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THE BUTTERFLIES OF GUANA ISLAND, BRITISH VIRGIN ISLANDS

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INTRODUCTION

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 bears a relatively rich vegetation and has sustained less damage by feral animals and man than have many adjacent islands. 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 great proportion of the Virgin Islands butterfly fauna. Riley (1975) lists 41 species living on all the islands together. We have recorded 31 on Guana. Considering its size this is a relatively rich fauna. Within the British Virgin Islands, Anegada (3872 ha) has 24 species (Smith et al., 1991) and Tortola (5444 ha) has 31 species (J. Miller and L. Miller, in prep.). Among larger islands in the region, Mona (6200 ha) has 46 species (Smith et al., 1988) and Monserrat (200,000 ha) has 38 (Schwartz, 1982).

These are the first records of butterflies from Guana Island. The material upon which this list is based was collected in July 1984 and 1985 (by S. E. & P. M. Miller), 1986 (S. E. Miller & M. G. Pogue), 1987 (S. E. Miller & V. O. Becker), 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 at the National Museum of Natural History (USNM), Washington, those of 1987-1990 are split between first author and the Bishop Museum, Hawaii.

This report is addressed not only to lepidopterists but also to biologists and others interested in the observation and study of the fauna of the Virgin Islands. For this reason we give brief information on each species to provide a context and suggest what kind of observations should be undertaken. The life histories of several species are still unknown, such as *Strymon bubastus* and *Ephyriades arcas*, while those of other species remain poorly known.

The species treated here have been illustrated elsewhere, especially in Comstock (1944) and Riley (1975). Therefore, we have not provided illustrations. However, we do provide

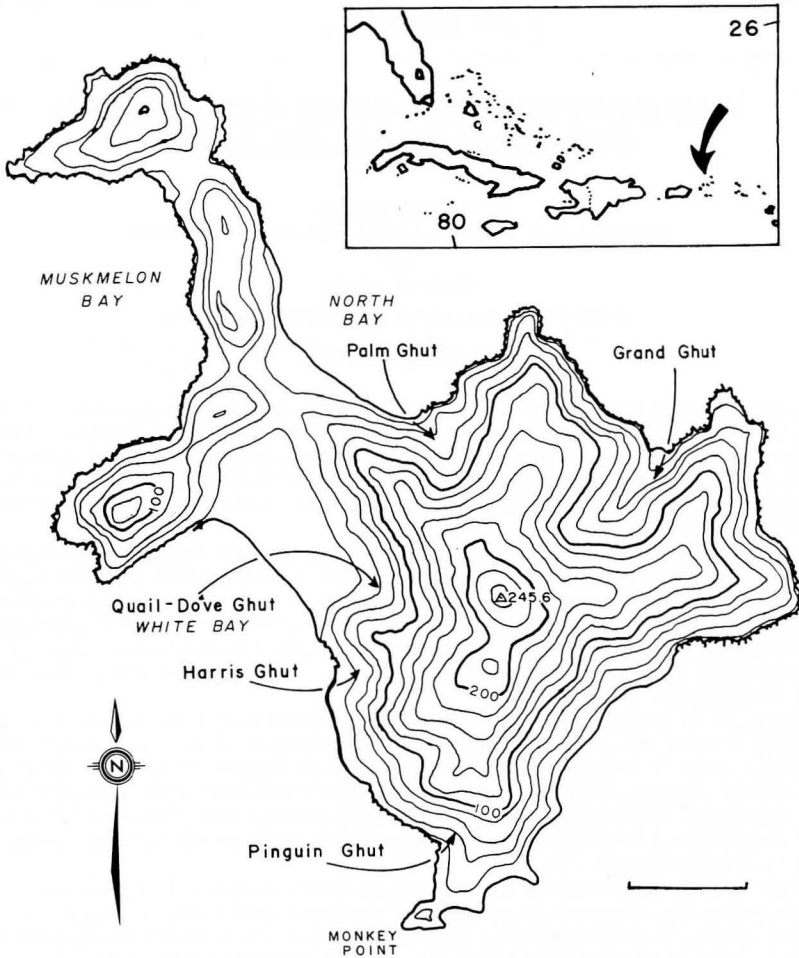


Figure 1. Guana Island. Contours are 20 m. Bar, bottom right, is 400 m. Inset shows the position of the Virgin Islands in the Antilles.

some diagnostic features to help with identifications. Common names for the butterflies follow Riley (1975).

PAPILIONIDAE

Battus polydamas thyamus (Rothschild & Jordan, 1906)
(Polydamas Swallowtail)

Widespread in the New World, from the southern United States to Argentina. This is the only swallowtail in the British Virgin Islands. It is tailless, black with yellow marks along margins. One specimen was seen (but not collected) gliding down the hill at North Bay, in July 1987. Doubtfully a resident as the larval host, *Aristolochia*, is not known to occur on Guana (Proctor, pers. comm.).

PIERIDAE

Ascia monuste virginia (Godart, 1819)
(Great Southern White)

A common species in the New World, ranging from the United States to Argentina. This and the following are the only two "whites" on Guana. This species is easily distinguished from female *Appias drusilla* by the wedge-shaped dark markings bordering the external margins. Presumably a resident as one its food plants, *Cakile lanceolata* (Willd.) O.E. Schulz (Cruciferae), is common along the beach on North Bay.

Appias drusilla boydi Comstock, 1943
(Florida White)

It ranges from Florida to Southern Brazil. Males are plain white except for the finely black-edged forewing costa. Females have margins bordered dark-gray, but not forming wedge-shaped marks as in *Ascia monuste*. The larvae of *A. drusilla* feed on various Capparidaceae, cultivated Cruciferae and *Drypetes* (Euphorbiaceae) (DeVries, 1987). Common on the island and presumably a resident as several species of Capparidaceae are abundant on the island (Proctor, pers. comm.).

Eurema elathea (Cramer, 1776)
(False Barred Sulphur)

This species ranges from Nicaragua south to Paraguay. Only the typical wet season form, common throughout the Caribbean, has been collected on Guana. It has the bar along the inner forewing margin fully developed. According to Riley (1975), the dry season form, which has the bar greatly reduced and sandy underwings also occurs in the area. Collecting in the dry season may reveal this form on Guana. Species of *Stylosanthes* have been recorded as the larval food plants (Riley, 1975) and at least one, *S. hamata* (L.) Taub., occurs on Guana (Proctor, pers. comm.). Certainly a resident, this species is very common on the plains around the pond.

Eurema lisa euterpe (Ménétrières, 1832)
(Little Sulphur)

This deep yellow black bordered species occurs from the eastern United States to Costa Rica. This and the former are the only two species of *Eurema* recorded from the Virgin Islands. Males of the two are easily separated by the black bar along the inner margin of the forewing cell in *elathea*; females of *elathea* have hind wings with white ground color, whereas in *lisa* it is yellow as in the male. According to Riley (1975), its grass-green downy larvae feed on a wide variety of leguminous plants such as clovers, peas and beans, *Trifolium*, *Cassia*, *Mimosa*, etc. Three species of *Cassia* (*s.l.*) and several other leguminous

plants are common on the island (Proctor, pers. comm.). Certainly a resident.

Phoebis sennae sennae (Linnaeus, 1758)
(Cloudless Sulphur)

Widespread in the New World, from the southern United States to Argentina. This is the only large bright yellow species seen on the island. Food plants are several species of *Cassia*, senna, clover, etc. (Riley, 1975).

NYMPHALIDAE

Danaus plexippus megalippe (Hübner, [1826])
(The Monarch)

This species ranges from Canada to Brazil, north of the Amazon (Ackery and Vane-Wright, 1984). Four subspecies are recognized in the Caribbean (Lamas, in press). A female form called leucogyne (Butler, 1884) with gray-brown or pale gray upperside ground color often occurs in the area (Riley, 1975). A few specimens of *megalippe* were seen visiting *Asclepias* in the lowlands of Guana and several collected. Milkweeds of the genera *Asclepias*, *Calotropis*, etc. are the common food plants. However, other milk plants such as *Apocynum* (Apocynaceae), *Ipomoea* (Convolvulaceae) and *Euphorbia* (Euphorbiaceae) have been reported (Ackery and Vane-Wright, 1984).

Agraulis vanillae insularis (Maynard, 1891)
(Gulf Fritillary)

This orange butterfly with conspicuous silvery marks on the underwings is the only fritillary found on the island. Widely distributed in the New World, this species ranges from the United States south to Argentina. Food plants are various vines of the genus *Passiflora* (Passifloraceae).

Heliconius charitonius charitonius (Linnaeus, 1767)
(The Zebra)

This black, yellow barred species, ranges from the southern United States to Venezuela and Peru. Very common on the island. Food plants are various species of *Passiflora* (Passifloraceae).

Biblis hyperia hyperia (Cramer, 1780)
(The Red Rim)

This beautiful black species, with red bordered hind wings, ranges from Mexico to Paraguay. A few specimens were spotted and a couple collected near the orchard at White Bay. The species is presumably a resident as the reported food plant, the Pine Nettle, *Tragia volubilis* L. (Euphorbiaceae) occurs on the island (Proctor, pers. comm.).

Junonia evarete (Cramer, 1779)
(Caribbean Buckeye)

A few specimens of this widespread New World species were seen on the island. Two specimens were caught in a Malaise trap near North beach. According to Turner and Parnell (1985) the only larval food plant in Jamaica is the black mangrove, *Avicennia germinans* (L.) L. (Avicenniaceae), a plant not recorded from Guana (Proctor, pers. comm.). This species is very similar to, and easily confused with the following.

Junonia genoveva (Cramer, 1780)
(Genoveva)

Two specimens were collected, one of them by Becker on flowers of *Stachytarpheta jamaicensis* (L.) Vahl, one of the larval food plants (Turner and Parnell, 1985). *Junonia genoveva* is easily confused with the former species, but readily separated by the color of antennae and by the broad oblique fascia on the ventral forewings. In *genoveva*, the antennae are pale cream or whitish with a dark club, and the fascia runs to the external margin, while in *evarete* the antennae are dark tawny or brown with a black club, and the fascia is closed by the marginal lines, not reaching the external margin.

Vanessa cardui (Linnaeus, 1758)
(Painted Lady)

This cosmopolitan species is "a notable migrant, a greater wanderer even than *Danaus plexippus*, liable to occur almost anywhere except in arctic conditions" (Riley, 1975). Two worn specimens were collected visiting flowers of oleander, *Nerium oleander* L. (Apocynaceae), on the top of the hill near the Guana Club houses. This is the first record from the Virgin Islands (cf. Comstock, 1944; Field, 1971; Riley, 1975).

LYCAENIDAE'

Chlorostrymon maesites maesites (Herrich-Schäffer, 1864)
(Clench's Hairstreak)

This beautiful species, with dark metallic blue dorsal wings and green ventral surfaces, ranges from Florida throughout the Caribbean Islands south to Dominica (Riley, 1975). It has been reared on *Albizia lebbek* L. (Benth.) in the laboratory (Opler and Krizek, 1984).

Electrostrymon angelia boyeri (Comstock & Huntington, 1943)
(Fulvous Hairstreak)

This Caribbean species ranges from the Bahamas to the Virgin Islands. This and the following species are the only ones bearing two hair-like tails on each hind wing. *Electrostrymon angelia boyeri* is readily separated from the next species by the fuscous brown wing undersides and absence of oblique white fascia on the forewing undersides. The larvae of *E. angelia* feed on *Schinus terebinthifolius* Raddi (Opler and Krizek, 1984).

Strymon acis mars (Fabricius, 1776)
(Drury's Hairstreak)

This species, which ranges from Florida throughout the Antilles to Dominica (Riley, 1975), is the largest hairstreak on Guana. Easily distinguished by the two tails on the hind wings and the lead-gray color and conspicuous white oblique band on the ventral wings. A very fresh female was collected in October, 1989, suggesting that it is a resident despite its rarity on the island. According to Riley (1975) "... in Jamaica... it is attracted to a low-growing shrub, *Croton discolor* [Euphorbiaceae], which... may be the food plant of its unknown caterpillar." Plants of this genus, which are very common on the island, should be searched for eggs and larvae.

Strymon bubastus ponce (Comstock & Huntington, 1943)
(Bubastus Hairstreak)

This is a widespread South American species, occurring through the Lesser Antilles north to Puerto Rico. Very similar to *S. columella* but tailless. Distinguished from the other tailless lycaenids on the island by the absence of a mark at the end of the discal

cell on the ventral forewing. Despite its wide distribution, the early stages are unknown.

Strymon columella columella (Fabricius, 1793)
(Hewitson's Hairstreak)

A very widespread species in the New World, ranging from the southern United States to Brazil. It is the only lycaenid on the island bearing a single tail on the hind wings. The ventral wing markings are very similar to *S. bubastus*. According to Riley (1975), its food plants are species of *Malva* and *Sida*, two genera of plants very common in all disturbed habitats.

Hemiargus hanno watsoni (Comstock & Huntington, 1943)
(Hanno Blue)

This species ranges from Costa Rica to Argentina, and is very common on the island. We follow Clench (1977: 186) in considering *hanno* as a species separate from *H. ceraunus* (Fabricius, 1793). The pattern on the ventral wing surfaces distinguishes it from the other three tailless lycaenids on the island: *S. bubastus* lacks the mark at the end of the forewing discal cell; *L. cassius* has more markings towards the wing bases; and *H. thomasi* has two black orbicular marks on the hind wing margin near the tornus. Food plants include many species belonging to several genera of legumes such as *Crotalaria*, *Chamecrista*, *Macroptilium*, etc.

Hemiargus thomasi woodruffi (Comstock & Huntington, 1943)
(Thomas's Blue)

This species ranges from southern Florida to St. Kitts, excluding Cuba and Jamaica (Riley, 1975), and is one of the four tailless lycaenids on Guana. This and *L. cassius* have two black orbicular marks on the ventral hind wings near the margin, however, *cassius* lacks other black markings. Certainly a resident on the island, the early stages are unknown.

Leptotes cassius catilina (Fabricius, 1793)
(Cassius Blue)

This species also ranges from Florida to Argentina, and is the most common blue on the island. Smaller than *H. thomasi* and distinguished from the other tailless lycaenids by the features discussed above. Food plants include several leguminous shrubs and bushes such as *Galactia*, *Indigofera*, *Desmodium*, *Crotalaria*, as well as *Plumbago* (Plumbaginaceae) (Riley, 1975). Several species belonging to all these genera occur on the island (Proctor, pers. comm.).

HESPERIIDAE

Choranthus vitellius (Fabricius, 1793)
(V-mark Skipper)

This species is restricted to Puerto Rico and the Virgin Islands (L. Miller, 1965). This bright yellow species is one of the most beautiful skippers on the island; easily distinguished from the others by its plain yellow underside. The larval hostplants include sugar cane and other grasses (Wolcott, 1951).

Cybaenes tripunctus (Herrich-Schäffer, 1865)
(Three spot Skipper)

This dull brown skipper ranges from the United States to Brazil. Common on the island, its larvae feed on Guinea grass (Riley, 1975).

Hylephila phyleus (Drury, 1773)
(Fiery Skipper)

This species is also widespread in the New World. Males are bright yellow but have dark marks scattered on the underside; females have yellow generally reduced. Its larvae feed on various grasses.

Panoquina sylvicola (Herrich-Schäffer, 1865)
(Sugar Cane Skipper)

This species is easily recognized by its brown color, semi-translucent marks on the forewings and by the row of blue spots forming a line along the margin on the ventral surface of the hind margin. It ranges from the United States to Argentina. Food plants include various grasses such as sugar cane, bamboo, Johnson and Pimento grass (Riley, 1975).

Wallengrenia otho druryi (Latreille, [1824])
(Broken Dash Skipper)

This common species, the size of *C. vitellius*, ranges from the United States to Argentina. It is almost all dark brown above, with reduced pale yellow markings; underside tinged rust-orange. Food plants are coarse grasses, sugar cane, rice, etc. (Riley, 1975).

Ephyriades arcas philemon (Fabricius 1775)
(Hairy Dusky wing)

The taxonomy of this large sexually dimorphic species is complex. Males are uniformly silky black with a costal fold from base to distal two-thirds of forewings; females dull brown with translucent marks on forewings. Using the characters of Riley (1975: 174), our specimens would be identified as *E. zephodes* (Hübner). However, the traditional external characters are of limited value (Smith *et al.*, 1988: 15; Schwartz, 1989: 54). Genitalia of one dissected male match *arcas* as illustrated by Evans (1953: 203), so we follow Smith *et al.* (1988, 1991) in assigning the Guana specimens to *arcas*. As the species have been mixed, it is not clear to which species the recorded food plants belong. Larvae of one or both have been reared on *Stygmaphyllon periplocifolium* (Desf.) Juss. [as *S. ligulatum*], *Malphigia fucata* Ker-Gawl. (Malphiaceae), and *Ceiba pentandra* (L.) Gaertn. (Bombacaceae). Considering this situation, more collecting, both of adults and larvae, is necessary to ascertain whether both species are present on the island and, to determine the larval food plants.

Polygonus leo savigny (Latreille, [1824])
(Hammock Skipper)

This large species ranges from the southern United States to Argentina. It is commonly found in shady areas along trails resting upside-down under leaves. Its larvae feed on dogwood in the United States. It has been recorded feeding on *Lonchocarpus* (Leguminosae) on Cuba (Riley, 1975).

Pyrgus oileus oileus (Linnaeus, 1767)
(Tropical Checkered Skipper)

This is certainly the most common butterfly on the island. It is found in open sunny disturbed areas where its malvaceous weed hosts grow, resting with wings wide open. Males are gray and females fuscous, spotted white.

Urbanus dorantes cramptoni Comstock, 1944
(Dorantes Skipper)

The two species of *Urbanus* present in the Antilles both occur on the island (we follow Lamas, in press, who considers *U. obscurus* (Hewitson) as a subspecies of *dorantes*), and are the only tailed skippers on Guana. *U. dorantes* is distinguished from *U. proteus* by the absence of metallic green. *U. dorantes* is widespread in the New World, ranging from the southern United States to Argentina. Its larvae feed on various species of beans (*Phaseolus*) (Leguminosae).

Urbanus proteus domingo (Scudder, 1872)
(Common Long-tail Skipper)

This species ranges from the United States to Argentina. Easily distinguished from the former species by the iridescent green scales on the body and wing bases (in the former the wings are plain dull brown). Common on the island, the larvae feed on various species of beans (*Phaseolus*), as well other leguminous plants.

SPECIES THAT MIGHT OCCUR ON GUANA ISLAND

Appias punctifera d'Almeida, 1939

Appias punctifera, a species very similar to *A. drusilla* (see above), also occurs in the Virgin Islands (Comstock, 1944; Riley, 1975). It has a black bar at the end of the forewing discal cell, more conspicuous ventrally than dorsally. Further collecting may locate *A. punctifera* on Guana.

Anartia jatrophae Johansson, 1763

This species is known from the larger neighbor island of Tortola (Comstock, 1944: 457; Gillham, 1957: 6), but not Guana. The food plant is *Bacopa monnieri* (L.) Pennell (Riley, 1975), which is known from Guana (Proctor, pers. comm.).

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