

PAPILIO ARISTODEMUS (PAPILIONIDAE) IN THE BAHAMAS

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ABSTRACT. Two subspecies of *Papilio aristodemus* Esper, both new, are described from the Bahamas: *driophilus* (TL: Cutlass Bay, near Dolphin Head, Cat Island), known from Cat, South Andros, and North Andros islands; and *bjorndalae* (TL: Man of War Bay, Great Inagua Island), known only from Inagua and strikingly different from any known subspecies, though apparently derived from *driophilus*.

Papilio aristodemus is an Antillean swallowtail with a strong tendency to vary geographically. Nominate *aristodemus* Esper 1794 occurs on Hispaniola; the subspecies *temenes* Godart 1819 is found on Cuba and on Little Cayman in the Cayman Islands (Carpenter & Lewis 1943); subspecies *ponceanus* Schaus 1911 is known only from southeastern Florida, particularly Key Largo. An old record of the species for Puerto Rico (*cf.* Comstock 1944: 535), subspecies unknown, is not substantiated by more recent captures.

This species recently has been discovered in the Bahamas (Clench, 1977). I first found it on South Andros Island in early June 1974. A year later, in early June 1975, I took it also at the southern end of Cat Island, and in 1976 I collected a specimen on North Andros. The populations on these islands are not absolutely identical, but they are close enough to be referred to the same subspecies, described below as *driophilus*.

Miss Karen Bjorndal, a graduate student at the University of Florida, Gainesville, spent over a year on Great Inagua Island, from April 1975 to August 1976, studying the energy budget and nutritional ecology of the Green Turtle, *Chelonia midas*. While there she also made a collection of butterflies, which she has generously donated to Carnegie Museum of Natural History. In her collection are two specimens of a striking new subspecies of *aristodemus*, in several ways the most distinct of all. It is a pleasure to name it in honor of Miss Bjorndal.

***Papilio aristodemus driophilus*, new subspecies**

Papilio aristodemus ponceanus: Clench 1977:190.

Description. Much closer to *ponceanus* (Florida) than to either *a. aristodemus* (Hispaniola) or *temenes* (Cuba). This is shown particularly by its sharing with *ponceanus* such traits as the thin median yellow-ocher band, and the complete, only slightly curved, subterminal row of yellow-ocher lunules, both on the forewing above. From *ponceanus*, however, it differs in these ways:

- (1) On the hindwing upperside the subterminal yellow, orange, or red-orange spot

in Cu_2-2A is completely separated by a black bar from the terminal yellow or orange distad. In *ponceanus* these two pale areas are connected by a narrow isthmus along Cu_2 .

(2) On the forewing above, the cell is rather densely and evenly sprinkled with pale (greenish) scales. In *ponceanus* the sprinkling is extremely sparse and tends to be limited to the basal and costal parts of the cell.

(3) The projections of the hindwing termen at the vein-ends (including the tail) are longer than they usually are in *ponceanus* (but the latter is inclined to be variable in this respect).

(4) On the forewing above, the segment of the median band in M_1-M_2 is broadly in contact with the next posterior segment, in M_2-M_3 . In *ponceanus* the M_1-M_2 segment is smaller, and posteriorly separated from the next one by a fuscous gap or (rarely) touches the next segment at a point only: the two segments are never in broad contact.

(5) On the hindwing upperside the median pale band is somewhat broader than in *ponceanus*. In *driophilus* the segment in the cell is consistently wider than the fuscous in the cell just distad; in *ponceanus* the pale band is here subequal to the fuscous in width, or it is somewhat narrower.

Length of forewing. Male, one only, 47.0 mm; female, 48.0–50.0 mm, mean (of 4), 49.1 mm. Measurements are of the type series only.

Types. HOLOTYPE, ♀, Cutlass Bay, near Dolphin Head, southern Cat Island, Bahamas, 6.vi.1975, leg. H. Clench, sta. 259 b; C. M. Acc. 27783. PARATYPES, 1 ♂ 3 ♀, as follows: 2 ♀, same data as holotype; 1 ♂ 1 ♀, the same except 4.vi, sta. 257 b. Holotype and paratypes, C. M. Ent. type series no. 680.

Remarks. In addition to the type series I have examined 4 ♂ 2 ♀ from South Andros Island, Bahamas: ca. 2 mi S Driggs Hill, 2–8.vi.1974, leg. H. Clench. The forewing length of this series is as follows: males, 43.5–49.0 mm, mean (of 4), 45.0 mm; females, 47.5–51.0 mm, mean (of 2), 49.2 mm. These specimens agree closely enough with the Cat Island series, notably in all points mentioned in the above description, that I believe them correctly referred to the subspecies *driophilus*. The agreement, however, is not perfect and the two island samples show a few, mostly statistical, differences:

(a) On the hindwing above, the subternal pale spot (as in (1) above) is dark orange, with little or no pale edging, in all the Cat Island specimens; it is light orange, more or less heavily edged laterally with yellow, in all but 1 ♂ from South Andros (in which it is dark orange). (In *ponceanus*: dark orange with slight lateral yellow.)

(b) On the hindwing above, a small rusty spot in the base of cell M_3-Cu_1 is present in 1 ♂ 1 ♀ (40%) of the Cat Island series, but is totally absent from the South Andros series. (In *ponceanus*: 56%).

(c) The discal cell on the forewing underside is filled with smooth, pale yellow-ocher in all Cat Island specimens; in all South Andros specimens the cell has peripheral fuscous and faint distal longitudinal fuscous streaks. (In *ponceanus*: as on South Andros, but the fuscous is even heavier.)

(d) On the forewing underside, the subapical transverse fuscous bar from costa (just distad of, and parallel to, the conspicuous pale bar on the forewing upperside) extends inward to cross cell R_5-M_1 in 1 ♂ (17%) from South Andros, in 4 ♀ (80%) from Cat Island. In the remaining individuals it does not reach that interspace (In *ponceanus*: 22%).

On South Andros *driophilus* flew in dense scrub, usually 1–2 m above the ground, only briefly and occasionally pausing to feed at the flowers of shrubs in that height range. The butterflies were mostly in the scrub itself and they entered roadways or other open areas only to cross from

one part of the scrub to another. These habits they shared fully with *P. andraemon bonhotei* Sharpe 1900, which flew with *driophilus*, and the two were virtually indistinguishable on the wing. On Cat Island the habits of *driophilus* were similar except that individuals were seen more often in open areas, especially at the flowers of ornamental vines and shrubs around the hotel where I stayed.

On 28 September 1976 I took a single male *driophilus* just north of Nicolls Town, North Andros, a new record for that island. I saw no others and am at a loss to explain the late capture date. The butterfly is quite fresh and was found flying in a somewhat overgrown old field. It, too, is referable to the new subspecies, although differing in a few respects (*e.g.*, the median pale band on the hindwing above is thicker than in any other *driophilus* seen except one of the female paratypes from Cat Island; and its distal edge is straight [as in *bjørndalae*], not convex near R_s and M_1). With regard to traits (a) through (d) above: (a) the subternal pale spot is dark orange with slight lateral yellow (as in *ponceanus*); (b) it has no rusty spot in M_3 - Cu_1 ; (c) on the forewing below it agrees with South Andros specimens in the discal cell coloration; (d) also on the forewing below, the subapical fuscous bar extends inward only to R_5 .

***Papilio aristodemus bjørndalae*, new subspecies**

Description. Differs in two major traits from all previously known subspecies of *aristodemus*: (1) a large patch of rusty red is present on the hindwing upperside between M_2 and the inner margin, and between the cell-end and the diffuse, faint band of sprinkled blue scaling that basally edges the subterminal row of pale spots; and (2) on the hindwing, both above and below, the subterminal pale spots posterior to M_2 are distally displaced and reduced in size, so that the row is essentially parallel to the termen throughout and the component spots are of similar thickness and more quadrate (less lunular). The latter trait is particularly conspicuous on the underside. The rusty red patch varies in the two specimens at hand, but I cannot tell whether the variation is sexual or individual. In the female the patch is large, the component spots contiguous, and there is even a minute extra dot of the same color in M_1 - M_2 ; in the male the component spot in Cu_1 - Cu_2 is wanting, and those in M_2 - M_3 - Cu_1 are thin and short, separated by fuscous along the veins.

The median pale band of the forewing upperside is thin, as in subspecies *ponceanus*, *driophilus*, and *aristodemus*, and slightly or not at all broken at M_2 , as in *driophilus*; on the forewing upperside the subterminal row of pale spots is lightly curved (as in all subspecies except nominate *aristodemus*, in which it is strongly curved, almost angulate, near Cu_1), and continues strongly costad to R_1 , as in *ponceanus* (in *a. aristodemus* it stops at M_2 ; in *temenes* at about M_1 ; in *driophilus* at R_3 or R_4 , the segment in R_4 - R_5 being often weak or wanting). On the hindwing upperside, in Cu_2 -inner margin, the subterminal pale bar is connected to the pale terminal area by a narrow isthmus along Cu_2 , as in *ponceanus* (in all other subspecies the two pale areas are usually completely separated by intervening fuscous). The median pale band on the hindwing upperside is thin, about as in *ponceanus* or even thinner, and about half as thick as that in *driophilus*, and its distal edge is straight, not convex near R_s , as it is in *ponceanus* and *driophilus*. This median band

posteriorly curves distad at the inner margin and runs along the margin almost to the blue bar, as in *driophilus* (in the others it intersects the inner margin at a high—often right—angle and does not run distad). Basad of the subterminal pale spots is a band of sprinkled blue scales, strongest in Cu₂-2A but extending, weaker, costad to M₁ or Rs, essentially as in *driophilus* and *ponceanus* (in nominate *aristodemus* it is absent except for the segment in Cu₂-2A, and in *temenes* it is usually so). Both specimens are smaller than any other *aristodemus* I have seen.

Length of forewing. Male, 40.0 mm; female, 44.0 mm.

Types. HOLOTYPE, ♀, Man of War Bay, Great Inagua Island, Bahamas, 4.x.1975, leg. Karen Bjørndal. C. M. Acc. 29104. PARATYPE, ♂, Calf Pond, northwestern Great Inagua, 18.v.1976, leg. Karen Bjørndal. C. M. Acc. 29104. Holotype and paratype, C. M. Ent. type series no. 690.

Remarks. This subspecies apparently was derived from *driophilus* of the central Bahamas, although it has departed from it to an unusual and striking degree. The large rusty red patch on the hindwing above gives it a distinctive appearance, but the patch is foreshadowed by the small, obscure, rusty red spot that appears in M₃-Cu₁ in some *driophilus* and *ponceanus* (see character (b) in the *Remarks* under *driophilus* above).

Miss Bjørndal comments (*in litt.*): "From September to December [1975] and from May to August [1976] swallowtails were flying on Inagua. I was unable to distinguish which species [*aristodemus* or *andraemon*]. They were commonly seen in open scrub, dense scrub, coppice, coastal areas and [in the residential area of] Matthew Town."

In April 1977 on Little Inagua Island I repeatedly saw, but was unable to capture, a swallowtail in the short, narrow strip of low forest on the western coast, about a mile south of Northwest Point. Like Miss Bjørndal, I was unable to tell which of the two species it might have been.

LITERATURE CITED

- CARPENTER, G. D. H., & C. B. LEWIS. 1943. A collection of Lepidoptera (Rhopalocera) from the Cayman Islands. Ann. Carnegie Mus. 29: 371-396, ill.
CLENCH, H. K. 1977. A list of the butterflies of Andros, Bahamas. Ann. Carnegie Mus. 46: 173-194, ill.
COMSTOCK, W. P. 1944. Insects of Porto Rico and the Virgin Islands, Rhopalocera or butterflies. Scient. Survey Porto Rico and the Virgin Islands (New York Acad. Sci.) 12(4): 421-622, ill.