

**BUTTERFLIES OF THE FLORIDA KEYS**

by Marc C. Minno and Thomas C. Emmel

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There are few habitats in the continental U. S. as unique as that of subtropical south Florida, and particularly the southern keys. Here, with the sprawling islands distributed over 230km edged with the clear aquamarine waters, this area is indeed a naturalist's paradise and an excellent place to study butterflies.

This volume begins with a brief introduction to the keys providing some of the geologic and geographic history of the area. The maps (Figs. 1-4) that provide name identifications for most of the larger islands off the main roads for the Upper, Middle, and Lower Keys are especially useful. A historical perspective contributes further background to human occupation of the area from the early 1500's. A concise discussion is also provided for the south Florida Keys' climate (rainfall, temperatures, wet versus dry seasons).

The next section introduces the ecology of the area. Each of the vegetation and plant communities (beaches, wetlands, hammocks, tropical pinelands, urban land and disturbed sites) is discussed in detail and illustrated, a sample of represented plants provided, and other pertinent information such as seasonal variation included. In this era of restoration and conservation biology, information on these insular habitats in area of rapid human population growth and development is timely.

The discussion of the butterflies of the southern Keys is initiated with a brief introduction to the possible origin of West Indian butterflies with little information on the fauna derived from peninsular Florida. The biological diversity of species represented in continental butterfly faunas of neotropical forests, selected West Indian Islands, and Florida are compared and contrasted with species-area relationships provided for some of the more accessible and often collected Florida Keys. The phenology of taxa (Table 3) and species distribution for individual taxa (Table 4) segregated according to the geographic area (Upper, Middle, And Lower Keys) are excellent summaries of information. The dynamics and recent changes in the butterfly fauna are also discussed. Conservation problems in the Florida Keys and current efforts by private, state, and federal agencies in addition to addresses for obtaining the appropriate permits are also listed. Other precautions to be taken when visiting or collecting in the keys are included.

The next section of the book illustrates the adult butterflies photographically on 21 colored plates on the right page and the identifying text, locality data, and forewing length on the left. Both dorsal and ventral surfaces are illustrated for most taxa with females included on occasion. Although these illustrations are accurate and generally crisp, the blue background diminishes some of their effectiveness (see Plates 12-14). Figures 26a-26c of *Panoquina panoquin* appear to have been added late. The non-sequential numbering of taxa on some of the plates is somewhat disturbing. However, Plates 22-29 provide noteworthy

illustrations of immatures and adults of selected butterflies from each of the major families.

Species accounts for the 106 butterflies reported from the Florida Keys are provided in the next section. Each family and/or subfamily is briefly reviewed with the salient features distinguishing each taxon, its geographic distribution, natural history, nectar sources, and current status (resident or migrant) listed. Of these, new information concerning the life history of several species, their current status, and other plant-insect interactions are invaluable. However, as with most volumes with an abbreviated format, it is difficult to include all of the pertinent information, and there are a few problems with continuity. For example, ant tending larvae is mentioned in both of the introductory sections for the subfamilies Polyommatae (Blues) and Riodinidae (Metalmarks) and omitted under the Theclinae proper. This might give the wrong impression to the novice that ant tending does not occur within such hairstreaks as *Strymon m. melinus*. A checklist, brief glossary, limited bibliography, and index to the butterfly species complete the text.

There are some problems with regard to the organization of the text and figures. Table 3 appears on pp. 24 and 25 prior to the discussion of phenology on p. 28. Similarly, Table 4 appears on pp. 26 and 27 ahead of the discussion on p. 29. However, despite these and some minor spelling errors (Cretaceus p. 20), this volume, with its striking illustrations on the laminated cover and readable text on coated paper stock, is an invaluable reference for any lepidopterist studying the butterflies of the Florida Keys.

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