

## BUTTERFLIES OF THE CAYMAN ISLANDS, WITH THE DESCRIPTION OF A NEW SUBSPECIES

LEE D. MILLER AND STEPHEN R. STEINHAUSER

Allyn Museum of the Florida Museum of Natural History,  
3621 Bayshore Road, Sarasota, Florida 34234

**ABSTRACT.** Thirty-one butterfly species are recorded from the islands of Grand Cayman and Cayman Brac, including two new records for the Cayman Islands, *Eumaeus atala* and *Eurema dina dina*. *Dryas iulia zoe*, new subspecies, is described, and some aspects of the taxonomy of Cayman Lepidoptera are discussed.

**Additional key words:** Caribbean biogeography, *Dryas iulia zoe* n. ssp., new records.

The junior author, in the company of Z. M. Schwendeman, collected on Grand Cayman and Cayman Brac islands between 31 October and 7 November 1990. During this time, they captured a total of 407 specimens representing 31 butterfly species, one with a different subspecies on each island, and one represented by a new subspecies described herein. Two new records for the Cayman Islands are included in this total. The presence of new records on the Caymans is rather surprising: one has been led to believe that these islands are well collected. The records enumerated below raise the total number of butterflies known from these islands to 46 species, and the Grand Cayman total number of species remains at 41 species (Schwartz et al. 1987: 147), while the total for Cayman Brac is now 30 species.

Five separate localities were collected on Grand Cayman, whereas six were visited on Cayman Brac. These are discussed briefly below, and will be referred to only by code number in the text. Unless otherwise indicated, all specimens are deposited in the Allyn Museum collection, but may be distributed later.

Station GC-1 was 1.3 km N of Frank Sound, Grand Cayman, visited on 31 October. The locality was one of secondary scrub.

GC-2 was the South Sound shore area, Grand Cayman, visited on 31 October and 2 and 4 November in an area of beach scrub.

GC-3 is the Great Beach, north of a quarry, Grand Cayman, collected on 31 October and 2 and 3 November. This locality had tall scrub, apparently undisturbed.

GC-4 is Seven Mile Beach, Grand Pavilion Hotel, Grand Cayman, collected on 1, 2, and 3 November in primarily grass and weeds adjacent to the parking area.

GC-5 is Prospect Park, off Mahogany Way, Grand Cayman, collected only on 2 November. Collecting was done along dike roads near Milords Bay.

CB-1 is the Brac Reef Resort, Cayman Brac, collected only on 4 November.

CB-2 is the South Side road between Jennifer and Pollard Bays, Cayman Brac, collected on 4, 5, and 7 November, secondary scrub and trees below cliff.

CB-3 is along Stake Bay Bluff Road and Major Donald Road, Cayman Brac, visited daily from 4–7 November. This area was wooded and grassy land with many cycads.

CB-4 is Spot Bay, Cayman Brac, collected on 5 November, secondary scrub.

CB-5 is the Ashton Ruttly Centre, Cayman Brac, at light, collected only for moths.

CB-6 was at Hawksbill Bay along the South Side road, Cayman Brac, collected on 6 and 7 November. This locality had secondary tree growth, was below the cliff and was shielded from the prevailing winds; it falls within the area encompassed by CB-2.

All specimens are labeled with "Allyn Museum / Acc. 1990-18", and these data will not be repeated further.

#### BUTTERFLIES RECORDED

##### Danaidae

*Danaus plexippus plexippus* (Linnaeus, 1758): A single female was collected at GC-2 on 31.x.1990. This record is remarkable because Askew (1980: 878) mentions that this species had not been seen on Grand Cayman since 1975, and Schwartz et al. (1987) do not mention records of it at all. The latter authors consider Cayman material to belong to the subspecies *megalippe* (Huebner, 1826), but the female at hand is clearly the migratory North American morph.

*Danaus gilippus berenice* (Cramer, 1779): A single male, GC-3, 31.x.1990.

##### Nymphalidae

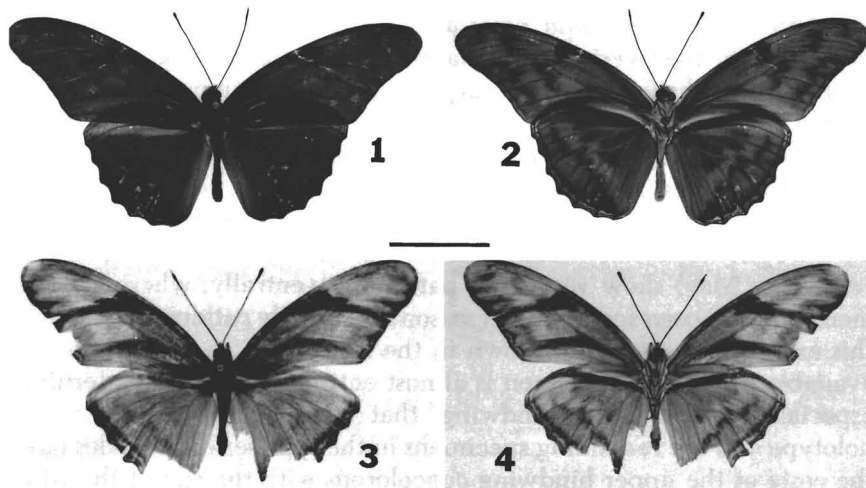
*Agraulis vanillae insularis* (Maynard, 1889): Many specimens captured at stations GC-2, GC-3, GC-4, GC-5, CB-1, CB-2 and CB-6 (including a pair *in cop.*, 6.xi.1990).

##### ***Dryas iulia zoe* Miller and Steinhauser, new subspecies**

(Figs. 1–4)

This butterfly is apparently the morph that has been considered to be identical with the Bahamian subspecies, *D. i. carteri* (Riley, 1926). It previously was unreported from Cayman Brac, and a solitary male from Grand Cayman (May, M. Simon) does not appear to agree with the material at hand, but it was collected earlier in the year, and such variation must be seasonal.

**Diagnosis:** Male: upper surface ground color rich golden orange with a prominent black forewing cell-end bar (occasionally with a subsidiary blackening of the basal part of  $M_3$ ) and very narrow black margins of both wings (hindwing margin even narrower



FIGS. 1-4. *Dryas iulia zoe* Miller and Steinhauser, new subspecies: **1, 2**, holotype ♂, upper (1) and under (2) surfaces: GRAND CAYMAN I[SLAND]: Great Beach area N of quarry; Sta. GC-3; 31.x.1990 (S. R. Steinhauser & Z. M. Schwendeman); Allyn Museum photographs 911105-15/16; **3, 4**, paratype ♀, upper (3) and under (4) surfaces: CAYMAN BRAC I[SLAND]: Hawksbill Bay, south side of road; Sta. CB-6; 6.xi.1990 (S. R. Steinhauser & Z. M. Schwendeman); Allyn Museum photographs 911105-19/20. Scale line = 20 mm.

than in *carteri*). Under surface ground color reddish tan (not as purplish as in *carteri* and not as orange as in *delila* (Fabricius 1775)); dark brown fore- and hindwing markings more clearly developed than in *carteri* and about comparable with those of *delila*; white hindwing subcostal, apical and tornal markings comparable to those of *carteri*. Length of forewing of holotype male 42.5 mm, those of the nine male paratypes range from 33 to 44 mm, averaging 40.3 mm. Female: upper surface ground color browner than in other subspecies with darker forewing shading in base of cell and distad on the wing along  $Cu_2-2A$ ; a broad fuscous band across end of forewing cell and distad along  $M_3$  to outer margin (this band always interrupted in *carteri*); submarginal dark forewing band scalloped basad on  $M_3$  and  $M_2$ ; hindwing marginal band enclosing submarginal tan spots. Under surface ground color dull grayish tan and dull brown markings as illustrated and similar to those of *nudeola* (Bates, 1934) (Alayo & Hernandez 1987: pl. 18). Lengths of the forewings of three female paratypes are 39.5, 39.5 and 38.0 mm.

Male and female genitalia as in other *D. iulia* populations.

**Variation:** Assuming the Simon specimen gives an accurate impression, the upper side coloration and maculation are similar to the autumn specimens at hand. The under side is much more uniform and slightly redder than described.

Described from 13 specimens, ten males and three females, from the Cayman Islands.

Holotype male: GRAND CAYMAN I[land]: Great Beach area N of quarry; Sta. GC-3; 31.x.1990 (S. R. Steinhauser & Z. M. Schwendeman).

Paratypes: Same data as holotype, 1 male, 1 female; same data as holotype, but 2.x.1990, five males; "Grand Cayman", 27.v.1979 (M. J. Simon, Acc. 1979-16), one male; CAYMAN BRAC I.: Hawksbill Bay, South Side rd.; Sta. CB-6; 6.xi.1990 (S. R. Steinhauser & Z. M. Schwendeman); two males and two females (including one pair *in cop.*).

**Disposition of type-series:** Holotype male, eight male and three female paratypes in Allyn Museum of Entomology; one male paratype in collection of M. J. Simon.

**Discussion:** It has always seemed odd that the Caymans should harbor a population of the Bahamian *D. i. carteri*, as claimed by Riley (1975:

87). Other isolates of *iulia* have achieved a remarkable radiation of subspecies in the West Indian islands, so the presence of a Cayman endemic is neither startling nor surprising. The present insect is perhaps nearer the Cuban *nudeola*.

Seasonal variation in *Dryas*: All of the subspecies of *D. iulia* from the northern West Indies and south Florida are very similar, displaying limited seasonal variation, most prominent on the under surface. Without exception, specimens collected during the dry season (roughly December to May) show very little patterning ventrally, whereas specimens from the corresponding wet season are strongly patterned. Certainly this explains the variation shown in the series of *D. i. zoe*, where the available dry season specimen is almost entirely devoid of patterning, especially on the under hindwing, that distinguishes the illustrated holotype and the remaining specimens in the type series. Females have the costa of the upper hindwing concolorous with the rest of the wing and are typical of the "Antillean group" of subspecies (Clench 1975) and contrasting with that of the Jamaican *D. i. delila*.

This variation is equally prominent in all populations of *D. iulia* from an area delimited by Florida, the Bahamas, and Jamaica, whereas specimens from further east and south in the Antilles do not illustrate this variation so dramatically.

To differentiate the present subspecies, other northern Antillean *iulia* are compared in Table 1.

*Etymology*: This insect is named after Zoe M. Schwendeman who sponsored the Cayman expedition and collected much of the type series while accompanying the junior author.

*Heliconius charitonia ramsdeni* W. P. Comstock and F. M. Brown, 1950: Five males were taken at stations CB-2, 5.xi.1990, and CB-6, 6.xi.1990. Comparison of Cayman material with that from Cuba and Jamaica reveal that the Cayman butterflies are referable to *ramsdeni*. This butterfly is well-known from all of the Caymans. The Allyn Museum has a pair from Grand Cayman (May, 1979, M. J. Simon). The Cayman population of *charitonia* flew higher and more rapidly than did others that we have observed in Florida, Latin America, or elsewhere in the Caribbean.

*Euptoieta hegesia hegesia* (Cramer, 1779): Very common on both islands. Nineteen specimens were collected at GC-2 (31.x and 2.xi.1990), GC-3 (2.xi.1990), CB-2 (5.xi and 7.xi.1990), and CB-6 (6.xi.1990).

*Phyciodes phaon* (W. H. Edwards, 1864): Abundant only on Grand Cayman, where it previously was recorded. Twenty-five specimens were collected at GC-2, GC-3, GC-4, and GC-5 between 31.x.1990 and 3.xi.1990.

*Junonia evarete zonalis* (C. and R. Felder, 1865): This insect was encountered only on Grand Cayman with records from GC-2, GC-3, GC-4, and GC-5, 31.x.1990-3.xi.1990. It was sympatric with the next species at GC-3, 2.xi.

*Junonia genoveva* (Cramer, 1779): This butterfly was somewhat commoner than the last; 14 specimens were collected at stations GC-1, GC-3, CB-2, and CB-3 on most dates. We suspect that Schwartz et al. (1987) have confused this species with the last: whereas we record *J. evarete* only from Grand Cayman, those authors record only *J. genoveva*, and the records for Little Cayman and Cayman Brac are similarly reversed. We follow Turner and Parnell (1985) in our treatment of *Junonia*.

TABLE 1. Comparative attributes of selected populations of *Dryas iulia* from Florida and the West Indies (*D. i. delila* from Jamaica excluded as discussed in the text).

Character	Taxon			
	<i>largo</i>	<i>carteri</i>	<i>nudeola</i>	<i>zoe</i>
FW cell spot	broadest costad	rectangular	broadest costad	rectangular
FW streak in M <sub>3</sub> -Cu <sub>1</sub>	always present	always present	present >90%	present 10%
FW margin	proximal teeth M <sub>2</sub> -M <sub>3</sub> , M <sub>3</sub> -Cu <sub>1</sub>	proximal teeth M <sub>2</sub> -M <sub>3</sub> , M <sub>3</sub> -Cu <sub>1</sub>	proximal teeth M <sub>2</sub> -M <sub>3</sub> , M <sub>3</sub> -Cu <sub>1</sub>	smooth, no teeth
underside ground color	sandy shaded orange	sandy with a purple wash	sandy shaded orange	sandy shaded orange
underside ground color	tan, lightly marked with brown	tan, heavily marked with brown	tan, lightly marked with brown	tan, heavily marked with gray-brown

*Anartia jatrophae jamaicensis* (Moeschler, 1886): This species is another not known from Cayman Brac, and specimens were collected only on Grand Cayman at GC-2, GC-3, GC-4, and GC-5 between 31.x.1990 and 3.xi.1990.

*Memphis echemus danielana* (Witt, 1981): Two tattered females of this insect were collected on Cayman Brac (CB-6, 6.xi.1990). The insect is well known from there; and the Museum also has specimens from Grand Cayman.

## Lycaenidae

*Eumaeus atala* (Poey, 1832): The discovery of a large and thriving colony of this most unexpected butterfly on Cayman Brac was perhaps the high point of the trip. A total of 58 specimens were collected, 53 at CB-3 during the period from 4-7.xi.1990, and five at CB-6 on 6-7.xi.1990; others were observed, but not captured at CB-1. They represent a new record not only for Cayman Brac, but also for the Caymans as a whole. There were abundant cycads in the area of karst topography at CB-6.

*Strymon martialis* (Herrich-Schaeffer, 1864): Two specimens of this insect were taken at GC-4 on 1-2.xi.1990. It also is known from Little Cayman, but not yet from Cayman Brac.

*Strymon acis gossei* (W. P. Comstock and Huntington, 1943): Two specimens were collected at GC-2 (2.xi.1990) and CB-6 (7.xi.1990). Both are referable to the Jamaican subspecies despite assignment of Cayman Brac material to the Cuban *S. a. casasi* (Comstock and Huntington, 1943) by Schwartz et al. (1987: 147).

*Leptotes cassius theonus* (Lucas, 1857): This butterfly was encountered on both islands, whence it has been reported previously. Specific records are GC-4 (3.xi.1990), CB-1 (4.xi.1990), CB-2 (5.xi.1990), and CB-6 (7.xi.1990).

*Hemiargus hanno filenus* (Poey, 1832): Known from all of the Caymans, specimens were taken at GC-1 (31.x.1990), GC-3 (2.xi.1990), GC-4 (2 and 3.xi.1990), CB-2 (5.xi.1990), and CB-6 (6.xi.1990).

*Cyclargus ammon erembis* Nabokov, 1948: This striking Cayman endemic is known from all three islands, and 49 examples were collected on GC-2, GC-4, CB-1, CB-2, and CB-4 between 31.x and 5.xi.1990. One pair was taken *in cop.*, GC-4, 2.xi.1990.

## Pieridae

*Appias drusilla poeyi* (Butler, 1872): Well known from the Caymans, a few specimens were collected at CB-2 (4 and 5.xi.1990) and CB-6 (6-7.xi.1990).

*Ascia monuste eubotea* (Godart, 1819): Another butterfly of wide occurrence, this species was taken at GC-3 (31.x and 2-3.xi.1990), GC-4 (3.xi.1990), CB-2 (4-5.xi.1990), and CB-6 (6-7.xi.1990).

*Phoebis sennae sennae* (Linnaeus, 1758): Recorded from all three Cayman Islands, single specimens were taken at GC-3 (2.xi.1990) and CB-6 (6.xi.1990).

*Eurema daira palmira* (Poey, 1852): This widespread species was encountered at GC-3 (31.x and 2.xi.1990), GC-4 (2.xi.1990), CB-1 (4.xi.1990), CB-2 (4.xi.1990), and CB-6 (7.xi.1990).

*Eurema elathea* (Cramer, 1775): This butterfly exhibited a more restricted range than the last and was collected at GC-3 (31.x and 2.xi.1990) and CB-1 (4.xi.1990). The latter record is the first from Cayman Brac (Schwartz et al. 1987: 147).

*Eurema nicippe* (Cramer, 1782): Recorded from all of the Caymans, a single specimen was taken at GC-3, 2.xi.1990.

*Eurema lisa euterpe* (Menetries, 1832): This widespread species was encountered only on Grand Cayman, though it is known from all of the Caymans (Schwartz et al. 1987: 147). Specimens were taken at GC-1 (31.x.1990), GC-2 (2.xi.1990), and GC-3 (31.x.1990).

*Eurema nise nise* (Cramer, 1775): This butterfly, described from Jamaica (Riley 1975: 120) and recorded from Cuba (Alayo & Hernandez 1987: 76-77), is newly recorded from the Cayman Islands on the basis of a single male taken at CB-2 on 5.xi.1990. This specimen is illustrated in Figs. 5-6.



FIGS. 5-6. *Eurema nise nise* (Cramer), ♂, upper (5) and under (6) surfaces: CAYMAN BRAC I[SLAND]: South Side road from Jennifer Bay to Pollard Bay; Sta. CB-2; 5.xi.1990 (S. R. Steinhauser & Z. M. Schwendeman); Allyn Museum photographs 911105-23/25. Scale line = 10 mm.

### Papilionidae

*Heracles andraemon andraemon* (Huebner, 1823): The nominate subspecies, described from Cuba, is restricted to Cayman Brac and Little Cayman; specimens were collected at CB-2 (4-5.xi.1990), CB-3 (6.xi.1990), and CB-6 (6.xi.1990). These are comparable to Cuban specimens.

*Heracles andraemon tailori* (Rothschild and Jordan, 1906): A single specimen of this Grand Cayman endemic was collected at GC-2 on 31.x.1990.

### Hesperiidae

*Urbanus proteus domingo* (Scudder, 1872): This was the commonest skipper in the collections from the Caymans, specimens were collected at GC-2 (31.x.1990), CB-2 (4.xi.1990), CB-3 (4.xi.1990), and CB-6 (6-7.xi.1990).

*Urbanus dorantes santiago* (Lucas, 1857): This Cuban endemic subspecies was rep-



FIGS. 7-8: *Urbanus dorantes santiago* (Lucas), ♀, upper (7) and under (8) surfaces: GRAND CAYMAN I[SLAND]: Great Beach, N of quarry; Sta. GC-3; 2.xi.1990 (S. R. Steinhauser & Z. M. Schwendeman) Allyn Museum photographs 911106-1/3. Scale line = 10 mm.

resented in the collection by a single female from GC-3 (2.xi.1990). It previously is unrecorded from the Caymans, although Schwartz et al. (1987: 147) record the Hispaniolan subspecies, *cramptoni* (Comstock, 1944). Comparison of the single Cayman specimen, which we illustrate (Figs. 7-8), with long series from Hispaniola and Cuba reveals the close affinity of the latter to the Cayman specimen.

*Cymaenes tripunctus tripunctus* (Herrich-Schaeffer, 1865): This butterfly was captured only at station CB-6, 6-7.xi.1990, but it was locally common. It previously has been reported from both islands under consideration here.

*Hylephila phyleus phyleus* (Drury, 1773): Although it has been reported from Grand Cayman and Cayman Brac (Schwartz et al. 1987: 147), specimens were procured only at GC-2 (31.x.1990) and GC-4 (1.xi.1990) during this trip.

*Panoquina sylvicola* (Herrich-Schaeffer, 1865): Previously recorded from Grand Cayman, specimens of this species were captured at stations GC-2 (31.x and 2.xi.1990), GC-3 (31.x and 2.xi.1990), and GC-4 (1-3.xi.1990). *Panoquina sylvicola* remains unrecorded from the other Cayman Islands.

### SUMMARY

In summary, the Cayman Islands have been populated from a number of sources, most notably Cuba and Jamaica. Carpenter and Lewis (1943) and Schwartz et al. (1987) mention cases where subspecies of butterflies from both of the larger islands are present somewhere in the Caymans, and we have seen specimens that confirm the presence of at least the two *Heraclides andraemon* populations. We cannot, however, verify that the populations of *Strymon acis* from the Caymans are of both Cuban and Jamaican subspecies; rather, all of the specimens we have examined are of the Jamaican race. Similarly, though Schwartz et al. (1987) record *Urbanus dorantes cramptoni* from Grand Cayman, the specimen that we have examined and illustrated herein is clearly *U. d. santiago* (Lucas); it is entirely possible that different invasions of that species could have arrived from different islands. We have seen no Hispaniolan elements from the Cayman fauna; instead there is a preponderance of Jamaican and Cuban taxa represented.

### ACKNOWLEDGMENTS

We are greatly indebted to Zoe M. Schwendeman of Sarasota, Florida, for underwriting the costs of the 1990 Cayman Island collecting trip and for her invaluable assistance in the field. We also wish to thank Gina Petrie and John Davis of the Cayman Islands Natural Resources Laboratory for their assistance to the junior author and recommendations of collecting sites; and Gretchen Allen, Social Secretary to the Governor of the Cayman Islands, for help and support.

Thanks are due Jacqueline Y. Miller for reviewing the manuscript and for performing the photographic duties with her usual skill.

### LITERATURE CITED

- ALAYO, D., P., & L. R. HERNANDEZ. 1987. Atlas de las mariposas diurnas de Cuba. Editorial Científico-Técnica, La Habana. 148 pp., 49 color pls.
- ASKEW, R. R. 1980. The butterfly (Lepidoptera, Rhopalocera) fauna of the Cayman Islands. Atoll Res. Bull. 241:121-138.



- CARPENTER, G. D. H. & C. B. LEWIS. 1943. A collection of Lepidoptera (Rhopalocera) from the Cayman Islands. Ann. Carnegie Mus. 29:371-396.
- CLENCH, H. K. 1975. Systematic notes on *Dryas iulia* (Heliconiidae). J. Lepid. Soc. 29: 230-235.
- RILEY, N. D. 1975. A field guide to the butterflies of the West Indies. Collins, London. 224 pp., 24 pls.
- SCHWARTZ, A., F. L. GONZALEZ & R. M. HENDERSON. 1987. New records of butterflies from the West Indies. J. Lepid. Soc. 41:145-150.
- TURNER, T. W. & J. R. PARNELL. 1985. The identification of two species of *Junonia* Hübner (Lepidoptera: Nymphalidae): *J. evarete* and *J. genovera* in Jamaica. J. Res. Lepid. 24:142-153.

*Received for publication 19 November 1991; revised and accepted 4 March 1992.*