

Journal of the Lepidopterists' Society
43(4), 1989, 332-333

MYRMECOPHILY AND LARVAL FOOD PLANTS OF
BREPHIDIUM ISOPHTHALMA PSEUDOFEA (LYCAENIDAE)
IN THE FLORIDA KEYS

Additional key words: *Batis maritima*, oviposition behavior, *Salicornia virginica*, *Tapinoma sessile*, pupal stridulation.

G. W. Rawson (1961, J. N.Y. Entomol. Soc. 69:88-91) described and illustrated the life history of *Brephidium isophthalma pseudofea* (Morrison) (Lycaenidae: Polyommatainae) from a population near New Smyrna Beach, Florida. During a visit to the lower Florida Keys, we made additional observations on the biology of this species.

On 23 June 1979, at the N end of Sugarloaf Key, Monroe Co., we found adults of *B. i. pseudofea* in a semitidal flat where *Salicornia bigelovii* Torr., *S. virginica* L. (Chenopodiaceae), and *Batis maritima* L. (Batidaceae) grew. Fifteen larvae of *B. i. pseudofea* were found on two adjacent plants of *S. virginica* and *B. maritima*. Between the bases of the two plants was a nest of an ant, *Tapinoma sessile* (Say) (Formicidae: Dolichoderinae). These ants patrolled the stems of both plants, and avidly tended larvae of *B. i. pseudofea*, stroking them with their antennae and feeding on secretions from the dorsal nectary organ on abdominal segment (A)7. One pupa was found attached to a stem of *B. maritima*. The ants also showed interest in this pupa, running over it and stroking it with their antennae. We could not verify if they actually fed on any secretions from the pupa, but later examination revealed a conspicuous scar on A7 corresponding to the dorsal nectary organ on the larva. We placed a living pupa in a small glass vial, and, upon tapping, the pupa stridulated, as has been reported for many lycaenids (Downey, J. C. 1966, J. Lepid. Soc. 20:129-155).

Several adults were seen near the plants with larvae. At ca. 1100 h, one female was observed alternately flying around and walking over the plants for several minutes, in the presence of the ants. We observed no aggressive behavior by the ants toward the female. She eventually deposited a single egg on the tip of a leaf of *B. maritima* and then flew away.

Rawson (*op. cit.*) raised *B. i. pseudofea* on *Salicornia bigelovii*, and suggested that *Batis* may also be a larval food plant. We raised larvae from both *S. virginica* and *B. maritima* to adults, thus confirming these species as larval food plants. Rawson made no observations of ants associated with larvae or pupae.

A dorsal nectary organ on A7 and paired tentacle organs on A8 (terminology of Cottrell, C. B. 1984, Zool. J. Linn. Soc. 79:1-57) are present in this species and many other members of Polyommatainae. Myrmecophily has been reported for *Brephidium exilis* Boisduval (Coolidge, K. 1924, Entomol. News 33:305-309), and for the African *B. metophis* (Wallengren) (Clark, G. C. & C. B. C. Dickson 1971, Life histories of South African butterflies, Purnell & Sons, Capetown, South Africa, 272 pp.). Ant association in *B. i. pseudofea*, although previously unreported, is therefore not surprising.

The clumped distribution of immatures of *B. i. pseudofea* raises the possibility of ant dependent oviposition. Although larvae and eggs were abundant on the two plants patrolled by the ants, a search of nearby plants that appeared identical in general aspect, but which lacked patrolling ants, yielded no larvae. This suggests that females may preferentially oviposit on plants with ants (review in Cottrell *op. cit.*). The distribution of ants may be a significant factor in the biology of *B. i. pseudofea*, which is extremely sporadic in its appearance despite ubiquitous larval food plants in coastal habitats.

Preserved immatures are deposited in the Allyn Museum of Entomology, Florida State Museum, Sarasota, Florida. We thank two anonymous reviewers for comments on this manuscript.

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Received for publication 3 October 1988; accepted 12 August 1989.

Journal of the Lepidopterists' Society
43(4), 1989, 333-336

APPIAS PUNCTIFERA D'ALMEIDA (PIERIDAE) IN
THE DOMINICAN REPUBLIC AND PUERTO RICO

Additional key words: island biogeography, seasonal dimorphism, Greater Antilles, Virgin Islands, *Appias drusilla*.

Appias punctifera is perhaps the least known and most elusive of endemic Antillean pierids. It much resembles the familiar "Florida White" (*A. drusilla* Cramer) and most obviously differs in possessing a black spot at the distal end of the forewing (FW) cell in both sexes, more prominently in the female. It is rare in collections, and N. D. Riley (1975, *A field guide to the butterflies of the West Indies*, Collins, London, 224 pp.) mentioned that he had not seen a specimen.

The taxon *punctifera* was first proposed by R. F. D'Almeida (1939, *Bol. Biologico*, São Paulo, 4(NS):50-66) as a subspecies of *Appias drusilla*, reducing to synonymy *Tachyris molpadia* Dewitz, *Tachyris margarita* Dewitz, and *Appias drusilla* f. *molpadia* Röber. *Appias punctifera* was raised to specific status by W. P. Comstock (1943, *Amer. Mus. Novitates* No. 1238, 1-6). D'Almeida based his description on four "all white" females collected in Puerto Rico, the type locality. Both sexes were available to Comstock who illustrated substantial differences between male genitalia of *A. drusilla* and *A. punctifera*, notably in the shape of the valvae and aedeagus. He recorded from Puerto Rico one female (Barros [sic], June), three females and one male (Coamo Springs, April) and one female (Lajas, June). The known range of *A. punctifera* was extended eastwards (Comstock 1944, *Ann. N.Y. Acad. Sci.* 12 Pt. 4: Lepidoptera, 527-528) to include the American Virgin Islands, by five males and one female (St. John, March) and one female (St. Thomas, June). More recently, one of us (SJR) found *A. punctifera* to be rare but occurring consistently in the Guánica xeric forest region of SW Puerto Rico, where it flies with the common *A. drusilla*, from which it is indistinguishable on the wing. Additional records (SJR) comprise one male (Toro Negro, October 1974), another male (Coamo, November 1974), and three males and two females (Ponce, Rt. 139, km 9.0, January 1987).

A. punctifera was first recorded from Hispaniola in a list of the butterflies of the Dominican Republic published by O. Cucurullo (1959, *Lista de Mariposas (Rhopalocera)* de Santo Domingo, published by the author, Santo Domingo, 1-13) without locality or collecting data. Subsequently, it was mentioned by L. Marion (1975, *Helios* 3:42-49) but, again, with no details. A. Schwartz (1983, *Haitian butterflies*, Editora R. Taller, Santo Domingo, Dominican Republic, 69 pp.) does not list this species from western Hispaniola. Here we report field observations on a population of *A. punctifera* in eastern Dominican Republic, with comparative comments on this species in western Puerto Rico.

Puerto Rican specimens are housed in the Department of Biology, University of Puerto Rico, Mayagüez; all specimens collected by us from the Dominican Republic are deposited in the Hope Entomological Collections, the University Museum, Oxford, England; the