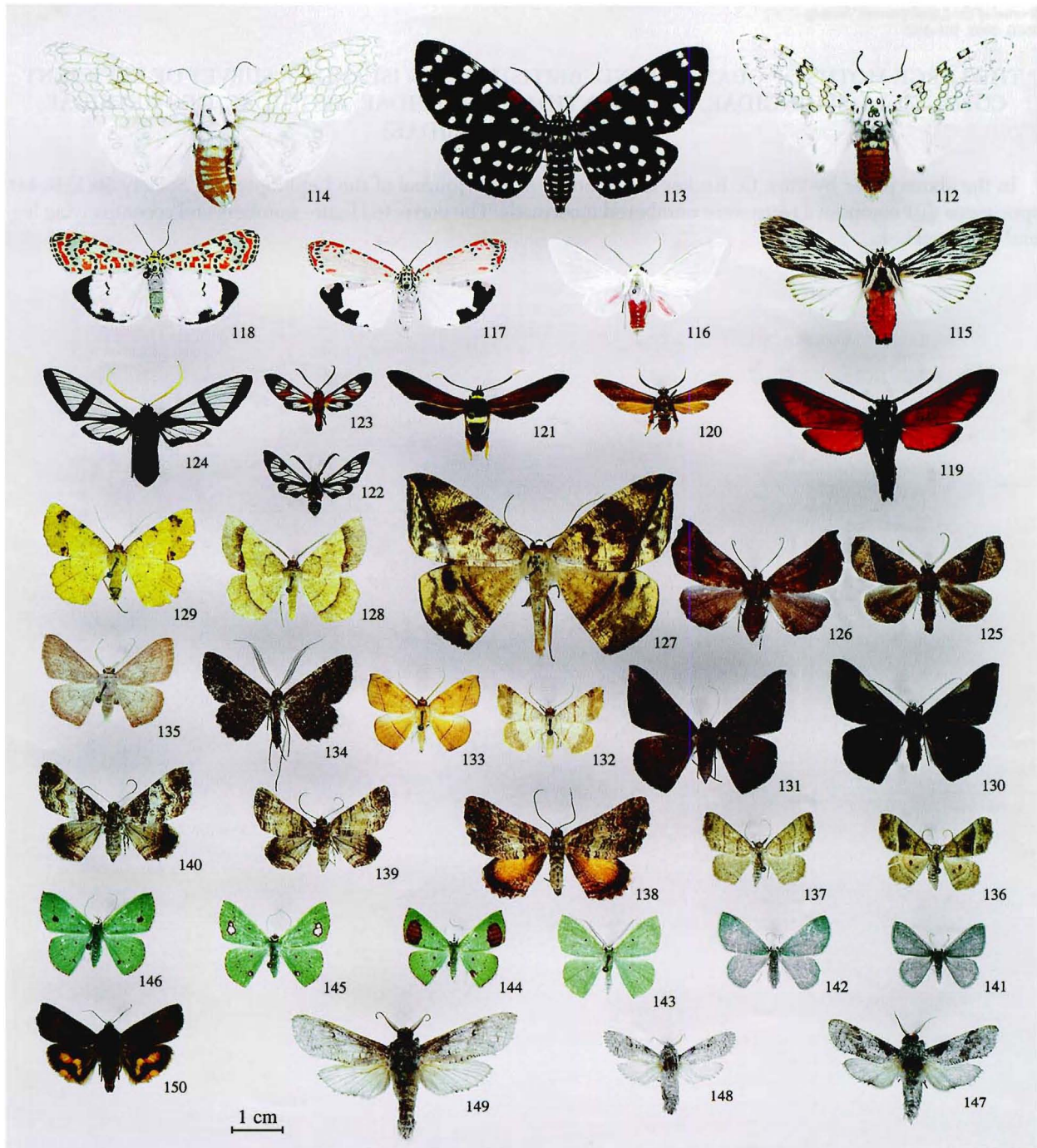
FIGS. 62–111. Natural size (1:1). Noctuidae (specimens from Guana, unless stated otherwise). 62, *Azeta versicolor*, male; 63, *A. versicolor*, female; 64, 65, *Metallata absumens*, males; 66, *M. absumens*, male; 67, *Plusiodonta thomae*, male; 68, *Syllectra erycata*, male (Cuba); 69, *Litoprosopus puncticosta*, male; 70, *Diphthera festiva*, male; 71, *Gonodonta bidens*, male (Puerto Rico); 72, *Mclipotis acontioides*, female; 73, *M. fasciolaris*, male; 74, *M. fasciolaris*, female; 75, *M. contorta*, male; 76, *M. famelica*, male; 77, *M. ochrodes*, male; 78, *M. ochrodes*, female (Puerto Rico); 79, *M. januaris*, male (Cuba); 80, *M. januaris*, f-male (Cuba); 81, *Epidromia lienaris*, male (Puerto Rico); 82, *Ephyrodes cacata*, male (Cuba); 83, *E. cacata*, female; 84, *Concana mundissima*, female; 85, *Massala asema*, male; 86, *Manbutra pyraliformis*, male (Cuba); 87, *Lesmone hinna*, male (Cuba); 88, *L. hinna*, female (Cuba); 89, *L. hinna*, male; 90, *L. formularis*, male; 91, *L. formularis*, female (Cuba); 92, *Baniana relapsa*, male; 93, *B. relapsa*, female; 94, *Eulepidotis modestula*, male (Cuba); 95, *E. addens*, female; 96, *Toxonprucha diffundens*, male (Mexico); 97, *Kakopoda progenies*, male; 98, *Parachabora abydas*, male; 99, *Cecharismena abarusalis*, male; 100, *C. cara*, male; 101, *Glymipis eubolialis*, male; 102, *Drepanopalpia lunifera*, male (Cuba); 103, *D. lunifera*, f-male; 104, *Lascoria orneodalis*, female; 105, *L. orneodalis*, male (Cuba); 106, *Bleptina caradrinalis*, male; 107, *B. caradrinalis*, female; 108, *B. hydrillalis*, male; 109, *B. menalcasalis*, female; 110, *B. menalcasalis*, male; 111, *Hypena lividalis*, female.

ERRATA

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THE LARGE MOTHS OF GUANA ISLAND, BRITISH VIRGIN ISLANDS: A SURVEY OF EFFICIENT COLONIZERS (SPHINGIDAE, NOTODONTIDAE, NOCTUIDAE, ARCTIIDAE, GEOMETRIDAE, HYBLAEIDAE, COSSIDAE)

In the above paper by Vitor O. Becker and Scott E. Miller (*Journal of the Lepidopterists' Society* 56(1):9–44), specimens that compose a plate were numbered incorrectly. The corrected figure numbers and accompanying legend are given here.



FIGS. 112–150. Arctiidae (112–124), Geometridae (125–146), Cossidae (147–149) and Hyblaeidae (150) (specimens from Guana, unless stated otherwise). 112, *Hypercompe simplex*, male (Puerto Rico); 113, *Composia credula*, male; 114, *H. simplex*, female; 115, *Calidota strigosa*, male; 116, *Eupseudosoma involutum*, male (Puerto Rico); 117, *Utetheisa ornatrix*, male; 118, *U. pulchella*, female (Brazil); 119, *Empyreuma pugione*, male; 120, *Horama panthalon*, male; 121, *H. pretus*, male; 122, *Cosmosoma achemon*, male (St. Thomas); 123, *Eunomia colombina*, male; 124, *Nyridela chalciope*, female (Cuba); 125, *Pero rectisectaria*, male; 126, *P. rectisectaria* female; 127, *Oxydia vesulia*, male; 128, *Erastria decrepitaria*, male (Cuba); 129, *E. decrepitaria*, female; 130, *Sphacelodes fusilineatus*, male; 131 *S. fusilineatus*, female; 132, *Macaria paleolata*, male; 133, *Patalene ephyrata*, male; 134, *Almodes terraria*, male (Bahamas); 135, *Semaepopus malefidarius*, male; 136, *Leptostales noctuata*, male; 137, *L. noctuata*, female; 138, *Obila praecurraria*, female (Tortola); 139, *P. defensata*, male; 140, *P. defensata*, female; 141, *Eucana simplaria* male; 142, *E. simplaria* female; 143, *Phrudocentra centrifugarium*, male; 144, *P. centrifugarium*, female (Cuba); 145, 146, *P. centrifugarium*, females; 147–149, *Psychonotua personalis*, males; 150, *Hyblaea puera*, male (Cuba).

18 times (Poole 1989). Frequently referred to in the literature as *A. octo* (Guenée), a synonym based on the priority of names established by Nielsen et al. (1996: note 690).

Ponometia exigua (Fabricius, 1793)
(Figs. 43–45)

ID: Small, variable, sexually dimorphic species; males pale yellow with forewing crossed with diffuse, sinuate olivaceous bands. Female forewing dark fuscous with a wide, contrasting, pale fascia along costa. In some females this pattern is less contrasting.

DIST: Southern United States, throughout the Antilles, south to Brazil, including Galapagos.

GUANA: 9 specimens, 1989, 1990.

BIO: Larvae on *Waltheria ovata* Cav. (Sterculiaceae) (Hayes 1975).

COM: Commonly referred to in the literature by its junior synonym *P. indubitans* (Walker).

Cydosia nobilitella (Cramer, 1779)
(Fig. 46)

ID: Small showy moth; one of the most attractive noctuids on the island. Forewing with reticulated pattern with white areas enclosed by dark bluish metallic gray and red lines. Hindwing semitranslucent white in males, dark gray in females. Pattern resembles some species of *Atteva* (Yponomeutidae) and specimens are often found mixed in collections.

DIST: Southern United States, throughout Antilles, south to Argentina.

GUANA: 1 specimen, 1984.

BIO: Hampson (1910) mentioned “*Spigelia an-thelmia* L.” (Loganiaceae) as hostplant, following Cockerell (1897). No species of this plant family known from the island (G. Proctor pers. com.), although the species occurs on other Virgin Islands (Acevedo-Rodriguez 1996). Cockerell (1897) and Dyar (1897) described the larvae.

Tripudia quadrifera (Zeller, 1874)
(Figs. 153, 154)

ID: The smallest noctuid on the island (0.7–1.2 cm wing span); resembling Olethreutinae (Tortricidae) and *C. metaspilaris* (see below). Dark gray; forewing with conspicuous quadrate mark on middle of dorsum.

DIST: Southern United States, throughout the Antilles, south to Brazil.

GUANA: 22 specimens, 1989, 1990.

BIO: Unknown.

Tripudia balteata Smith, 1900
(Fig. 155)

ID: Small, on average slightly larger than *T. quadrifera*. Dark gray. Easily identified by the broad, oblique, yellowish band on forewing.

DIST: Southern United States, Antilles, south to Brazil.

GUANA: 16 specimens, 1987, 1989, 1990.

BIO: Unknown.

Ommatochila mundula (Zeller, 1872)
(Fig. 156)

ID: Small, 1.5–2 cm wing span, dark gray, resembling some Olethreutinae species (Tortricidae). Forewing divided across the middle by a pale, almost straight line, the basal half much darker than outer half.

DIST: Southern United States, Antilles, south to Argentina.

GUANA: 14 specimens, 1986, 1989, 1990.

BIO: Unknown.

Cobubatha metaspilaris Walker, 1863
(Fig. 157)

ID: Small, 1.5 cm wing span, gray; similar to, but larger than *T. quadrifera*. In the latter the mark on dorsum is quadrate whereas in *metaspilaris* it is trapezoidal.

DIST: Antilles.

GUANA: 3 specimens, 1990.

BIO: Unknown.

Eumicremma minima (Guenée, 1852)
(Fig. 158)

ID: Very small (1.2–1.5 cm wing span); forewing pale, crossed with olive and dark olive waiving bands, and with some very small, black dots along termen, the most conspicuous the one near apex and the other near tornus. In resting posture it looks like some species of Cochylini (Tortricidae).

DIST: Southern United States, Antilles, south to Argentina.

GUANA: 3 specimens, 1987.

BIO: Larvae on *Gnaphalium* (Asteraceae).

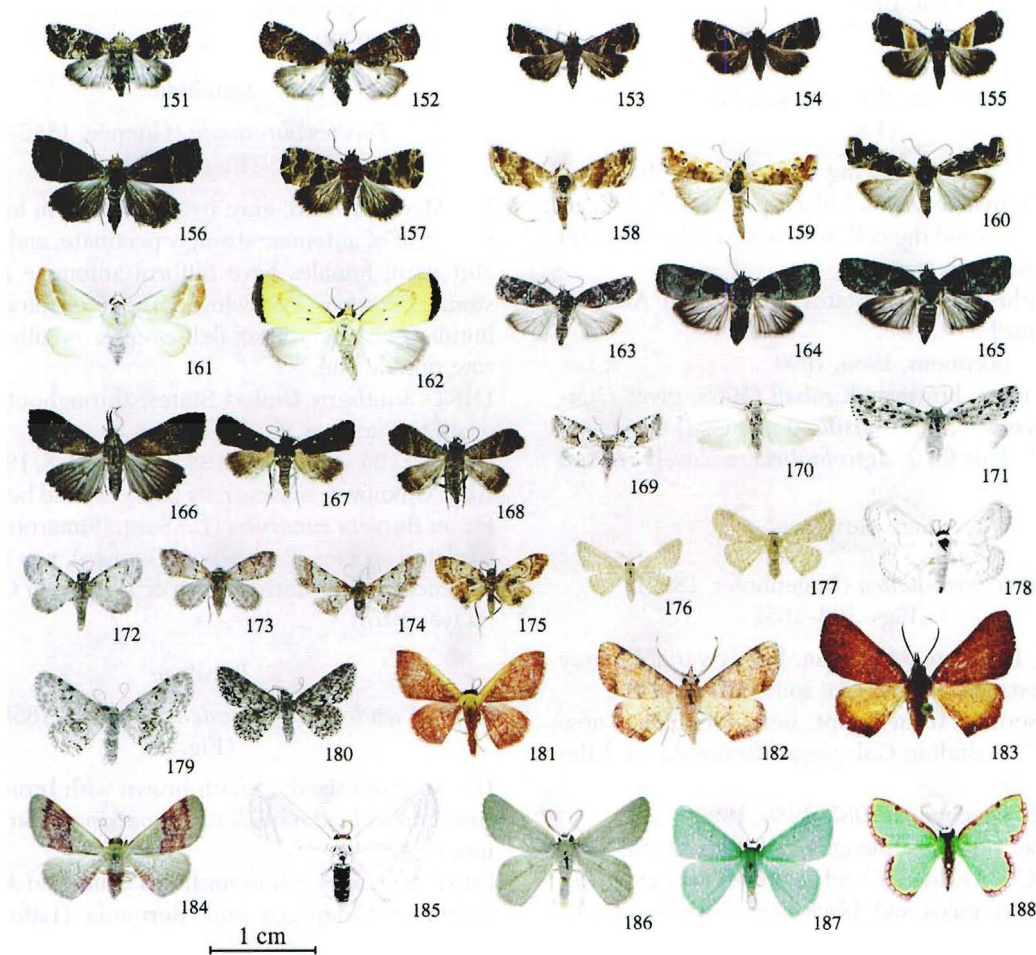
Eublemma rectum (Guenée, 1852)
(Fig. 161)

ID: Small, 1.5 cm wing span; pale yellow; forewing clouded with red brown with oblique pale fascia from middle of dorsum to near apex.

DIST: Southern United States, throughout the Antilles, south to Argentina, including Galapagos and Bermuda.

GUANA: 3 specimens, 1989.

BIO: Larvae on *Ipomoea* and *Convolvulus* (Convolu-



Figs. 151–188. Twice natural size (2:1). Noctuidae (151–168), Arctiidae (169–171) and Geometridae (172–188) (specimens from Guana, unless stated otherwise). **151, 152**, *Anateinoma affabilis*, males; **153**, *Tripudia quadrifera*, female (Mexico); **154**, *T. quadrifera*, female; **155**, *T. balteata*, male; **156**, *Ommatochila mundula*, female; **157**, *Cobubatha metaspilaris*, male; **158**, *Eumicremma minima*, male (Cuba); **159**, *Spragueia margana*, male, (Brazil); **160**, *S. margana*, female (Brazil); **161**, *Eublemma rectum*, male; **162**, *Thioptera aurifere*, male (Brazil); **163**, *Characoma nilotica*, female; **164, 165**, *C. nilotica*, females (Mexico); **166**, *Hypena minualis*, female; **167**, *Bleptina araealis*, male; **168**, *B. araealis*, female; **169**, *Afrida charientisma*, male; **170**, *Progona pallida*, male; **171**, *Lomuna nigripuncta*, female; **172**, “*Idaea*” *monata*, male; **173**, *Idaea monata*, female; **174**, *Idaea eupitheciata*, female; **175**, *I. eupitheciata*, male; **176**, *I. minuta*, male; **177**, *I. minuta*, female; **178**, *Scopula laesaria*, female; **179, 180**, *Idaea* probably *fernaria*, females; **181**, *Leptostales phorcaria*, male; **182**, *Cyclomia mopsaria*, male; **183**, *C. mopsaria*, female; **184**, *Leptostales oblinataria*, female; **185**, *Acratodes suavata*, male; **186**, *Chloropteryx paularia*, male; **187**, *Synchlora frondaria*, male; **188**, *S. cupedinaria*, male.

laceae) (Forbes 1954) [as *E. obliqualis* (Fabricius), a homonym].

Spragueia margana (Fabricius, 1794)
(Figs. 159, 160)

ID: The smallest of the two *Spragueia* species on the island; dimorphic. Similar to *S. perstructana* (see below). Males easily distinguished from the latter by the absence of orange, by the pale costa, and by the olivaceous shades and marks on forewing; females by the olivaceous thorax, which is edged pale yellow in *S. perstructana*.

DIST: Southern United States, throughout the New World tropics, including Galapagos.

GUANA: 4 specimens, 1987.

BIO: Larvae on *Abutilon* and *Sida* (Malvaceae) (Hayes 1975).

Spragueia perstructana (Walker, 1865)

ID: Similar to, but slightly larger than *S. margana* (see above); also dimorphic. Illustrated in color in Kimball (1965: Pl. IV, figs. 31, 37).

DIST: Southern United States, Antilles, south to Costa Rica.

GUANA: 1 specimen, 1989.

BIO: Unknown.

Thioptera aurifere (Walker, [1858])
(Fig. 162)

ID: Small, 1.5–1.8 cm wing span; yellow; forewing usually with two very small black dots, an ill defined reddish line beyond the cell from costa to dorsum, and termen edged with gray.

DIST: Southern United States, throughout Antilles, south to Brazil.

GUANA: 4 specimens, 1989, 1990.

BIO: Unknown, however Kimball (1965) gives *Digitaria ischaemum* [*Syntherisma impomoea*] (Poaceae) as the food plant for *T. nigrofimbria*, a closely related species.

Sarothripinae

Characoma nilotica (Rogenhofer, 1882)
(Figs. 163–165)

ID: Small, 1–1.2 cm wing span, highly variable, gray species. Rests flat, looking like some tortricids.

DIST: Described from Egypt, hence its name; now Pantropical, including Galapagos, Bermuda, and the Pacific Islands.

GUANA: 25 specimens, 1985, 1986, 1990.

BIO: Larvae on white mangrove, *Laguncularia racemosa* (L.) C.F. Gaertn. (Combretaceae) (Hayes 1975); willow, almond, azalea, and “black olive” (Ferguson 1991).

Collomena filifera (Walker, 1857)
(Figs. 49, 50)

ID: Medium sized gray species, similar to female *S. frugiperda*. Distinguished by the whitish diffused band across the subterminal area of forewing and by the entirely whitish, semitranslucent hindwing (narrowly bordered gray in females).

DIST: Florida, throughout the Antilles, south to Brazil.

GUANA: 4 specimens, 1989, 1990.

BIO: Unknown.

Motya abseuzalis Walker, 1859
(Fig. 48)

ID: Slightly smaller than *C. filifera*; whitish gray. Easily recognized by the two, almost parallel, rows of small, black dots along termen, with the one near tornus conspicuously larger. The male abdomen has two paired black dots dorsally, near apex. Hindwing semitranslucent white, bordered gray.

DIST: Florida, throughout the Antilles, south to Brazil.

GUANA: 1 specimen, 1989.

BIO: Unknown.

Euteliinae

Paectes obrotunda (Guenée, 1852)
(Figs. 51, 52)

ID: Medium sized, gray, irrorated brown; males have basal half of antennae strongly pectinate, and long slim abdomen; females have filiform antennae and short stout abdomen. Forewing with a conspicuous pale lunular mark near base, delimited externally by a narrow, double line.

DIST: Southern United States, throughout Antilles, south to Paraguay.

GUANA: 64 specimens, 1984, 1987, 1988, 1989, 1990.

BIO: Unknown, however, its larvae should be searched for on *Bursera simaruba* (L.) Sarg. (Simarubaceae), as a related species, *P. arcigera* (Guenée), was reared on *B. graveolens* (Kunth) Triana & Planch. in Galapagos (Hayes 1975).

Plusiinae

Pseudoplusia includens (Walker, [1858])
(Fig. 53)

ID: Medium sized, grayish brown with bronze luster. Recognized by the small silver markings near center of forewing.

DIST: United States to northern Chile and Argentina, including Galapagos and Bermuda (Lafontaine & Poole 1991:50).

GUANA: 2 specimens, 1989.

BIO: Polyphagous; Ferguson et al. (1991) lists plants belonging to 14 families as foodplants. Can be a minor pest of beans, soy beans, and other leguminous crops.

COM: Generally referred to in the literature as *P. oo* (Cramer), a homonym. Other species belonging to this subfamily, such as *Trichoplusia ni* (Hübner) and *Argyrogramma verruca* (Fabricius), are likely to be collected on the island in the future. These also bear silver marks on the forewing.

Catocalinae

Ptichodis immunis (Guenée, 1852)
(Figs. 54, 55)

ID: Medium sized, 2.5–3 cm wing span, pale species. Forewing crossed with ill defined olivaceous lines, two of them highly contrasting: the antemedial and the postmedial, both bordered internally with lemon yellow.

DIST: Mexico, throughout the Antilles to Brazil.

GUANA: 6 specimens, 1987, 1989, 1990.

BIO: Unknown.

Mocis latipes (Guenée, 1852)
(Fig. 58)

ID: Medium sized, 3.5–4 cm wing span, broad winged, dark species. Highly variable in color and pattern. Ground color varies from pale brownish through fuscous to reddish brown. Females tend to have pattern less contrasting than males, and the paler forms could easily be confused with the darker forms of female *M. disseverans*, a Neotropical species recorded from the Greater Antilles. Smaller than *M. repanda* (see below). The males of the species belonging to this genus can be easily distinguished from other noctuids by the thickly hairy hind legs.

DIST: Southern United States, throughout the Antilles, south to Argentina, including Galapagos and Bermuda.

GUANA: 1 specimen, 1989.

BIO: Larvae on several species of grasses, sometimes a pest of grazing land.

COM: Generally referred to in the literature as *M. repanda*, a different species (see below).

Mocis antillesia Hampson, 1913
(Figs. 56, 57)

ID: Same size and easily confused with *M. latipes*. Ground color pale brownish to pale yellow. Clothing of hind legs usually yellowish in this whereas grayish in *M. latipes*. Smaller than *M. repanda* (see below).

DIST: Lesser Antilles, Bahamas.

GUANA: 4 specimens, 1989, 1990.

BIO: Unknown.

Mocis repanda (Fabricius, 1794)
(Figs. 59, 60)

ID: Larger than the former two species in the genus, 4.5–5.5 cm wing span. Smaller specimens of this species are larger than the largest specimens of both *M. latipes* and *M. antillesia*. Distinguished from congeners by shape of postmedial lines in both wings: in the forewing it is bent inwards after the angle near costa, and fades away before tornus, whereas in the former two it is straight and reaches tornus; in the hindwing it is strongly angled outwards before tornus whereas in the others it is straight.

DIST: Antilles and Guatemala.

GUANA: 2 specimens, 1987, 1990.

BIO: Larvae on *Mucuna deeringiana* (Bort) Merr. [as *M. megas*] (Fabaceae) (Martorell 1976).

COM: Generally known in the literature as *M. megas* (Guenée), a junior synonym (Poole 1989). Berio (1953) clarified the status of *M. repanda* and illustrated the male genitalia.

Ophisma tropicalis Guenée, 1852
(Fig. 61)

ID: Same size as *M. repanda*, but with stouter body. Extremely variable in pattern and color. Recognized by the small, conspicuous white dot on base of forewing.

DIST: Southern United States, throughout the Antilles, south to Argentina.

GUANA: 2 specimens, 1987.

BIO: Larvae on *Cupania americana* L. (Sapindaceae) (Martorell 1976).

Ophiderinae

Azeta versicolor (Fabricius, 1794)
(Figs. 62, 63)

ID: Medium sized, polymorphic species; ground color varies from ferruginous to dark grayish brown. Recognized by the pointed forewing and transverse pale dash at middle of forewing costa.

DIST: Throughout the New world tropics from Florida to Argentina.

GUANA: 23 specimens, 1987, 1989, 1990.

BIO: Larvae on *Canavalia* (Fabaceae) (Kimball 1965).

COM: Commonly referred to in the literature by its junior synonym, *A. repugnalis* (Hübner).

Metallata absumens (Walker, 1862)
(Figs. 64–66)

ID: Medium sized, highly variable species. Ground color varies from reddish brown to gray. Similar to *E. cacata* but readily separated by the dark brown head and anterior border of thorax, by the nearly rounded border of hindwing, and by the filiform antennae in both sexes. Some specimens bear a black reniform mark at the end of forewing cell.

DIST: Southern United States, throughout the Antilles, south to Brazil, including Galapagos.

GUANA: 12 specimens, 1987, 1989, 1990.

BIO: Unknown.

Plusiodonta thomae (Guenée, 1852)
(Fig. 67)

ID: Medium sized, dark brown species with some shining golden areas on forewing. Recognized by the single dentate expansion on middle of dorsum of forewing.

DIST: Described from St. Thomas, considered endemic to the Antilles.

GUANA: 4 specimens, 1987, 1989.

BIO: Unknown.

COM: It is very likely that the continental species, *P. clavifera* (Walker), is conspecific with *P. thomae*. There

is some degree of variation in both the Antillean and the continental populations, and specimens from both regions intergrade into each other. *Plusiodonta clavifera* has been reported from Galapagos (Hayes 1975).

Syllectra erycata (Cramer, 1780)
(Fig. 68)

ID: Medium sized, reddish ferruginous species. Forewing with three transverse lines, angled basad near costa, and with one or two small, round pale dots on outer side of postmedial line. Males distinguished by unique shape of antenna, which is uncommonly thick throughout its length except for the tip.

DIST: Florida, throughout the Antilles, south to Brazil.

GUANA: 3 specimens, 1986, 1987.

BIO: Unknown.

Litoprosopus puncticosta Hampson, 1926
(Fig. 69)

ID: Large, velvet fuscous species. The narrow wings and stout body resemble a small sphingid. Readily distinguished from other noctuids of same size on the island by the orbicular black mark at lower edge of hindwing.

DIST: Haiti, Virgin Islands.

GUANA: 1 specimen, 1989.

BIO: Unknown, however, a close relative, *L. futilis* (Grote & Robinson), has been found boring into the flower stalks of *Sabal* and *Serenoa* (Arecaceae) (Ferguson et al. 1991).

Diphthera festiva (Fabricius, 1775)
(Fig. 70)

ID: Medium sized, bright yellow, with an elaborate pattern of bluish gray lines and three parallel rows of dots parallel to external margin. Hindwing dark gray with pale cilia.

DIST: Widespread throughout the New World tropics, from Florida to Argentina.

GUANA: 2 specimens, 1987, 1989.

BIO: Larvae on *Casuarina equisetifolia* L. (Casuarinaceae), *Corchorus hirsutus* L. (Tiliaceae), *Schrankia portoricensis* Urb. (Fabaceae), and *Waltheria indica* L. (Sterculiaceae) (Martorell 1976, Torres 1994). Bright colored larvae reared in Brazil on *Sida* sp. (Malvaceae) (VOB), a common weed in disturbed areas on the island. COM: Referred to as *Noropsis hieroglyphica* (Cramer), the junior synonym, in older literature. Its pattern may be aposematic. One male was tossed towards a gray kingbird, *Tyrannus dominicensis* (Gmelin), who caught it in the air, returned to its perch, tried to swallow the

moth, then spit it out and cleaned its beak against the branch (VOB pers. obs.).

Gonodonta bidens Geyer, 1832
(Fig. 71)

ID: Showy, medium sized moth; cannot be confused with any other species on the island. Forewing velvet dark brown; basal and postmedial areas paler, crossed with waving dark and reddish brown lines. Hindwing dark gray with a bright elongate yellow area at middle. Head conspicuously white.

DIST: Florida, throughout the Antilles, south to Argentina.

GUANA: 1 specimen, 1990.

BIO: Larvae on *Guarea trichilioides* L. (Meliaceae), *Cupania* (Sapindaceae) and *Diospyrus* (Ebenaceae) (Todd 1972a). Adults have been reported to damage oranges in northern Mexico by piercing ripening fruits (Todd 1959).

Melipotis acontioides (Guenée, 1852)
(Fig. 72)

ID: Medium to large sized, 3.5–5 cm wing span, light gray species. Hindwings semitranslucent white with a broad gray band along external margin not reaching lower angle; often with a small gray dot just before lower angle.

DIST: Florida, Antilles, south to Brazil, including Galapagos.

GUANA: 4 specimens, 1989.

BIO: Larvae on *Delonix regia* (Bojer ex Hook.) Raf. (royal poinciana) and *Parkinsonia aculeata* L. (Fabaceae) (Martorell 1976, Torres 1994).

COM: Except for *M. acontioides*, species of *Melipotis* are difficult to distinguish because they look very similar to each other and there is a high degree of variation among specimens within each species. Most *Melipotis* species recorded for Guana also occur in southern United States and were reviewed by Richards (1939) and illustrated in color by Bordelon and Knudsen (1999).

The species of this genus are often the most abundant moths at lights in dry areas of the New World tropics. One of the reasons is that they feed on various leguminous plants such as *Acacia*, *Cassia*, *Prosopis*, and other species that are abundant in such habitats. During certain collecting trips, especially immediately after the beginning of rainy season, they came to light in such great numbers that the entire sheet was covered, making it impossible to collect any other moths. On some occasions the lights had to be disconnected and collecting discontinued (VOB pers. obs.).

Melipotis fasciolaris (Hübner, [1831])

(Figs. 73, 74)

ID: Medium to large sized, 3–4.5 cm wing span, variable species—the most variable species of the genus occurring on the island. In some specimens the pattern is less contrasting while in others the contrast is strong. Most specimens can be distinguished from those of other species on the island by the antemedial oblique, pale fascia of forewing. In *M. fasciolaris* the fascia is straight and uniform in width throughout. In some specimens the area basad of the fascia is pale olivaceous. DIST: Southern United States, Antilles, south to Uruguay.

GUANA: 7 specimens, 1989.

BIO: Unknown, however Wolcott (1951) noted “Numerous caterpillars hiding under loose bark of trees of *Guaiaecum officinale* L. (Zygophyllaceae), presumably after feeding at night on the foliage”. This observation should be verified because this tree generally grows together with many leguminous species known as food plants of other species of *Melipotis*.

Melipotis contorta (Guenée, 1852)

(Fig. 75)

ID: Same size as larger specimens of *M. acontioides* and *M. fasciolaris*, but not as variable. Very similar to *M. famelica* with which it shares the white basal area of hindwing, and pale head and dorsal area of thorax. Easily separated from *M. famelica* by the irregular pale area at the end of cell. In the latter this is nearly rounded, whereas in *contorta* its lower end extends broadly towards the external margin.

DIST: Florida, Antilles.

GUANA: 4 specimens, 1989, 1990.

BIO: Unknown.

Melipotis famelica (Guenée, 1852)

(Fig. 76)

ID: Very similar to *M. contorta* in size and pattern. Color pattern not highly variable but sexually dimorphic. Females have pattern less contrasting than males. Some males have antemedial fascia tinged reddish brown.

DIST: Southern United States, Antilles, south to Venezuela, including Bermuda (Ferguson et al. 1991).

GUANA: 9 specimens, 1987, 1989, 1990.

BIO: Larvae on *Leucaena latisiliqua* (L.) Gillis & Stearn (Fabaceae) (Martorell 1976).

Melipotis ochrodes (Guenée, 1852)

(Fig. 77, 78)

ID: Easily confused with *M. indomita*, a neotropical species also recorded from the Greater Antilles but

not collected on Guana. Highly variable. Basal area of hindwing semitranslucent gray, not whitish as in *M. contorta* or *M. famelica*, or almost dark gray as in *M. januaris*.

DIST: Antilles, Mexico, south to Brazil.

GUANA: 1 specimen, 1989.

BIO: Larvae on *Prosopis juliflora* (Sw.) DC. and *Schrankia portoricensis* Urb. (Fabaceae) (Martorell 1976).

COM: The specimen illustrated here, identical to the one collected on Guana, matches the series at BMNH identified as *M. ochrodes* (type specimen in MNHN, Paris, not examined). This species could represent only a smaller form of *M. indomita*.

Melipotis januaris (Guenée, 1852)

(Figs. 79, 80)

ID: On average slightly smaller than other *Melipotis* species on the island; sexually dimorphic. Males have forewing with very contrasting, dark brown pattern; females little contrasting, reddish brown. Easily distinguished from all other species on the island by almost entirely dark gray hindwing.

DIST: Southern United States, throughout Antilles, south to the Guianas and Colombia.

GUANA: 1 specimen, 1987.

BIO: Larvae on *Inga laurina* (Sw.) Willd. [as *I. fagifolia*] (Fabaceae) (Martorell 1976).

Ascalapha odorata (Linnaeus, 1758)

(Witch moth, black witch)

ID: Distinguished by very large size and broad wings showing bluish hue. Sexually dimorphic; males blackish gray, females lighter in color, with more contrasting pattern, and with three close, parallel, zig-zag, white lines crossing the wings.

DIST: Originally South American, now Pantropical.

GUANA: 3 specimens, 1982 (J. Lazell), 1988, 1989.

BIO: Larvae on various leguminous trees, including *Acacia*, *Cassia* and *Piptadenia* (Hayward 1969, Hayes 1975). Comstock (1936), Schreiter (1936) and Bourquin (1947) describe its life history and immature stages.

COM: Illustrated in several works, including Covell (1984), Ferguson et al. (1991), Hayes (1975), and Kimball (1965).

Epidromia lienaris (Hübner, 1823)

(Fig. 81)

ID: Large, 5 cm wing span; highly variable, gray fuscous species; forewing with conspicuous reniform black mark at middle and a postmedial, almost straight, pale line.

DIST: New World tropics.

GUANA: 1 specimen, 1990.

BIO: The larvae (reported as *E. pannosa* Guenée) were found on *Psidium longipes* (O. Berg) McVaugh (Myrtaceae), and were fed in the laboratory on *P. guajava* L., *Eugenia axillaris* (Sw.) Willd. (Myrtaceae), *Metopium toxiferum* (L.) Krug & Urb., and *Rhus copallina* L. (Anacardiaceae) (Dickel 1991).

COM: This is a widespread and highly polymorphic species, described more than 10 times (Becker 2001), and is commonly known in the literature as *E. zetophora* Guenée (Hayes 1975) and *E. pannosa* (Solis 1986, Dickel 1991).

Manbuta pyraliformis (Walker, 1858)
(Fig. 86)

ID: Medium sized, gray species. Forewing speckled with small black dots and with an oblique postmedial yellowish fascia; basal area of this fascia light gray, distal area dark gray. Males with pectinate antennae.

DIST: Florida and Antilles.

GUANA: 1 specimen, 1986.

BIO: Unknown.

COM: Poole (1989) listed this species under *Epidromia* Guenée, however, its genitalia and pectinate antennae are similar to those of species currently placed in *Manbuta* Walker (Becker 2001).

Ephyrodes cacata Guenée, 1852
(Figs. 82, 83)

ID: Resembling *M. absumens* in size and coloration (see above). Variable in color, from reddish brown to gray, mottled with black scales. Distinguished by the strongly angled termen of both wings, especially of the hindwing, forming a small tail. Male antennae strongly pectinate, female filiform.

DIST: Southern United States, throughout the Antilles, south to Colombia.

GUANA: 5 specimens, 1989.

BIO: Larvae on *Sesbania grandiflora* (L.) Pers. (Fabaceae) (Brunner et al. 1975).

Concana mundissima Walker, [1858]
(Fig. 84)

ID: Medium sized, silky shining gray species; forewing with fine, broken, transverse lines and a dark dot near middle, closer to dorsum. Hindwing semitranslucent white, edged with gray.

DIST: Florida, throughout the Antilles, south to Brazil.

GUANA: 7 specimens, 1989, 1990.

BIO: Unknown.

Massala asema Hampson, 1926
(Fig. 85)

ID: Medium sized, 3.5 cm wing span, stout bodied, pale brownish species. Wings shaded brown with ill defined, irregular brownish lines, nearly parallel to each other, from costa to dorsum.

DIST: Antilles.

GUANA: 2 specimens, 1989.

BIO: Unknown.

Lesmone formularis (Geyer, 1837)
(Figs. 90, 91)

ID: Medium sized, gray, sexually dimorphic species; males have two wide ill-defined dark gray bands across the wings; in spread specimens the bands are continuous, crossing both forewing and hindwing. Females lack these bands, however, the edge of the postmedial band in the hindwing is replaced by a straight yellow fascia running from apex to tornus.

DIST: Southern United States, throughout the New World tropics, including Galapagos.

GUANA: 3 specimens, 1987, 1989.

BIO: Larvae on *Cassia* and *Mimosa* (Fabaceae).

Lesmone hinna (Geyer, 1837)
(Figs. 87–89)

ID: Same size and similar to *L. formularis*, but distinguished by the conspicuous round, pale dot on the forewing cell.

DIST: Southern United States, throughout the Antilles, south to Brazil.

GUANA: 5 specimens, 1989.

BIO: Unknown.

Baniana relapsa (Walker, 1858)
(Figs. 92, 93)

ID: Small to medium sized, pale ochreous, sexually dimorphic species. Male forewing with conspicuous triangular black patch near base, close to dorsum; postmedial area black, fading gradually towards termen. Females lack the triangular patch and have the distal area lighter gray, resembling *P. immunis*, but readily distinguished by the dark brown anterior edge of thorax.

DIST: Restricted to the Antilles.

GUANA: 18 specimens, 1986, 1987, 1989, 1990.

BIO: Unknown.

Eulepidotis addens (Walker, 1858)
(Fig. 95)

ID: Small, grayish brown; forewing with three straight lines across, the medial and postmedial double, en-

closing a conspicuous ochreous band. Hindwing with diffuse orbicular mark followed by a short tail on the lower part of external margin.

DIST: Antilles.

GUANA: 12 specimens, 1987, 1989, 1990.

BIO: Larvae on *Inga vera* Willd. (Fabaceae) (Martorell, 1976).

Eulepidotis modestula (Herrich-Schäffer, 1869)
(Fig. 94)

ID: Small, white tinged yellow species, with lines crossing the forewing and a short tail on the hindwing similar to those of former species.

DIST: Antilles.

GUANA: 1 specimen, 1989.

BIO: Larvae on *Ceiba pentandra* (L.) Gaertn. (Bombacaceae) (Martorell 1976).

Toxonprucha diffundens (Walker, 1858)
(Fig. 96)

ID: Small sized, 1.8–2.2 cm wing span, gray species. Highly variable; most specimens have pattern as in *Kakopoda progenies* (see below).

DIST: Antilles, south to Brazil.

GUANA: 1 specimen, 1990.

BIO: Unknown, however, other species in the genus have been reared on *Acacia* (Fabaceae) (Crumb 1956).

Kakopoda progenies (Guenée, 1852)
(Fig. 97)

ID: Medium sized, 2.5–3.0 cm wing span; broad winged, dark gray moth. Wings crossed with many fine waving lines alternating black and pale. Very similar to, and easily confused with, *T. diffundens* (see above), but readily separated by size. Smaller specimens of this species are always larger than the largest of the latter. Males are also separated from *T. diffundens* by the pale brush at the tip of abdomen.

DIST: Florida, throughout the Antilles to Brazil.

GUANA: 4 specimens, 1987, 1989.

BIO: Unknown.

COM: We consider *Kakopoda cincta* Smith, 1900, **new synonym**, described from Florida, to represent the same species.

Parachabora abydas (Herrich-Schäffer, [1869])
(Fig. 98)

ID: Small to medium sized, cupreous brown species; hindwing semitranslucent white, bordered with a wide, diffuse gray area, and veins contrastingly gray.

DIST: Mexico, throughout the Antilles, south to Brazil.

GUANA: 3 specimens, 1988, 1989.

BIO: Unknown.

Cecharismena abarusalis (Walker, 1859)
(Fig. 99)

ID: Small brown species with forewing tinged copper and ferruginous; apex of forewing pointed. Very similar to the following, but easily separated by the oblique straight medial line.

DIST: Florida, throughout Antilles, south to Brazil.

GUANA: 9 specimens, 1987, 1989.

BIO: Unknown, however, *C. nectarea* Möschler has been reared in Puerto Rico on *Caperonia palustris* (L.) A. St.-Hil. (Euphorbiaceae) (Schaus 1940).

Cecharismena cara Möschler, 1890
(Fig. 100)

ID: Same size and easily confused with *C. abarusalis*. Forewing with violet hue. Readily distinguished from the former by the medial oblique line curved in *C. cara* and straight in *C. abarusalis*.

DIST: Antilles.

GUANA: 2 specimens, 1989.

BIO: Unknown (see *C. abarusalis*).

Glympis eubolialis (Walker, [1866])
(Fig. 101)

ID: Small gray species with forewing crossed, in the middle, with ill defined, straight dark brown band; area distad to this band usually darker than basal area. Shape, size, and color similar to *Bleptina* species (below). Easily distinguished from *Bleptina* by the porrect labial palpi, which are long and upturned in *Bleptina* (see below).

DIST: Antilles.

GUANA: 22 specimens, 1989, 1990.

BIO: Unknown, however, the larvae of *G. concors* were found feeding on *Sesbania grandiflora* (L.) Pers. (Fabaceae) in Puerto Rico (Martorell 1976).

Herminiinae

Drepanopalpia lunifera (Butler, 1878),
new combination
(Figs. 102, 103)

ID: Small to medium sized, 1.5–2 cm wing span, dimorphic, dark fuscous species. Males have very long labial palpi thickly covered with long scales, reflexed over the head to the posterior margin of thorax. Females have long, porrect palpi. Male forewing with a reniform, pale mark at end of cell; in females this mark is reduced to small dot.

DIST: Antilles.

GUANA: 9 specimens, 1987, 1989.

BIO: Unknown.

COM: The series in VOB, including specimens from Guana Island, Tortola, Puerto Rico and Cuba, was compared with material in BMNH. Males match the type of *Drepanopalpia polycyca* Hampson 1898, **new synonym**, and females match the type of *Hypena lunifera* Butler 1878. *D. polycyca* is also curated in BMNH as a synonym of *Mastigophorus latipennis* Herrich-Schäffer. There is no specimen of *M. latipennis* in Coll. Gundlach (IES, Havana) where the type material of the Cuban species described by Herrich-Schäffer is supposed to be deposited. It is possible that some material is in MNHU, Berlin. It is possible that both *M. lunifera* and *M. polycyca* are junior synonyms of *M. latipennis*.

Lascoria orneodalis (Guenée, 1854)
(Figs. 104, 105)

ID: Small to medium sized, 1.5–2 cm wing span, dark fuscous species, resembling *D. lunifera*. Males have labial palpi as in the former species, but the forewing has a strong indentation at middle of external margin. Females have long upcurved palpi as in *Bleptina*.

DIST: Florida, Antilles.

GUANA: 3 specimens, 1987.

BIO: Larvae on tomato leaves (Solanaceae) (Martorell 1976).

Bleptina hydrillalis Guenée, 1854
(Fig. 108)

ID: Dark brown, 1.8–2.0 cm wing span; forewing crossed by three, well defined, pale lines: a straight line near base, and two sinuate lines, one after the reniform mark on cell, the other before external margin. Reniform mark usually pale, but black in some specimens.

DIST: Southern United States, Central America, Antilles.

GUANA: 34 specimens, 1986, 1989.

BIO: Unknown.

Bleptina caradrinalis Guenée, 1854
(Figs. 106, 107)

ID: About same size as *B. hydrillalis*, pale, variable. In those specimens with a dark band across forewing, the band is closer to the middle.

DIST: Southern United States, throughout the Antilles, South to Brazil.

GUANA: 6 specimens, 1989.

BIO: Larvae reported on dead leaves (Kimball 1965).

Bleptina menalcasalis Walker, [1859]
(Figs. 109, 110)

ID: Medium sized, 2.2–2.7 cm wing span, pale species. Forewing diffusely crossed with ill defined, irregular

lines. Distinguished from other noctuids of same size by the long, upcurved labial palpi.

DIST: Antilles, south to Venezuela.

GUANA: 27 specimens, 1986, 1987, 1989, 1990.

BIO: Unknown, but likely dead leaves (see *B. caradrinalis*).

Bleptina araealis (Hampson, 1901)
(Figs. 167, 168)

ID: Very small, 1–1.3 cm wing span, variable, fuscous to dark fuscous species. Forewing often with a dark gray fascia on basal fourth; area basad to fascia paler than rest of wing. Easily distinguished from other small species on the island by the very long upcurved labial palpi and by three very small, round, pale dots on forewing, the first just outside the basal band and the two others close together at end of cell.

DIST: Antilles and Florida (Dickel 1991). The first author recently collected one male and one female in Mexico: Tamaulipas, El Encino.

GUANA: 12 specimens, 1987, 1990.

BIO: Unknown (see previous species).

Hypeninae

Hypena lividalis (Hübner, 1790)
(Fig. 111)

ID: Small, gray; forewing with straight, white post-medial line; area basad of line olive, area distad gray.

DIST: South Palearctic, Pantropical.

GUANA: 2 specimens, 1989, 1990.

BIO: Larvae on *Urtica* and *Parietaria* spp. (Lödl 1994:502).

COM: In a revision of the genus, Lödl (1994) listed six synonyms under *H. lividalis*, two of them originally described from material collected in the Antilles.

Hypena minualis (Guenée, 1854)
(Fig. 166)

ID: Small, dark gray species with little contrasting markings. Forewing with a slightly paler basal area, separated from the external dark area by an ill defined oblique, dark gray line from near base of costa to middle of dorsum; a faint dash near apex. The palpi resemble those of female *D. polycyca*, but readily separated from the latter by the absence of the pale dot on cell.

DIST: Antilles, south to Brazil.

GUANA: 3 specimens, 1989.

BIO: Larvae on *Sida rhombifolia* L. (Malvaceae) (Ferguson et al. 1991).

ARCTIIDAE

Arctiinae

Hypercompe simplex (Walker, 1855)
(Figs. 112, 114)

ID: Large, white; forewing with outer half translucent, basal half with a series of annulate black edged spots. Abdomen orange with subdorsal pairs of dark bluish dots. Females much larger than males; spots on the abdomen white.

DIST: Puerto Rico, Virgin Islands and Lesser Antilles. GUANA: 6 specimens, 1987, 1989.

BIO: Martorell (1976) lists over a dozen hostplants, including *Cedrela* (Meliaceae), *Cissus* (Vitaceae), *Erechtotes* (Compositae), *Erythrina* (Fabaceae), *Ipomaea* (Convolvulaceae), tomato, banana, beans, guava, eggplant and *Solanum torvum* Sw. (Solanaceae).

COM: Commonly found in the literature, including in Martorell (1976), as *Ecpantheria icasia* (Cramer), a similar species from continental South America.

Calidota strigosa (Walker, 1855)
(Fig. 115)

ID: Large, gray moth with pink abdomen. Forewing with veins darker than ground color, shortly interrupted with pale. Cannot be confused with any other moth from the island.

DIST: Antilles and Southern United States.

GUANA: 28 specimens, 1984, 1987, 1989, 1990.

BIO: Dyar (1901:270) reared this species on *Guetarda elliptica* Sw. (Rubiaceae) and described its larvae; Martorell (1976) lists the same plant as its host in Puerto Rico.

COM: Franclemont (1983) and Watson & Goodger (1986) resurrected, respectively, *C. laqueata* (Edwards 1887) (type-locality: USA) and *C. cubensis* (Grote [1866]) (type-locality: Cuba) from the synonymy of *strigosa*. We believe they are only geographical forms of the same species.

In the resting position, the adult looks cryptic but when touched it opens the wings exposing the bright pink abdomen that seems to be aposematic. A specimen was picked from the collecting sheet by a pearly-eyed thrasher, *Margarops fuscatus* (Vieillot), and rejected. The same specimen was placed back on the wall where the bird often perched. The same bird picked up the moth again and then dropped it again (VOB pers. obs.).

Eupseudosoma involutum (Sepp, [1855])
(Fig. 116)

ID: Medium sized, white moth, with red abdomen. Cannot be confused with any other species in the island.

DIST: Southern United States, throughout Antilles, south to Argentina.

GUANA: 4 specimens, 1987.

BIO: Larvae on guava (*Psidium guineense* Sw.), *Eugenia*, *Eucalyptus*, and other Myrtaceae.

Utetheisa ornatrix (Linnaeus, 1758)
(Fig. 117)

ID: Medium sized, variable white moth. Most specimens have the forewing white, tinged pink, and a pink costa interrupted regularly by dark gray dots. In other specimens most of the white is replaced by pink and the wing is crossed with transverse rows of dark gray dots. The proportion of gray in the hindwing also varies; in some specimens it is restricted to the borders, while in others it covers most of the area.

DIST: Southern United States, throughout the Antilles, south to Argentina.

GUANA: 5 specimens, 1984, 1988, 1989, 1990.

BIO: Larvae on various species of *Crotalaria* (Fabaceae).

COM: Commonly found flying during the day in open, disturbed areas where its host plants often grow. Pease (1973) discussed the variation of this moth in the Virgin Islands.

Utetheisa pulchella (Linnaeus, 1758)
(Fig. 118)

ID: Easily confused with the dotted form of *U. ornatrix* (see above); easily separated by the dots on dorsum of thorax. *Utetheisa ornatrix* has three pairs; *U. pulchella* has only three dots.

DIST: Africa and Asia, now established in the New World tropics, but very rare in collections. The first author collected two specimens in Brazil, one at Pipa Beach, south of Natal, Rio Grande do Norte, and one in Planaltina, DF, near Brasília, which is the southern most record for the species in the New World.

GUANA: 1 specimen, 1990.

BIO: Larvae on *Myosotis* (Boraginaceae) and grasses (Hampson 1901).

Pericopinae

Composia credula (Fabricius, 1775)
(Fig. 113)

ID: Large, black, with body and wings dotted white; forewing with deep red markings on basal half below costa.

DIST: Endemic to the Antilles, this is the only species of the genus found on the Puerto Rican Bank.

GUANA: 10 specimens, 1984, 1986, 1987, 1989.

BIO: Unknown. Its closest relative, *C. fidelissima*

Herrich-Schäffer, from Cuba and Florida, has been reared on *Canavalia* (Fabaceae), oleander (*Nerium*), and *Echites* (Apocynaceae) (Kimball 1965).

COM: Commonly referred to in the literature by its junior synonym *C. sybaris* (Cramer). It is a crepuscular moth, commonly found flying along the trails before dark. Todd (1982) states it "occurs throughout the Greater Antilles, and south to Brazil" but that the "continental distribution needs to be studied." Previous authors (Forbes 1930, Bates 1933) considered it to be endemic to the Antilles. In the series in USNM there is only one non-Antillean specimen, an old specimen labeled only "Brazil," which we believe to be mislabeled. We are not aware of any other continental records for this large and colorful species, which would not be overlooked by collectors.

Ctenuchinae

Empyreuma pugione (Linnaeus, 1767) (Fig. 119)

ID: Large, wasp-like moth with conspicuous red wings and black body. Wings bordered dark gray, and body tinged iridescent green.

DIST: Apparently restricted to the Puerto Rican Bank. GUANA: 9 specimens, 1984, 1987, 1989, 1990.

BIO: Larvae on oleander, *Nerium oleander* L. (Apocynaceae) (Gundlach 1881).

COM: Day flying; very likely a Müllerian mimic of *Pepsis rubra* (Drury) (Hymenoptera: Pompilidae) (R. Snelling det.), as its larvae feed on a toxic plant. Similar to other arctiids, the larvae presumably sequester alkaloids from the host plant. Referred to in the older literature as *E. lichas* (Cramer).

Horama pretus (Cramer, 1777) (Fig. 121)

ID: Large, wasp-like, ochreous brown species, distinguished by the broad white band across base of abdomen.

DIST: Antilles.

GUANA: 36 specimens, 1984, 1985, 1987, 1989, 1990.

BIO: Larvae on *Cassine xylocarpa* Vent. [as *Elaeodendron xylocarpum*] (Celastraceae) (Wolcott 1951).

COM: Day flying, commonly seen visiting flowers. Presumably a Müllerian mimic of *Polistes major* Palisot de Beavois (Hymenoptera: Vespidae) (R. Snelling det.).

Horama panthalon (Fabricius, 1793) (Fig. 120)

ID: Similar but smaller than *H. pretus*. Distinguished by pattern on abdomen: only a small white dash across base, followed by alternating ochreous and black bands.

DIST: Southern United States, throughout the Antilles, south to southern Brazil.

GUANA: 13 specimens, 1986, 1989, 1990.

BIO: Unknown.

COM: Dietz and Duckworth (1976) divided the species into three subspecies, assigning the Antillean population to the nominal form. Very likely a Müllerian mimic of *Polistes crinitus* (Felton) (Hymenoptera: Vespidae) (R. Snelling det.).

Cosmosoma achemon (Fabricius, 1781) (Fig. 122)

ID: Small, wasp-like moth with unique combination of colors. Mostly orange with vertex of head and subdorsal sides of abdomen metallic bluish green; forewing with translucent areas.

DIST: Antilles south to Brazil.

GUANA: 10 specimens, 1989, 1990.

BIO: Unknown.

Eunomia colombina (Fabricius, 1793) (Fig. 123)

ID: Medium sized, wasp-like moth with black body and translucent wings. Forewing bordered black with a dark, red mark at end of cell connected with costa. Thorax striped white; abdomen with a carmine red band across the base, expanding laterally, followed by a white band, partially interrupted dorsally; the rest banded with alternating, narrow, red and white lines.

DIST: Antilles. Hampson (1898) gives also Honduras and Brazil, but the material studied by him should be checked.

GUANA: 1 specimen, 1989.

BIO: "Oruga en las convolvulaceas" (Gundlach 1881).

COM: Listed as *E. columbina*, a misspelling, by Wolcott (1951).

Nyridela chalciope (Hübner, [1831]) (Fig. 124)

ID: Medium sized, wasp-like, black moth with transparent wings. Head, thorax dorsally, base of wings, legs, and abdomen dorsally and laterally with iridescent blue. Antennae yellow. Forewing bordered black with an oblique transverse band from middle of costa to tornus.

DIST: Described from Havana, occurs throughout the West Indies and Central America, south to Panama.

GUANA: 1 specimen, 1990.

BIO: Larvae on *Cupania americana* L. (Sapindaceae) (Möschler 1890).

COM: Some authors regard the Central American

population as belonging to a separate species, *N. xanthocera* (Walker).

Lithosiinae

Afrida charientisma Dyar, 1913
(Fig. 169)

ID: Very small, 8–12 mm wing span, slightly variable species. Forewing mostly grayish, slightly tinged with green, crossed by alternating, ill defined whitish and dark gray bands. Easily recognized by the antemedial whitish band across forewing, starting from costa and running obliquely outwards to middle, then bent to base towards dorsum.

DIST: Antilles.

GUANA: 27 specimens, 1985, 1986, 1990.

BIO: Unknown, however, most of the species of this subfamily are lichen-feeders (Hampson 1900).

Progona pallida (Möschler, 1890)
(Fig. 170)

ID: Small, pale species, with no markings. Forewing slightly dusted gray.

DIST: Previously known only from Puerto Rico.

GUANA: 6 specimens, 1986, 1990.

BIO: Unknown.

Lomuna nigripuncta (Hampson, 1900)
(Fig. 171)

ID: Small, 1.3–1.7 cm wing span, whitish moth. Forewing dusted gray, conspicuously spotted with small, dark gray dots.

DIST: Previously known only from Puerto Rico (Field 1952).

GUANA: 29 specimens, 1984, 1985, 1986, 1990, 1991.

BIO: Unknown.

GEOMETRIDAE

Oenochrominae

Almodes terraria Guenée, [1858]
(Fig. 134)

ID: Medium sized, gray species. Wings densely dusted with dark gray scales and crossed with pale and dark ill defined, irregular bands. Males easily recognized by the strongly pectinate antennae nearly the length of forewing. Females have a slight olivaceous tinge, and external margins of both wings more strongly dentate.

DIST: Southern United States, throughout the Antilles to Colombia.

GUANA: 2 specimens, 1990.

BIO: Unknown.

Ennominae

Pero rectisectaria (Herrich-Schäffer, [1855])
(Figs. 125, 126)

ID: Medium sized, sexually dimorphic, variable species. Males with ground color varying from pale to dark brown; forewing with antemedial band, when visible, strongly bent to the base near costa, post-medial band nearly straight, with area distad to it much paler than rest of wing. Females more reddish brown. Easily distinguished from other species of same size by the conspicuously scalloped forewing margin near apex.

DIST: Puerto Rico, throughout the Lesser Antilles.

GUANA: 42 specimens, 1986, 1987, 1988, 1989, 1990.

BIO: Unknown.

COM: Poole (1987), who revised this large genus, stated that "Either it is rare, or it occurs in areas not commonly collected." Judging from the long series collected by us, it is not rare. It was common in October 1989, just after hurricane Hugo, when the first author had dozens of specimens on the light and selected 10 males and 4 females.

Oxydia vesulia (Cramer, [1779])
(Fig. 127)

ID: Large, extremely variable species, with no two identical specimens. Ground color of both wings varying from pale yellow, through pale gray to brown, clouded and irrorated in various degrees by gray. Forewing with an oblique post medial band from apex to near middle of dorsum. Easily recognized by the white vertex of head.

DIST: Southern United States, Antilles, south to Argentina.

GUANA: 4 specimens, 1987.

BIO: Larvae on *Acalypha* (Euphorbiaceae), *Cinchona* (Rubiaceae), *Cissampelos* (Menispermaceae), *Citrus* (Rutaceae), *Persea* (Lauraceae), *Rosa* (Rosaceae), and *Securidaca* (Polygalaceae) (Martorell 1976, Torres 1992).

Erastria decrepitaria (Hübner, [1823])
(Figs. 128, 129)

ID: Medium sized, yellow moth. Sexually dimorphic: males suffused olive, especially forming a wide bar along external margin; females more yellowish with the external olive area reduced to a faint irregular band, with a conspicuous dark spot on the band near the tornus.

DIST: Southern United States, throughout Antilles, south to Brazil.

GUANA: 4 specimens, 1987, 1989.

BIO: Unknown.

Sphacelodes fusilineatus (Walker, 1860),
revised status
 (Figs. 130, 131)

ID: Medium sized, dimorphic species. Males dark olive brown; forewing crossed with three equidistant, nearly parallel lines and with a subtriangular gray mark on costa between medial and postmedial line. Females brown with lines same as males, but mark on costa absent.

DIST: Antilles.

GUANA: 25 specimens, 1986, 1988, 1989, 1990.

BIO: Unknown.

COM: This species has been confused in the literature with *S. vulnerarius* (Hübner). The two differ in many features, the most obvious the color of antenna and costal mark of forewing. In *S. fusilineatus* the antenna and costal mark are light gray, whereas in *vulnerarius* the antenna is ochreous and the costal mark reddish brown. *Sphacelodes fusilineatus* was described from material with no locality label. There is a series in VOB collected in Guana, Tortola, St. Thomas, and Cuba. One of these was compared with and matches the type of *S. fusilineatus*. It is very likely that this is the species referred to by Kimball (1965:192) as "5221, 1 S. SP.", and listed by Ferguson (1983:95) as *S. haitiaria* Oberthür. The series of *S. vulnerarius* in VOB was collected in Cuba, Mexico, and Brazil. In Cuba, *S. fusilineatus* was captured at Pinares de Mayari, Holguín, while those of *vulnerarius* at Viñales, Pinar del Rio. The first locality is dry, similar to the conditions in St. Thomas and Guana, while the second is humid, similar to those areas on the American continent from where the series of *S. vulnerarius* came.

Macaria paleolata (Guenée, [1858])
 (Fig. 132)

ID: Small, slightly variable, pale species. Wings crossed by two ill defined, nearly straight bands; area distad to postmedial band darker than rest of the wing. Distinguished by head and anterior margin of thorax ochreous.

DIST: Antilles.

GUANA: 24 specimens, 1989, 1990.

BIO: Unknown, however, other species of this large genus feed on leguminous species (Fabaceae).

COM: This species was transferred from *Semiothisa* to *Macaria* by Scoble (1999). It is very likely that other, similar species of the large genus *Macaria* occur on the island.

Patalene ephyrata (Guenée, [1858])
 (Fig. 133)

ID: Small, variable, pale yellow to pale brown species. Forewing with antemedial band nearly evenly

rounded, postmedial band straight to near apex then strongly angled basad to costa. Hindwing with a single, straight band near middle. Distinguished by pointed apex and the sinuate external margin of forewing.

DIST: Antilles (Herbulot 1984).

GUANA: 41 specimens, 1986, 1987, 1988, 1989, 1990.

BIO: Larvae on *Ficus* (Moraceae) and *Ricinus* (Euphorbiaceae) (Brunner et al. 1975).

Cyclomia mopsaria Guenée, [1858]
 (Figs. 182, 183)

ID: Small, extremely variable species. Ground color of ten pale tinged reddish brown, to dark reddish brown. Forewing varying from unmarked to marked with transverse, ill defined, irregular lines. Hindwing pale to orange, often bordered with reddish brown. Similar to small noctuids such as *Eublemma* spp., but distinguished by the bipectinate antenna in males. Distinguished from other small geometrids by sharply pointed, porrect labial palpi, unusually long for a geometrid.

DIST: Antilles, south to Brazil.

GUANA: 11 specimens, 1987, 1989, 1990.

BIO: Unknown, however, *Erythroxyllum havanense* Jacq. (Erythroxyllaceae) has been listed as food plant of "*Cyllomia* sp. [presumably a misspelling] Un gusano medidor," in Cuba (Brunner et al. 1975).

COM: Its extreme variation led to its description several times. It is likely that after revision more names will be added to the six junior synonyms currently listed (Becker in prep.).

Geometrinae

Eueana simplaria Herbulot, 1986
 (Figs. 12–14, 141, 142)

ID: Small to medium sized, bluish green species. Lines on wings almost indistinct. Vertex of head white; abdomen with traces of a whitish line dorsally. Genitalia (Figs. 12–14) very similar to those of *E. niveociliaria* (Herrich-Schäffer), illustrated in Ferguson (1985: fig. 25a–e).

DIST: Guadeloupe.

GUANA: 17 specimens, 1986, 1989.

BIO: Unknown, but Scoble (1999) records *E. niveociliaria* from Rhamnaceae.

COM: Of all "greens" from the island this is the only bluish species, and it is slightly larger than the other species. The subfamily was revised for North America by Ferguson (1985) and for the neotropics by Pitkin (1996).

Phrudocentra centrifugarium (Herrich Schäffer, 1870)
 (Figs. 143–146)

ID: Medium sized, extremely variable, bright green species. Some specimens, usually males, have only

small, dark brown dots on wings, one on cell and the others along what would be the antemedial and post-medial lines; others have larger marks, of various sizes and shapes, whitish or brownish, above tornus. Abdomen has a series of minute, white dots dorsally, one on each segment.

DIST: Florida, throughout Greater Antilles to Puerto Rico (Ferguson 1985).

GUANA: 4 specimens, 1990.

BIO: Larvae on *Myrica cerifera* L. (Myricaceae) (Scoble 1999).

Chloropteryx paularia (Möschler, 1886)
(Fig. 186)

ID: Small, olivaceous species. Wings with antemedial and postmedial rows of minute whitish dots forming irregular lines. This is the only species of the green Geometrinae with this color.

DIST: Florida, throughout the Antilles.

GUANA: 11 specimens, 1987, 1989, 1990.

BIO: Larvae on *Myrica cerifera* L. (Myricaceae) in Florida (Ferguson 1985).

Synchlora frondaria (Guenée, [1858])
(Fig. 187)

ID: Small, bright green species. Distinguished from *S. cupedinaria* by the concolorous fringes.

DIST: United States, throughout the Antilles, south to Argentina.

GUANA: 29 specimens, 1986, 1988, 1989, 1990.

BIO: Larvae on *Stilingia* (Euphorbiaceae), *Pluchea*, *Bidens*, *Chrysanthemum*, *Helianthus* (Asteraceae), *Rubus* (Rosaceae), *Glycine max* (L.) Merr., and *Prosopis* (Fabaceae) (Ferguson 1985).

Synchlora cupedinaria (Grote, 1880)
(Fig. 188)

ID: Small, bright green species. Wings thickly bordered with brown. Thorax and abdomen brown dorsally; abdomen usually with white dots dorsally. Easily distinguished from the other green Geometrinae by the brown thorax and abdomen.

DIST: Florida, throughout Greater Antilles to Virgin Islands, to Nevis (Herbulot 1984).

GUANA: 41 specimens, 1985, 1986, 1988, 1989, 1990.

BIO: Larvae on *Lantana camara* L. (Verbenaceae) (Scoble 1999).

Sterrhinae

Of all the moths treated in this paper, the Sterrhinae have proven to be most difficult to identify. We have tried to reflect the species concepts as represented in the BMNH and USNM collections, and have followed the

generic placements in Scoble (1999). Our dissections of types, as well as Guana specimens, indicate that many problems exist in the existing classification, and full resolution of the names is beyond the scope of this paper.

Semaepus malefidarius (Möschler, 1890)
(Fig. 135)

ID: Medium sized, pale moth densely irrorated with reddish brown scales. Wings crossed with ill defined, hardly contrasting, irregular bands, slightly darker than ground color.

DIST: Puerto Rico, Virgin Islands.

GUANA: 14 specimens, 1989, 1990.

BIO: Unknown.

COM: Closely related to *S. castarium* (Guenée) from the Greater Antilles.

Leptostales noctuata (Guenée, [1858])
(Figs. 136, 137)

ID: Small to medium sized, pale species, densely irrorated with olive scales. Forewing with antemedial and postmedial bands darker than ground color, termen sinuate, apex pointed. Males show a dark mark on cell; in females this mark is reduced and faint.

DIST: Antilles.

GUANA: 19 specimens, 1986, 1987, 1988, 1989, 1990.

BIO: Unknown.

Acratodes suavata (Hulst, 1900)
(Fig. 185)

ID: Small, white species; wings crossed with three ill defined, little contrasting, grayish bands; medial and postmedial closer together. The only white geometrid on the island with no contrasting marks on wings.

DIST: Southern United States, Antilles.

GUANA: 31 specimens, 1985, 1986, 1987, 1988, 1989, 1990.

BIO: Larvae on *Randia aculeata* L. (Rubiaceae) (Kimball 1965).

COM: It is very likely that *A. virgotus* (Schaus), described from Jamaica, is a synonym. Our series matches the type of *A. virgotus* in USNM.

Lobocleta nymphidiata (Guenée, [1858])

ID: Small, white species with wings crossed with 4–5 narrow, irregular dark brown lines, consisting of rows of dark dots.

DIST: Antilles.

GUANA: 1 specimen, 1985.

BIO: Unknown.

Scopula laresaria Schaus, 1940
(Fig. 178)

ID: Small, pale whitish, irrorated with scattered gray scales; forewing crossed with poorly defined, irregular, narrow pale yellowish lines. Same size and color as *L. nymphidiata*, but readily distinguished by the blackish vertex of head, white in *L. nymphidiata*.

DIST: Puerto Rican bank.

GUANA: 9 specimens, 1985, 1988, 1989.

BIO: Unknown.

Idaea sp., probably *I. fernaria* (Schaus, 1940),
new combination
(Figs. 179, 180)

ID: Small, light gray, densely irrorated with dark gray scales; wings crossed with three, ill defined, irregular, narrow, dark gray lines more or less interrupted, giving the impression that they are densely dotted; both wings with black dot on cell. Females slightly lighter than males.

DIST: Antilles.

GUANA: 27 specimens, 1985, 1986, 1988, 1987, 1989.

BIO: Unknown.

COM: Based on the structure of male genitalia and eighth sternite of a male paratype, this species does not belong in *Scopula*, so we are provisionally transferring it to *Idaea fernaria*, **new combination**, following the generic concept of Holloway (1997). The Guana specimens are very similar to the type series of *Idaea fernaria*, but differ in the size of the long expansion on the juxta. In Guana specimens it is much longer than in a paratype of *I. fernaria*, nearly the size of the valvae, expanding beyond the uncus. *Idaea fernaria* is externally similar to *I. amnesta* (Prout, 1922), from Jamaica, but the male genitalia are very different.

"*Idaea*" *monata* (Forbes in Ramos, [1947])
(Figs. 172, 173)

ID: Very small, gray species; antemedial and post-medial lines dark gray, strongly contrasting, especially in the males; in some males the area between the two lines are dusted dark gray, forming a wide band across the wings.

DIST: Antilles.

GUANA: 29 specimens, 1985, 1986, 1989, 1988, 1990.

BIO: Unknown.

COM: This species is very similar to *Idaea insulensis* (Rindge, 1958), from Florida, but differs in the base of the valvae being more expanded in *I. insulensis* than in *I. monata*, although study of extensive series could show this to be interspecific variation. Based on the

structure of the male genitalia (Rindge 1958:fig. 9), neither *I. monata* or *I. insulensis* are properly placed in *Idaea* (cf. Holloway 1997), but recognition of the proper generic placement is beyond the scope of this paper. Weakly patterned individuals of *I. monata* are similar externally to *Lobocleata nataria* (Walker, 1866), but the male genitalia do not match the type of *L. nataria* in BMNH.

Idaea minuta (Schaus, 1901)
(Figs. 176, 177)

ID: Very small, 8–10 mm wing span, pale species. Wings crossed with several, narrow, ill defined, irregular, light brown lines. One of the smallest geometrid species on the island.

DIST: Antilles, USA.

GUANA: 19 specimens, 1985, 1987, 1988, 1989.

BIO: Unknown.

COM: Specimens belonging to this series were identified as *I. minuta* by C. Covell, and also matched the type of *Ptychopoda curtaria* Warren 1904, **new synonym**, from Jamaica, in BMNH.

Idaea eupitheciata (Guenée, [1858])
(Figs. 174, 175)

ID: Very small, sexually dimorphic, pale species, with wings crossed with irregular reddish brown bands. Males paler than females; forewing with small tuft of dark scales near dorsum; hindwing with a small tail near tornus. Females darker than males and without the tufts and tails.

DIST: Antilles.

GUANA: 16 specimens, 1985, 1988, 1989, 1990.

BIO: Unknown.

Leptostales phorcaria (Guenée, [1858])
(Fig. 181)

ID: Small, reddish brown; wings crossed with narrow, ill defined, irregular, yellowish lines; thorax dorsally and forewing costa yellow. Cannot be confused with any other species on the island.

DIST: Antilles.

GUANA: 2 specimens, 1989.

BIO: Unknown.

Leptostales oblinataria Möschler, 1890
(Fig. 184)

ID: Small, olivaceous species, with a broad reddish brown band across the forewing, delimited by medial and postmedial bands. Some specimens with this band faded. Cannot be confused with any other species on the island.

DIST: Southern United States, Antilles, into South America (Covell 1969).

GUANA: 15 specimens, 1988, 1989, 1990.

BIO: Unknown.

Larentiinae

Obila praecurraria (Möschler, 1890) (Fig. 138)

ID: Large species with velvet moss green forewing and orange ochreous hindwing. Forewing crossed with numerous alternating pale and dark gray waving bands. Hindwing with a wide gray band extending inwards, along internal margin, to the base. Female with middle of forewing crossed with a wide, irregular whitish band. DIST: Antilles.

GUANA: 1 specimen, 1989.

BIO: Unknown.

COM: Our specimen matches the type of *Pterocypha xantholiva* Warren, 1895, synonymized with this by Schaus (1940:326).

Pterocypha defensata Walker, 1862, **revised status** (Figs. 139, 140)

ID: Medium sized, variable, moss gray. Similar to *O. praecurraria*, but slightly smaller and lacking the orange ochreous hindwing color.

DIST: Southern United States, Antilles.

GUANA: 20 specimens, 1986, 1987, 1989, 1990.

BIO: Unknown.

COM: Commonly referred to in the literature, including Scoble (1999), by its synonym *P. floridata* (Walker), but *P. defensata* was described in 1862 and *P. floridata* in 1863, so *defensata* has priority.

HYBLAEIDAE

Hyblaea puera (Cramer, 1777) (Fig. 150)

ID: Medium sized, fuscous species with hindwing beautifully decorated with yellow to orange patches. Abdomen dorsally crossed with narrow lines behind each segment.

DIST: Pantropical.

GUANA: 2 specimens, 1989, 1990.

BIO: Larvae on *Crescentia cujete* L., *Spatodea campanulata* P. Beauv., *Tabebuia heterophylla* (DC.) Britton (Bignoniaceae), and *Petitia domingensis* Jacq. (Verbenaceae) (Martorell 1976). Considered as a minor pest of forest trees in Puerto Rico (Torres 1994). Immature stages described by Singh (1995).

COM: Taxonomy of the related species discussed by Berio (1967), but *H. puera* apparently represents a species complex (Shaffer & Nielsen 1996).

COSSIDAE

Psychonoctua personalis Grote, 1865 (Figs. 147–149)

ID: Medium to large, 2–4.5 cm wing span, narrow winged, gray species. The short, strongly pectinate antennae, and abdomen thickly clothed with long scales makes it easily recognized from any other large moths on the island.

DIST: Antilles and Mexico.

GUANA: 5 specimens, 1990.

BIO: The larvae are wood borers in many trees, sometimes causing severe damage to orange, coffee, white mangle, sea grape, etc. (Wolcott 1951).

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APPENDIX

***Catabenoides* Poole, new genus**

[The following new generic description was intended to appear in a fascicle of the series *Moths of America North of Mexico*. Because this fascicle will not be published in the foreseeable future, the author has permitted us to include the new generic name here, in order to allow us to describe *Catabenoides lazelli* in the proper place.]

Type-species: *Adipsophanes terminellus* Grote, 1883

Catabenoides contains the majority of the species previously placed in *Catabena*. The genus appears to be an outlier of a large group in southern South America, primarily Paraguay and Argentina. The genus is postulated to be closest phylogenetically to *Catabena* and *Neogalea*, but it has a number of curious synapomorphies making its affinities somewhat problematical. The principle identifying characters are in the male and female genitalia. In the male valve the bottom margin of the sacculus in both the right and left valves is produced into a long process separate from the clasper. The ventral margins of the valvae have strong elongate setae. The sacculus is lightly chitinized proximal to the clasper separating off a much more heavily sclerotized plate.

In addition to the three species known from North America (the type species, *C. vitrina* (Walker), **new combination**, and *C. divisa* (Herrich-Schäffer), **new combination**), there is one previously described species; *Catabenoides seorsa* (Todd) (*Catabena seorsa* Todd), **new combination**, from the Galapagos Islands. There are two undescribed species in the West Indies [one of these is described herein as *C. lazelli*], one undescribed species from central Mexico, and at least two unnamed species from Paraguay. The exact affinities of *Catabenoides*, *Catabena*, and *Neogalea* with the Argentina and Chilean faunas remain to be determined. The single remaining described species in "Catabena" of Poole (1989), *Laphygma terens* Walker, was described from "Venezuela." The type is rubbed and its abdomen is missing. I have not been able to match it with any specimens from the extensive Venezuela material in the USNM. It appears superficially to be a *Catabenoides*. Therefore for book-keeping purposes, I place it as *Catabenoides terens* (Walker), **new combination**.

Description. Head: Lashes absent; eyes large, naked; frons slightly swollen, very closely scaled; antenna simple, faintly ciliate; palpi unremarkable for the tribe; proboscis normal; two thin ridges of flattened scales between the bases of the antennae. **Thorax:** Patagia capable of being raised in a hood; vestiture of dorsum of thorax of flattened scales without hairs; slight metathoracic tuft; vestiture of wings of flattened scales; no sign of sexually modified scales in male. **Prothoracic leg:** Tibia with later ridge of hair giving it a flattened look; no tibial claw; tibia approximately as long as first three tarsal segments; first four tarsal segments with three rows of spines; tarsal claw without a tooth. **Mesothoracic and metathoracic legs:** Proximal third of tibia with tuft of long hairs and scales; tibia approximately as long as first three tarsal segments. **External tympanic region:** Approximately as in *Supralathosea* Barnes & Benjamin, however, first tergum much shorter than in *Catabena* and *Supralathosea* and with a strong definite proximal lip as in *Apharetra* Grote; hood strong. **Internal tympanic region:** Not examined. **Abdomen:** Very weak tuft on first tergite; male with basal hair pencils and accessory hair pencils in known species. Eighth sternum with strong row of hairs in middle of U-shaped pleurite. **Male genitalia** (Figs. 2, 3): Valvae characterized by production of ventral margin of sacculus into a process of various shapes; ventral margin of valvae with strong modified setae; a weak unsclerotized area before origin of clasper; uncus swollen with an apical tooth; juxta a single pointed plate; vesica in type species elongate-ovate, connected by a short neck to body of aedeagus; type species with a group of elongate, fused spines at apex of vesica and with groups of short, stubby spines near the middle and ventral margin of the vesica; vesica variable in other species. **Female genitalia:** Ovipositor lobes square, unmodified; ductus bursa well sclerotized, elongate, mushroom shaped in type species, separated by a distinct junction from the heavily sclerotized upper part of bursa; bursa bilobed, but lobes not distinctly separate; corpus bursae with stellate ridges, but no signum. **Larva and foodplants:** Unknown for North American species but recorded as *Lantana peduncularis* Andersson (Verbenaceae) in *Catabenoides seorsa* from the Galapagos.

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