

DEYRUP, M., AND R. FRANZ (eds.) 1994. Rare and Endangered Biota of Florida. Vol. IV. Invertebrates. University Press of Florida; Gainesville, xxx + 798 p. ISBN-0-8130-1323-2. Paperback. \$39.95 (and ISBN-8130-1322-4. Hardback. \$75.00).

This is the second, revised edition of a book published in 1982. The original edition was 19.5 × 26.6 cm with 131 pages, 86 of them on insects, and was vol. VI of the series. The original series was: I-Mammals, II-Birds, III-Amphibians and Reptiles, IV-Fishes, V-Plants, VI-Invertebrates, and VII-Liaison and Recommendations. How the original vol. VI became vol. IV of the new series is not explained. I suspect that catalogers will use the copyright date (1994) which is printed on the volume rather than the publication date (1 March 1995) which appears only separately in advertising material.

This new volume is 15 × 22.7 cm with 478 pages on insects and 30 on arachnids. The advertising material states that it "contains descriptions of 350 species (of at least 50,000 that exist in Florida) that the Florida Committee on Rare and Endangered Plants and Animals deem to be in decline or in danger of extinction." For most species mentioned there are five headings with brief text (DESCRIPTION, RANGE, HABITAT, LIFE HISTORY AND ECOLOGY, and BASIS FOR STATUS CLASSIFICATION). There also is, for most species, a map showing recorded distribution in Florida (by county) and the rest of the New World from the northern part of South America to the Canadian border. Habitus drawings are provided for some adults (Blattaria, Orthoptera, Scarabaeidae, Erotylidae, Formicidae and Mutillidae) and larvae (Trichoptera), whereas adults of Odonata and butterflies are illustrated by photographs, and other taxa are not illustrated. An English-language name has been coined for almost all of the species mentioned.

Insect taxa dealt with are Ephemeroptera (all), Odonata (all), Orthoptera (all), Blattaria (all), Mallophaga (all, but only as a list, without species-by-species treatment), Coleoptera (families Cicindelidae, Scarabaeidae, Cerambycidae, Histeridae, Cebrionidae and Erotylidae only), Trichoptera (all), Lepidoptera (Hesperiidae, Lycaenidae, Nymphalidae, Papilionidae and Pieridae only), Diptera (Psychodidae, Culiidae, Chironomidae, Tabanidae, Mydidae, Empididae, Anthomyiidae and Asilidae only), Hymenoptera (Formicidae, Mutillidae, and Colletidae only). For these taxa, someone judged which were the species with most restricted distribution and/or the lowest population densities in Florida. For most, but not all taxa, all species were considered before judgment was made.

It may have been the hope of the producers of the series of volumes that this volume on invertebrates would begin to match in coverage that of the volumes on vertebrates and plants. Though the editors have expanded this volume greatly (cf. the first edition) any hope of effective coverage of all the rarest of the estimated 50,000 species of invertebrates cannot now be met because of the paucity of information. Whole phyla of invertebrates are not even mentioned. There are more pages about insects than about any other class, but even so, the proportion of insect families evaluated for rarity of their species is very low. The sad truth is that very little is known about Florida's rare invertebrates compared with its vertebrates.

Criteria for inclusion in the volumes of this series take into account only the Florida distribution. Thus, a species which is at the edge of its range in Florida (its major distribution may be in Appalachia or Cuba) and consequently is uncommon, is to be included; examples are the mosquitoes *Anopheles albimanus* Wiedemann and *Culex bahamensis* Dyar & Knab, and the butterflies *Eurema nise* (Cramer) and *Kricogonia lyside* (Godart). It is rational that invertebrate species and vertebrate species should be given equal status in these volumes. It would be especially interesting to prepare balance sheets of expenditure of funds to manage populations of *Anopheles albimanus* and *Felis concolor*, both of which are treated in the volumes as "endangered species", because both have caused loss of human life in parts of the Americas.

An enormous amount of basic research on insects and other invertebrate animals is needed before the successors of this volume truly represent Florida's rare and endangered invertebrate biota. This volume, to its credit, offers vignettes of some of Florida's rarer insects.

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