

ANNOTATED LIST OF BUTTERFLIES OF
SAN SALVADOR ISLAND, BAHAMAS

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ABSTRACT. Collection records for 41 species of butterflies from San Salvador Island, the Bahamas, are reported. These include the first Bahamian records for *Eunica tatila tatilista*, *Eunica monima*, and *Hypolimnas misippus*. Some notes on ecology of certain species are also included.

San Salvador Island lies along the easternmost flank of the Bahamas, approximately 600 km SE of the coast of Florida and 320 km from Cuba. This island is 21 km in length (N-S) and 8 km wide. Its vegetation has been described by Smith (1975) as subtropical scrub.

Several individuals and groups have collected butterflies on the island, including Worthington in 1909, the Armour Expedition in the 1930's, the John R. Hayes family in 1974 and the Van Voast Expedition of the American Museum of Natural History in 1953 (Rindge, 1955). As a result of these collections, a total of 20 species of butterflies were reported from the island.

Since December, 1975, students from Hartwick College have been collecting insects on the island yearly. Their collections bring the total number of butterfly species reported from the island to 41, and the first Bahamian records for three species, *Eunica tatila*, *Eunica monima*, and *Hypolimnas misippus*, are among these.

This paper lists records for all butterflies collected on San Salvador. The species are arranged by family and species in the order used by Riley (1975). Older collection records are followed by abbreviations for the museums in which the specimens are deposited. Abbreviations are as follows: CM, Carnegie Museum of Natural History; MCZ, Museum of Comparative Zoology; AMNH, American Museum of Natural History.

Collecting Localities and Common Species

Smith (1975) distinguished several vegetation zones on the island, each characterized by soil type and vegetation assemblage (Smith,

¹ Deceased 1 April 1979. Mr. Clench verified or identified most of the specimens, and provided most of the records other than our own. The final manuscript was prepared posthumously.

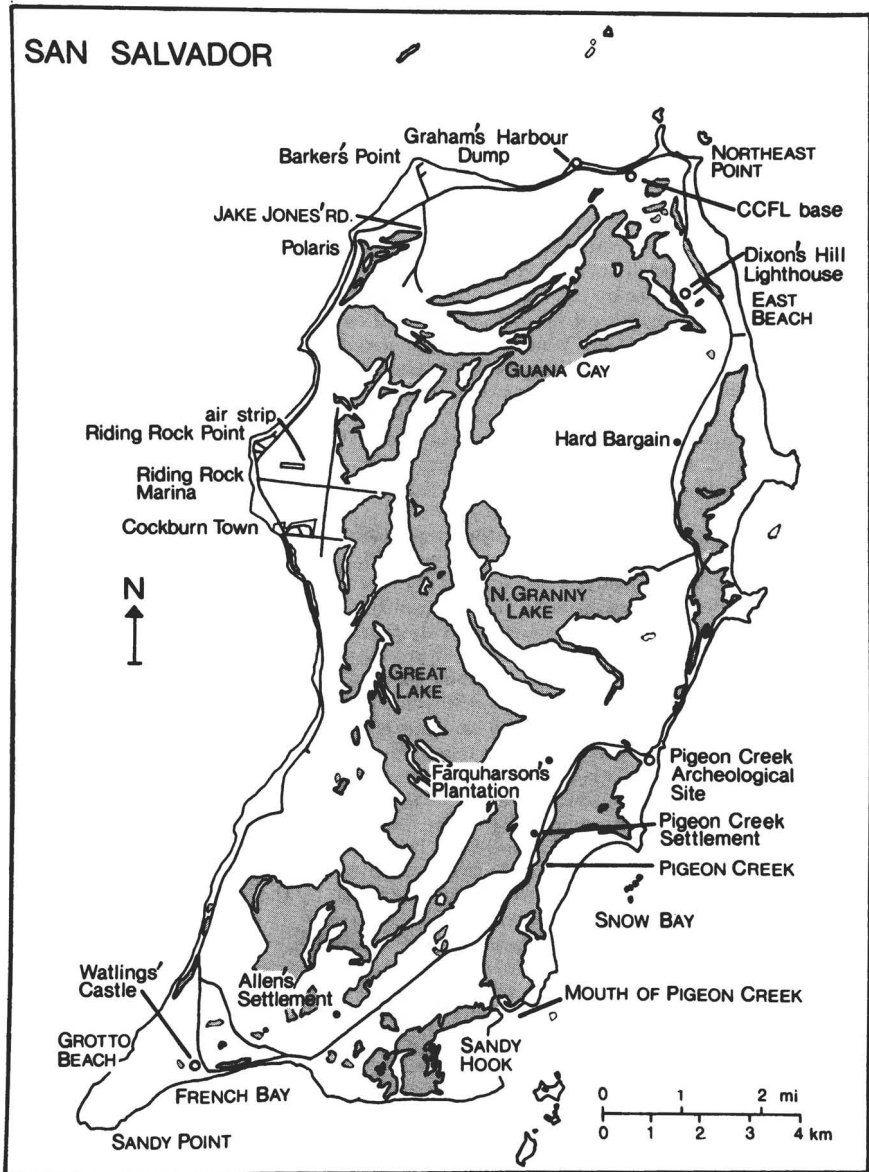


FIG. 1. Map of San Salvador Island, Bahamas, showing collection localities.

unpubl.). The following descriptions of our collecting localities, indicated in Fig. 1, utilize his terms for the vegetation types.

1. College Center of the Finger Lakes Base (CCFL). This old naval base at Graham's Harbor is now operated as a field station by the College Center of the Finger Lakes.

It serves as our headquarters during collecting trips. The lawns on the base are mowed, and ornamentals such as oleander, frangipani, and hibiscus have been planted. A few common butterflies on the base include *Anartia jatrophae guantanamo*, *Dryas iulia carteri*, *Eurema elathea*, and *Eurema lisa sulphurina*.

2. Graham's Harbor Dump. A sandy road runs from the highway through an area of disturbed coastal thicket to the open dump area on the coast. The most common plants along the road are *Croton discolor* Willd., *Cassia bicapsularis* L., *Corchorus hirsuta* L., and *Lantana involucrata* L. (Salbert & Elliott, 1979). Among the common butterflies along the dump road are *Agraulis vanillae*, *Battus polydamas*, *Phoebis agarithe antilia*, and *Eurema chamberlaini chamberlaini*.

3. Jake Jones' Road. This road runs about 3.2 km into the island's interior, from an area of coastal thicket at its intersection with the highway, through coppice. The trail ends in an open area, grazed by wild cattle. Milkweed, *Asclepias curassavica* L., is common, and individuals of *Danatus plexippus megalippe* are usually seen. Along the trail in areas of coppice, poisonwood, *Metopium toxiferum* (L.) Krug. & Urb., is one of the most common trees. In the more open areas, Christmas bush, *Cassia bicapsularis* L., is common, as is low-growing life plant, *Kallanchoe pinnata* (Lem.) Pers. This trail shows a great diversity of Lepidoptera, undoubtedly because of the ecological diversity along it. Several species of *Eurema* are found: *E. chamberlaini*, *E. elathea*, *E. mesalina*, and *E. dina helios*. Other species occurring here include *Papilio andraemon bonhotei* and *Junonia genoveva*.

4. Near Polaris. This is an area of the vegetation type that Smith (ibid.) calls *Coccothrinax* scrub. The soil here is light-colored sand, and the vegetation is characterized by shrubs and palms. Epiphytic species of *Tillandsia* and *Encyclia* are common. *Junonia genoveva* is a characteristic species in this locality, and during our studies *Ascia monuste eubotea* was collected almost exclusively there.

5. Cockburntown and Riding Rock. Cockburntown is the island's largest town. There are many private homes with ornamentals planted here. The Riding Rock Inn, the major tourist hotel, is about 1.6 km N of the town near the airstrip. The Riding Rock Marina lies midway between the inn and the town. Earlier butterfly collectors concentrated their efforts in this area of the island, but we have done little collecting there.

6. Near French Bay. This is an area at the south end of the island, which Smith (ibid.) designated rocky coppice because of the limestone substrate. There are many deep pits in the limestone, and most of the individuals of *Marpesia eleuthea bahamensis* seen or collected were flushed from these pits.

7. Sandy Hook. This is a peninsula at the southeastern end of the island, bounded on the south and east by Snow Bay and on the north by the mouth of Pigeon Creek. Smith calls its vegetation *Coccothrinax* scrub because of its white sandy soil and low-growing vegetation. *Euptoieta hegesia hegesia* is especially common here.

8. Trail to North Granny Lake. This trail runs into the interior from the highway on the island's east side. About .8 km inward, there is a small tidal pond where we concentrated our collecting efforts. The trail to this point is being invaded by haulback, *Mimosa bahamensis* Benth. Characteristic butterflies here include *Calisto herophile apollinis* and *Hylephila phyleus phyleus*.

9. Trail to East Beach. This trail runs less than .8 km through blacklands to the *Uniola* strand which adjoins the beach. The vegetation is characterized by shrubs, especially species of *Croton*. Several species of lycaenids are common here including *Strymon acis armouri*, *Electrostrymon angelia dowi*, and *Leptotes cassius theonus*.

10. Guana Cay. This area is located on the shore of Great Lake, one of the brackish lakes in the island's interior. Along the lake's shore there is an open mangrove area; this is surrounded by coppice. Two butterfly species characteristic of the mangroves are *Anaea verticordia* and *Lucinia sida albomaculata*. Within the coppice *Eunica tatila tatilista* occurs.

Collecting Results

Numbers in parentheses indicate specimens collected.

DANAIDAE

Danaus plexippus megalippe Hübner, 1824. 24 Feb. 1909, nfd² (CM); 30 Nov. 1975; 1 Dec. 1975, 25 Nov. 1976 (3), 24 Nov. 1977, 29 Nov. 1977, end of Jake Jones' Rd; 1977, nfd. Adults were usually associated with the milkweeds at the end of Jake Jones' Road.

Danaus gilippus berenice Cramer, 1779. 17 Feb. 1933, nfd (CM).

SATYRIDAE

Calisto herophile apollinis Bates, 1934. 9 Dec. 1977, trail to N. Granny Lake. The only specimen was collected in an area of thick coppice where haulback predominated.

NYMPHALIDAE

Anaea verticordia Hübner, 1824. 21 July 1974, NE Point (CM); 30 Nov. 1975; 1977, nfd (8); 25 Nov. 1976, Jake Jones' Rd (2); 12 Dec. 1976, Grotto Beach; 30 Nov. 1977, Sandy Hook; 1 Dec. 1977, Jake Jones' Rd; 2 Dec. 1977, Guana Cay; 29 Nov. 1978, Farquharson's Plantation; 29 Nov. 1978, W Pigeon Creek; 5 Dec. 1978, trail to E Beach; 14 Dec. 1978, Graham's Harbor Dump. This species was collected at several different localities. Its behavior is best observed in the mangroves at Guana Cay where individuals alight upside down near the base of limbs.

Marpesia eleuthea bahamensis Munroe, 1971. 25 Nov. 1976, Jake Jones' Rd; 5 Dec. 1977, nr. French Bay (2). This species is rather rare, but we have seen it several times in the rocky coppice near French Bay, where individuals have been flushed from limestone pits.

Lucinia sida albomaculata Rindge, 1955. 2 Dec. 1977, Guana Cay (2); 2 Dec. 1977, Graham's Harbor Dump; 23 Nov. 1978, Jake Jones' Rd; 6 Dec. 1978, Guana Cay. While we have collected the species elsewhere on the island, it is most commonly associated with the mangroves at Guana Cay.

Eunica tatila tatilista Kay, 1926. 2 Dec. 1977, 6 Dec. 1978, Guana Cay. This is the first Bahamian record of this species. Although a coloring book about Bahamian butterflies (Anon., 1974) listed it from Andros, Clench (1977) did not collect it there. On San Salvador this species was restricted to coppice in the interior of the island. We collected it only on our expeditions to Guana Cay.

Eunica monima Cramer, 1782. 22 Nov. 1978, intersection Jake Jones' Rd and highway. This species, like the preceding, has never before been reported from the Bahamas. Riley (1975) reported it from Cuba, Haiti, the Dominican Republic, Jamaica and Puerto Rico, and mentioned its migratory habits. It remains to be seen whether this specimen represents an isolated migratory individual, or whether the species has established a population on the island.

Hypolimnna misippus misippus Linn., 1764. 17 Nov. 1978, road W of CCFL Base; 9 Dec. 1978, Pigeon Creek Settlement. This is also a new species record for the Bahamas. Two females were collected at opposite sides of the island, and one of us (D. R.) also saw a male, which was not collected. These findings suggest that the species is breeding on San Salvador.

Junonia coenia Hübner, 1822. 30 Nov. 1978, Allen's settlement.

Junonia genoveva Cramer 1780. 24 March 1909, nfd (CM); 20 Nov. 1975, nfd; 26 Nov. 1976, nr. Polaris; 15 Dec. 1976, 1 Dec. 1977, Jake Jones' Rd.

Anartia jatrophae guantanamo Munroe, 1942. 13 March 1909, nfd (CM); 18 March 1953, nr. Cockburntown (Rindge, 1955) (AMNH); 22 July 1974, Riding Rock Marina (2) (CM); 21 Nov. 1977, 21 Nov. 1978, CCFL Base; 21 Nov. 1977, 3 Dec. 1978, Graham's Harbor Dump; 24 Nov. 1977, 1 Dec. 1977 (2), 4 Dec. 1978, Jake Jones' Rd; 5 Dec. 1978, trail to E Beach. This species is especially common in developed areas, such as the CCFL Base and the Cockburntown area.

Vanessa cardui Linn., 1758. 14 Dec. 1976, Watlings' Castle; 22 Nov. 1978, Graham's Harbor Dump. According to Riley (1975) isolated migratory individuals are occasionally collected in the West Indies. This seems to be the case for San Salvador.

² nfd = no further data available.

Euptoieta hegesia hegesia Cramer, 1779. 11 March 1909, Cockburntown; 13–27 March 1909, nfd (13) (CM); 18 March 1953, nr. Cockburntown (AMNH) (Rindge, 1955); 21 July 1974, Riding Rock Marina (CM); 22 Nov. 1976, 21 Nov. 1977, 21 Nov. 1978, 4 Dec. 1978, CCFL Base; 25 Nov.–16 Dec. 1976, 24 Nov. 1977; 23 Nov. 1978, Jake Jones' Rd; 30 Nov. 1976 (2), 6 Dec. 1978, Sandy Hook; 14 Dec. 1976, Watlings' Castle; 23 Nov. 1977, Graham's Harbor Dump (2); 29 Nov. 1978, W of Pigeon Creek. This species is among the most common on the island.

HELICONIIDAE

Dryas iulia carteri Riley, 1926. 30 Nov. 1975, nfd; 23 Nov. 1976, 22 Nov. 1978, CCFL Base; 26 Nov. 1976, nr. Polaris; 13 Dec. 1976, 1 Dec. 1977, 1 Dec. 1978 (2), Jake Jones' Rd. This butterfly is common in developed areas of the island. Individuals are frequently near buildings on the CCFL base.

Agraulis vanillae insularis Maynard, 1889. 11–17 March 1909, nfd or Cockburntown (series) (CM); 1939, nfd (MCZ); 18 March 1953, nr. Cockburntown (AMNH) (Rindge, 1955); 21–22 July 1974, Riding Rock Marina (6) (CM); 21 July 1974, NE Point (CM); 21–25 Nov. 1975, nfd; 22 Nov. 1976, 21 Nov. 1977 (3), CCFL Base; 15 Dec. 1976, 24 Nov.–2 Dec. 1977 (2), 4 Dec. 1978, Jake Jones' Rd; 28 Nov. 1977, nr. Polaris; 1 Dec. 1978, nfd; 6 Dec. 1978, Guana Cay. This species, like *Euptoieta hegesia hegesia*, is one of the most common on the island.

LYCAENIDAE

Strymon martialis Herrich-Schäffer, 1864. 18 March 1953, nr. Cockburntown (AMNH) (Rindge, 1955).

Strymon acis armouri Clench, 1943. 22 Nov. 1976, CCFL Base; 14 Dec. 1978, Jake Jones' Rd; 28 Nov. 1977, nr. Polaris; 4–14 Dec. 1978 (2), Graham's Harbor Dump; 5 Dec. 1978, trail to E Beach; 6 Dec. 1978, Guana Cay.

Strymon columella cybira Hewitson, 1874. 17 March 1909, nfd (CM); 18 March 1953, nr. Cockburntown (AMNH) (Rindge, 1955); 29 Nov. 1978, nr. Pigeon Creek; Nov–Dec. 1978, nfd.

Electrostrymon angelia dowi Clench, 1941. 5 Dec. 1978, trail to E Beach.

Leptotes cassius theonus Lucas 1857. 11 March 1909, Cockburntown (CM); 13 March 1909, nfd (CM); 17 Feb. 1933 (MCZ) (Clench, 1943); 18 March 1953, Cockburntown (AMNH) (Rindge, 1955); 4 Dec. 1975, nfd; 22 Nov. 1977, Graham's Harbor Dump; 23 Nov. 1978, Barker's Point; 27 Nov. 1978, CCFL Base; 29 Nov. 1978, W Pigeon Creek (4); 5 Dec. 1978, trail to E Beach (10). This is the most common species of lycaenid on San Salvador. Individuals are very commonly seen on vegetation, especially *Croton* along trails and roads on the island.

Hemiargus thomasi Clench, 1941. 13 March 1909, nfd (CM).

PIERIDAE

Ascia monuste eubotea Latreille, 1819. 11 March 1909, Cockburntown (CM), 13–20 March 1909, nfd (2) (CM); 17 Feb. 1933, nfd (7) (MCZ); 18 March 1953, Cockburntown (AMNH) (Rindge, 1955); 21 July 1974, NE Point (5) (CM); 15–26 Nov. 1976 (2), 28 Nov. 1977 (1), nr. Polaris; 15 Nov. 1976, Jake Jones' Rd. While this species was collected frequently from the island in the past, most of the specimens we collected were from the area of *Coccothrinax* scrub near Polaris.

Eurema chamberlaini chamberlaini Butler, 1898. 17 Feb. 1933, nfd (2) (MCZ); 21 July 1974, NE Point (5) (CM); 22 Nov. 1976, 23 Nov. 1978, CCFL Base; 24 Nov. 1976, 13 Dec. 1976, 24 Nov.–1 Dec. 1977 (2); 24 Nov. 1978, Jake Jones' Rd; 2 Dec. 1977, Guana Cay; 21 Nov.–14 Dec. 1978, Graham's Harbor Dump (2); 5 Dec. 1978, trail to E Beach (2).

Eurema elathea elathea Cramer, 1775. 2 Dec. 1976, 27 Nov. 1978, CCFL Base; 16 Dec. 1977, 1 Dec. 1978, Jake Jones' Rd.

Eurema lisa sulphurina Poey 1853. 22 Nov. 1976, CCFL Base.

Eurema messalina blakei Maynard 1891. 13 Dec. 1976, 1 Dec. 1977 (2) Jake Jones' Rd; 14 Dec. 1976, Watlings' Castle; 29 Nov. 1978, Pigeon Creek Archeological Site (2); 6 Dec. 1978, Guana Cay.

Eurema dina helios Bates, 1934. 24 Nov. 1976, 1 Dec. 1977, Jake Jones' Rd. *Eurema chamberlaini* was the most widely distributed of the species of *Eurema* on the island. It occurred in disturbed areas such as the CCFL Base and the dump as well as in other habitats such as coppice, coastal thicket and blacklands. *E. messalina blakei*, on the other hand, was restricted to coppice areas. The other species of *Eurema* were collected rarely, and it is impossible to generalize about their distribution patterns.

Kricogonia lyside Godart, 1819. 17 Feb. 1933, nfd (MCZ); 23 Nov. 1976, 26 Nov.–1 Dec. 1978 (2), CCFL Base; 26 Nov. 1976, nr. Polaris; 5 Dec. 1976, 1 Dec. 1977, 22 Nov. 1978, Jake Jones' Rd; 22 Nov. 1977 (2), 4 Dec. 1978, Graham's Harbor Dump.

Phoebis agarithe antillia Brown, 1919. 13 March 1909, nfd (CM); 17 Feb. 1933, nfd (MCZ); 21 July, 1974, NE Point (CM); 21 July, 1974, Riding Rock Marina (3) (CM); 20–26 Nov. 1975, nfd (4); 22–23 Nov. 1976 (2), 21 Nov. 1978, CCFL Base; 2 Dec. 1976, Watlings' Castle; 1 Dec. 1977, Jake Jones' Rd; 21–23 Nov. 1978, Graham's Harbor Dump (3); 7 Dec. 1978, Sandy Hook. This species is more frequently collected in disturbed areas than is *Phoebis sennae*, but it is also found in coppice, and in *Coccythrinax* scrub. It is often seen along the highway.

Phoebis sennae sennae Linn., 1758. 13–25 March 1909, nfd (2) (CM); 17 Feb. 1933, nfd (3) (MCZ); 26 Nov. 1976, nr. Polaris; 13 Dec. 1976 (3), 24 Nov.–1 Dec. 1977 (3), 22 Nov. 1978 (1), Jake Jones' Rd; 14 Dec. 1976 (4), Watlings' Castle; 5 Dec. 1978, trail to E Beach. This species is seen less frequently in developed areas than *P. agarithe*, and has been collected most frequently in coppice. It also has been collected in *Coccythrinax* scrub and in the blacklands. The species apparently is migratory, and Williams et al. (1942) reported an 1889 account of this species passing over San Salvador in migration.

PAPILIONIDAE

Battus polydamas lucayus Rothschild & Jordan, 1906. 20 Nov.–2 Dec. 1975, nfd (2); 23 Nov. 1976, 29 Nov.–3 Dec. 1977, CCFL Base; 14 Dec. 1976, Watlings' Castle; 22 Nov. 1977, Graham's Harbor Dump; nfd (4).

Papilio andraemon bonhotei Sharpe, 1900. 21–30 Nov. 1975, nfd (3); 2 Dec. 1976, Watlings' Castle.

HESPERIIDAE

Epargyreus zestos zestos Geyer, 1932. 25 Nov. 1976, 24 Nov. 1977, 23 Nov. 1978, Jake Jones' Rd; 30 Nov. 1976, 1 Dec. 1977, Sandy Hook; 5 Dec. 1977, Sandy Point; 23 Nov. 1978, CCFL Base; 26 Nov. 1978, Farquharson's Plantation; 29 Nov. 1978, W Pigeon Creek; 5 Dec. 1978, nr. E Beach; 28 Nov. 1977, nr. Polaris.

Polygonus leo savignyi Latreille, 1824. 1 Dec. 1977 (2), 1 Dec. 1978, Jake Jones' Rd.

Urbanus proteus domingo Scudder, 1872. 3–17 March 1909, nfd (2) (CM); 17 Feb. 1933, nfd (2) (MCZ); 21 Nov. 1975, nfd; 24 Nov.–13 Dec. 1976 (5), 25 Nov.–1 Dec. 1977 (2), 1 Dec. 1978, Jake Jones' Rd; 14 Dec. 1976, Watlings' Castle (2); 25 Nov. 1977, 24 Nov. 1978 (2), nr. Polaris; 23–24 Nov. 1978, CCFL Base.

Ephryiades brunnea brunnea Herrich-Schäffer, 1864. 11 March 1909, Cockburntown; 3 March 1909, nfd (CM).

Hylephila phyleus phyleus Drury. 11 March 1909, Cockburntown; 3–24 March 1909, nfd (CM); 18 March 1953, nr. Cockburntown (AMNH) (Rindge, 1955); 14 Dec. 1976, Watlings' Castle; 15 Dec. 1976, nr. Polaris; 2 Dec. 1977, Graham's Harbor Dump; 8 Dec. 1977, 5 Dec. 1978, trail to N Granny Lake.

Wallengrenia misera Lucas, 1857. 3 March 1909, nfd (CM); 18 March 1953, nr. Cockburntown (AMNH) (Rindge, 1955).

Euphyes cornelius cornelius Latreille. 15 Dec. 1976, Jake Jones' Rd.

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