

LIVING BUTTERFLIES OF SOUTHERN AFRICA: Biology, Ecology, and Conservation. Volume I. Hesperidae, Papilionidae and Pieridae of South Africa

by Graham A. Henning, Stephen F. Henning, John G. Joannou, and Stephen E. Woodhall

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(Available from E. W. Classey Ltd., P. O. Box 93, Faringdon, Oxon SN7 7DR, UK, for £88.50 (ca. \$142.00)); or Flora & Fauna Books, P. O. Box 15718, Gainesville, FL 32607, USA, for \$129.00).

This is really an extraordinary book in several ways. First, there have been many magnificent works previously published on the butterflies of South Africa, including their life history, habitats, and taxonomy, and this book includes new data and coverage. Second, this book uses color in more ways than this reviewer has ever seen outside of general biology textbooks (which are supported by a huge press run and large retail price to boot). It will be interesting to see if future publishers elsewhere in the world can match this extensive use of color, including everything from color bars surrounding the Latin name of each species to colored maps, color photographic illustrations of the larva and even pupa of many species, and color boxes around keys to the species of some genera! Every page has color used on it, even if it is just the background box around black line-drawings.

Thus, there is no question that this team of writers and their publishers, together with an extensive underwriting sponsorship of the First National Bank and a number of subscribers to the Sponsors' Edition, Collectors' Edition, and the Standard Edition (the last being the copy purchased by this reviewer) produced a beautiful book.

How does this book differ from all its distinguished predecessors? The Table of Contents and several prefatory sections give a clue to why this book is considered a significant achievement and improvement over its predecessors. This is the first of a projected five-volume series entitled *Living Butterflies of Southern Africa*. This mammoth project will treat the approximately 884 described species of butterflies living in South Africa (here defined as the entire geographic area of the countries of South Africa, Lesotho, Swaziland, Botswana, Namibia, Moïambique, and Zimbabwe). The first four volumes will cover South Africa, Lesotho, and Swaziland, and the fifth volume will deal with Botswana, Namibia, Moïambique, and Zimbabwe, as well as treating species not included in the previous volumes. The brothers Graham and Stephen Henning are the recognized authorities on southern African butterflies and each has more than 37 years of experience with the lepidopteran fauna there. John Joannou is a distinguished photographer of South African Lepidoptera and has worked out many new life histories in the fauna. The fourth author, Stephen Woodhall, not only has provided many excellent photographs to the work but also is a talented artist who provided the artwork herein.

The main text of the book begins with an extensive section on butterfly biology and ecology, including discussion of systematics, life cycle and morphology of butterflies (with a brief discussion on each distinguishing feature of the adults, eggs, larvae, and pupae, together with extensive diagrams). It continues with extensive discussion of the early stages, including their biological activities and structural characteristics, all illustrated with extensive line drawings and photographs. The behavior and habits of the adults are treated at length, including discussions of temperature and flight, feeding, courtship and mating, migration, predators and parasites, protection and defence, and mimicry. The authors then provide a fascinating outline of the zoogeography of South African butterflies, including extensive discussions and illustrations of the many vegetation types, lists of typical plant species, and butterflies endemic to each region and habitat.

This material is then followed by a discussion on breeding butterflies which includes many valuable suggestions and also fantastic photographs of ants attending lycaenid larvae. An extensive discussion on conservation includes the subject of collecting, noting that "Man as a butterfly

collector is a very inefficient predator compared with insectivores," and "Butterfly populations have amazing recuperative powers, as long as they have the correct habitat in which to live." The roles of habitat destruction and introduction of alien species, particularly exotic plants, are discussed, and also the destructive effects of Argentine ants, which were introduced in fodder imported from Argentina for the British cavalry around the year 1900, according to popular theory. Conservation measures, including preferential treatment of endangered species and threatened species, are discussed, as is the role of veld and mountain fires.

The rest of the book (from page 49 onwards) is devoted to discussion of classification by superfamily, family, subfamily, and genus, and then a detailed treatment of each species. A typical species account includes the Latin name and its author surrounded by a colored box, the common English name, and the citation of the publication of the original description of that species. The subspecies then are briefly identified, prior to a detailed treatment of each of the subspecies which starts with the Latin name and citation of the original description as well as type locality. Under each subspecies is the complete Identification section covering both adults and early stages; a section on Habitat and Ecology; and then shorter sections on Larval Food Plants; Distribution; and Conservation. The text is arranged in double-column format, and a full-color picture (from life) of the adult/s (sometimes both sexes or both upperside and underside), larva, and pupa are commonly included. A full-color distribution map is also included in each subspecies section.

At the end of the book (starting on page 369), there is an extensive Larval Food Plants section listing by family all the species of South African plants that are used by butterflies in the Hesperidae, Papilionidae, and Pieridae; the species of associated butterflies are listed after each host plant. This section is covered by a comprehensive glossary with detailed definitions of every technical term used in the text. The book closes with a very comprehensive bibliography, a list of abbreviations used in the bibliography, and an index to both common and scientific names. The Subscribers who underwrote the three editions of this book are listed as well. A brief but interesting biography of each of the four authors, together with a color photograph of them, is given on the book jacket.

Overall, this volume will be an integral part of the library of every lepidopterist interested in African butterflies. This is the first volume of a major faunal work which is assured to be a standard well into the 21st century. The authors and publisher are to be congratulated on a truly outstanding publication. We eagerly look forward to the appearance of the next four volumes.

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