

choose and those interested in east African butterflies can have both volumes—the authors are to be congratulated for their accomplishments.

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A PRACTICAL GUIDE TO BUTTERFLIES AND MOTHS IN SOUTHERN AFRICA, by S. E. Woodhall (co-ordinating editor) et al. 1992. Lepidopterists' Society of Southern Africa, P.O. Box 470, Florida Hills, 1710, Transvaal, Republic of South Africa [Sponsored by Monsanto South Africa (Pvt) Ltd., Agricultural Group]. 223 pp., 48 color photographs on 8 plates, numerous black and white photographs and text figures. Softcover, glossy paper, 14.5 × 21 cm, ISBN 0-620-16774-2. Available from the Lep. Soc. So. Africa for \$25 U.S. plus postage (\$1 for surface mail or \$20 for Airmail).

This techniques guide was compiled through the efforts of nineteen of the top lepidopterists in southern Africa. It is an easily totable resource (approximately 6" × 8" × ½") for almost every aspect of studying Lepidoptera, meant for use by beginners as well as by others who desire to learn more about techniques used in other countries. It is easy reading, even amusing at times, and the techniques appropriate for southern Africa are certainly usable here. Although the price is high for a paperback, the book is absolutely stuffed with information!

Chapter topics include the history of lepidopterists and lepidopterology in southern Africa, the lepidopteran life cycle, morphology and terminology, binomial nomenclature, species theory, evolution of Lepidoptera, a discussion on "lumpers vs. splitters," taxonomic classification, and the rules that govern scientific nomenclature (ICZN). As expected in a work meant to address beginners, the book is amply illustrated with black and white photographs, line drawings, cartoons, and eight pages of color photographs depicting 48 live specimens of butterflies, moths (even some micros), and larvae which accompany the systematic classification of Lepidoptera and a brief overview of Lepidoptera.

A chapter devoted to Lepidoptera conservation in southern Africa presents the various habitat changes and impacts that man's activities have had on insect populations and includes discussions of monitoring methods (conducting mark-recapture studies, hostplant monitoring, habitat monitoring). Also in this chapter is mention of the *South African Red Data Book—Butterflies*, a publication documenting 102 species considered to be exposed to some level of threat. This guide provides a table of 190 or so rare, endangered or vulnerable butterfly species cross tabulated with habitat, habits, distribution, taxonomy, food, and reproduction. Checkmarks in the columns denote a *lack of information* about a specific aspect of the particular butterfly. This table draws attention to those aspects unknown, with the idea that special efforts should be made to remedy these "unknowns."

Collecting and field techniques for butterflies are detailed and are accompanied by photographs, cartoons, and line drawings. Included are instructions on the construction of equipment and the proper use of nets, traps, decoys and baits, killing methods, and specimen storage in the field, along with suggestions for observing hilltopping, territoriality, and egg laying behavior. Especially interesting are the instructions for preparing rotten shrimp bait, various fruit baits, and different combinations of scat and urine to attract specimens. Apparently, the fresher the dung, the better (baitwise). However, a cautionary note is included to remind the lepidopterist to keep a sharp lookout for the originator of the dung; e.g., lions, elephants, baboons, etc. Discussion of moth collecting includes traps (many diagrams and photos), sugaring, and the collecting of immatures.

Preservation and mounting techniques are covered thoroughly. Relaxing techniques (chambers, injection, cutting wing muscles), selecting pin sizes, pinning specimens, con-

struction of various spreading boards, use of various materials as "setting strips," and setting pins are all discussed. The actual spreading technique for butterflies and macros is described in detail, with many cautions included for the inexperienced. There are also instructions for baking (=drying) specimens while on the spreading board. Although the description of techniques for pinning micros is brief, detailed instructions are given for preserving and mounting early stages, and for dissection and preservation of genitalia, palpi, legs, androconia, and larval head shields. Degreasing, dust removal, mold removal, repairing damaged specimens, housing the collection, prevention of infestation, proper labelling, and hints for successful mailing of specimens are also included in this chapter.

Other topics covered in this guide include rearing and breeding Lepidoptera (cages, sleeving, foodplants, artificial diets, and larval diseases) and photography in the field and in the studio (backdrops and composition, as well as proper storage of photographs). There are chapters on good scientific practice, the British Butterfly Conservation Society Code of Practice, several appendices (providing addresses of equipment dealers, names and addresses of journals worldwide that accept Lepidoptera papers, reviews of threatened species in southern Africa), a glossary of terms, a bibliography, and an index.

Throughout the book the authors encourage all lepidopterists to expand and further the science of lepidopterology. Emphasis on observations in the field and the elucidation of life histories are recurring themes in this handbook that espouses a common-sense approach to the study of Lepidoptera. Amateur lepidopterists are hailed for tirelessly providing valuable information, continually taking on the onerous task of breeding and recording life histories, and contributing much of what is known about Lepidoptera. The debate over collecting vs. no-collecting is broached. Admitting that it is an emotionally charged issue, the authors agree that general bans on collecting are detrimental to the conservation of Lepidoptera and of nature as a whole. Conservation is promoted and responsible collecting is encouraged. The point is made that the reproductive capabilities of insects far outweigh the impact of the small numbers collected by lepidopterists. A reminder to all is that the younger generation should be encouraged to study invertebrates; that first-hand collecting and field experiences, besides being enjoyable, entice children to become more aware of nature and more able at a later date to make informed judgements on conservation matters; and that if "... no more children are starting at the basics, one day there will be no lepidopterists to be consulted on conservation."

I found the book to be an inspiring and complete guide to handling Lepidoptera, written in an easy to understand, often entertaining manner. It was rewarding to read a techniques book that continually encouraged and lauded the efforts of avocational lepidopterists. It sets an excellent example for our own future *Lepidopterists' Society Techniques Manual*.

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