

status. Also included on the species page is an occurrence calendar-graph for each stage of the species and a map of Ontario showing distribution by dots placed in each county and district of occurrence. I wish the authors had included more biological information and "characteristics" of each species instead of devoting more than half a page to each distribution map. The 12 color plates include 2 habitat photographs and 27 individual photographs that show 7 larvae and pupa and 20 adults, representing 22 species.

Following the main species section is information on 19 stray species that have been vouchered by a single specimen (e.g., *Erynnis zarucco*) or rarely recorded (e.g., *Speyeria idalia*). It appears to me that these strays should have been included in the main species section, which already includes such strays as *Pyrgus communis*, *Hylephila phyleus*, *Battus philenor*, to name a few. Next is a section listing five unconfirmed species that may range into Ontario based on records from adjacent provinces and Michigan. This section might better have been called a hypothetical species list. The final species section has information on five doubtful species that have been erroneously referred to Ontario as a result of misidentification, improper labelling, or lack of a voucher specimen.

The last four pages of the *Atlas* comprise a bibliography, including check-lists, TEA publications, and general works, and a provincial ranking of status indicating number of occurrences within the province.

This publication is a valuable addition to the literature on Lepidoptera of the region from Hudson Bay to the Great Lakes, although there are a few questionable assertions. For example, the authors state that *Lycaeides melissa samuelis* hibernates "as a larva," but according to James Scott (*The Butterflies of North America*, 1986, Stanford University Press, CA), "eggs hibernate in ssp. *samuelis*..." And for *Danaus plexippus*, the authors mention "positive evidence for a cycle of abundance peaking about every 11 years." In both cases, the authors fail to include literature citations or to otherwise identify the source of this information.

This *Atlas* would have been more valuable if specific rearing experiences and personal food plant observations had been included. Furthermore, there is no discussion under *L. m. samuelis* or other rare or threatened species as to the authors' recommendations of proposed management methods and techniques to preserve or enhance existing populations. This shortcoming appears to be inconsistent with the authors' stated purpose "to provide a reference for planning efforts to conserve our rare species..." Also, I found it interesting that the authors assert that the food plants of *Erynnis persius* are "willows, poplars and aspens." In Michigan, *persius* feeds on lupine and most recent authoritative references state that lupine is the preferred larval food.

The Ontario Butterfly Atlas, with an 8 × 10" format, is printed on high quality paper with easy to read type and excellent photographs. I found no typographical errors or improper use of nomenclature. I recommend this publication to all students interested in the butterflies and skippers of Ontario and the Great Lakes region.

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OUT OF AFRICA

THE BUTTERFLIES OF KENYA AND THEIR NATURAL HISTORY, by Torben B. Larsen. 1992. Oxford University Press, Oxford, New York and Tokyo. xxii + 490 pp., 19 + A4 figures, 64 color plates. Hard cover, 18 × 25 cm, ISBN 0-19-854011-6. \$195.00.

BUTTERFLIES OF TANZANIA, by Jan Kielland. 1990. Hill House, Melbourne and London. 363 pp., 3 maps, 179 text figures, 68 color plates. Hard cover, 22.5 × 30 cm, no ISBN. \$120.00.

These are two rather comparable volumes devoted to the butterfly fauna of adjacent East African countries. Both are authoritative, even though Kielland's volume represents many more years of sampling the Tanzanian fauna than does Larsen's. Despite this shortcoming, however, Larsen has managed to produce a very readable and useful volume because he has consulted with many authorities and resident Kenyan collectors and has organized the field notes of the latter into an excellent compendium. Kielland's book is no less well-documented and both volumes contain much useful information for either the collector or the butterfly-watcher.

The plates, of course, are the highlight of any butterfly book, and these are of top quality. The specimens illustrated are the best ones available to the authors: those in the Kenya book are presumably the best available at The Natural History Museum, London, whereas the specimens in the Tanzanian book are largely those available in Mr. Kielland's collection, sometimes to the detriment of the Tanzanian work. The larger format of Kielland's book makes possible the life-size illustrations of all taxa. Larsen's book illustrates only half of each spread specimen for larger species and has more reduced figures, but where applicable, this fact is stated on each caption page.

The Kenya volume appears to have been proofread somewhat more stringently than does the Tanzanian one. A number of annoying "typos" in the latter distract the reader. For example, when one seeks the illustration for *Bicyclus kiellandi* Condamine, the plate on which it is figured is stated in the text (page 81) to be Plate 18; the butterfly is actually illustrated in Plate 17! Occasional inappropriate capitalizations of some, but not all, patronymial specific epithets occur throughout the text.

Both books use species citations that do not strictly conform to the *Rules of Zoological Nomenclature* because they do not place the authors' names in parentheses when a species or subspecies was described in a genus other than the one in which it is presently contained. This habit, while maddening to the purist, seems to be gaining acceptance among authors, and perhaps it will no longer be required in future *Rules*.

Larsen is a superb writer who manages to use humor to its greatest advantage. He does not always write humorously, but rather interjects it occasionally. For example, on page 34, during a discussion of urine being attractive to butterflies, he provides this aside: "(When collecting in the tropics I often take a couple of Johnnie Walker bottles full of urine with me; whoever once stole two such bottles from my car must have been in for a surprise when he reached home)." I suspect that there is more useful information about habits of butterflies in the Kenya book, but both provide much useful data.

I have only two major criticisms, neither perhaps important in itself, but both of which are an annoyance. Both books contain a number of descriptions of new taxa, especially in the Kielland book, which make the books indispensable to the taxonomist. There seems to be a "conspiracy" on the part of some authors to include such descriptions in books to enhance sales, but perhaps this not intentional. Steve Collins and Larsen do describe their new species in an appendix (pp. 438-445) almost apologetically, which seems to mitigate my objection mentioned above. Kielland does not so segregate his new names (as well as those of other authors), which are included throughout the text. Type specimens are illustrated in both books, thereby further increasing their utility to the specialist.

The second criticism applies only to the Kielland book, and it is not the author's fault: the type faces employed throughout the book are so similar to one another (family-group names are in slightly larger type) that it is extremely difficult to locate information quickly or determine where one discussion ends and the next begins. In Larsen's book, the main headings are much better accentuated, and one can tell at a glance what constitutes any species discussion. In addition, genera are well separated in that text, whereas in the Tanzanian volume there is no difference in typography between genera, species or subspecies.

These are really minor complaints, however, and both books are significant additions to the African butterfly literature. They are well-written and superbly illustrated, and though both volumes are somewhat expensive, they are well worth the money. If the reader has to choose only one of the volumes (they do cover roughly the same fauna of nearly 900 butterfly species), I would have to recommend Larsen's volume over Kielland's based chiefly on the clarity of the former's presentation. Hopefully, no one will have to

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-