

phological details. *The Scale Insects of the Tropical South Pacific Region* provides the first, comprehensive treatment on the scales present in Melanesia and Polynesia. In addition, the authors go one step further by attempting to produce a series of books partly aimed at encouraging non-specialists to identify and study scales. To do this, they have provided descriptions and illustrations of almost all of the species included in the keys, reference figures illustrating most of the major morphological characters, and keys to all genera and species covered in the book. These features will be a great aid to non-specialists as there is nothing more discouraging than being unable to interpret a couplet in a key because of undefined vocabulary, non-illustrated structures, or arriving at an identification and not knowing if it is correct because only the name of the species is given.

The first book covers armoured scales or Diaspididae. It covers 124 species and 37 genera. One new genus and 38 new species are described. The second book covers the mealybugs or Pseudococcidae. It includes 92 species and 37 genera, including three new genera and 28 new species. Both books contain keys to all of the genera and species. The books include a discussion of some of the more economically important species, a short introduction to the morphology and taxonomy of the scales, and a list of scales by host plant. Distributions, hosts, and parts of the host attacked are given along with the descriptions. Most of the more important characters used in scale identification are illustrated and discussed, although in some cases more details would have been useful for non-specialists who have not had any exposure to scale taxonomy. For example, named illustrations of the different types of setae would be helpful. Methods for preparing armoured scales and mealybugs for mounting on slides are presented, but are much too brief. Preparation of good specimens is crucial for accurate identification. Non-specialists will have trouble attempting to identify poorly cleared, improperly mounted, or badly stained specimens. A little more emphasis on this section, including collecting and preservation methods, would have been space well spent.

For the mealybugs, detailed descriptions and illustrations are given for almost all species. Only the genus *Planococcus*, which is under revision, lacks species descriptions, although figures are provided. The authors feel the reader should be able to identify species of *Planococcus* from the key. However, for two of the species, *P. citri* and *P. pacificus*, this may be difficult since one of the characters presented in the key is not obvious on the illustrations. These species

are extremely difficult to separate and more comments on differences would have been useful.

Most of the armoured scales are also described and illustrated, although descriptions for certain cosmopolitan or less important species may be brief or lacking. Users will have to rely more on the illustrations to verify identifications, but this is not an important drawback since the armoured scales are generally more easily identified than mealybugs. Many of the illustrations also contain drawings of the scale cover. This is a useful aid for non-specialists attempting to learn to recognize scales in the field.

The keys are relatively easy to use, more so than most of the keys in other taxonomic works I have used. The terminology and characters used are those in standard use. Descriptions of cosmopolitan species, in conjunction with figures, generally have sufficient detail to alert the reader if a mis-identification has been made.

These books fill a gap in the knowledge of the scales in the South Pacific region. The work is scholarly and the overall quality of the descriptions and plates is excellent. The inclusion of plates and descriptions of previously-described species makes the work of general reference value and will aid entomologists attempting to use other taxonomic works. Many of the species covered are present in the Micronesian area, or are cosmopolitan, so the reference is valuable for use outside the South Pacific region. The reader must be aware, however, that this is a taxonomic work and the keys and descriptions contain a substantial amount of specialized vocabulary associated with scale morphology. Some training in scale morphology may be necessary for some users. For individuals involved in quarantine identifications, or entomologists interested in working with scales, these will be useful references and money well spent. I, along with the authors, hope they will encourage more work with scales in the oceanic Pacific.

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Monitor lizard

GRAY'S MONITOR LIZARD. Walter Auffenberg. University Presses of Florida. Gainesville. 1988. 419pp. \$39.00 cloth.

It is a rare event when a reviewer is both inspired and humbled. Such is my case in this review. After a

cumulative 22 month study in the Philippines over an eight year span, Walter Auffenberg has produced a milestone autecological analysis of one of the world's least known vertebrates, *Varanus olivaceus*. Similar to the depth and intensity that was displayed in his previous opus (Auffenberg, 1981), this latest tome reaches heights that all biologists should strive to attain. Virtually all aspects of the natural history of this fascinating lizard are addressed and thoroughly explored. Movements, feeding ecology, intra- and interspecific behavior, growth, reproduction, and morphology are broad categories that are exhaustively covered. To accomplish this, Auffenberg accumulated a monumental body of data. For example, over 100,000 contacts with telemetered individuals yielded information on movements, ranges, daily activities, and body temperatures. Had Auffenberg opted to do an autecological study in the strict sense, the information garnered would still have been enormous and exceedingly valuable. However, he chose to greatly extend the scope of the study. Since these are partially frugivorous lizards, information was gathered on densities and diversities of fruiting plants that occurred in the region resulting in a considerable body of botanical data from a previously little known region. An ontogenetic shift from carnivory as juveniles to frugivory as adults led Auffenberg to collect population information on terrestrial insects, decapods, and molluscs. These baseline data were also lacking for the region. Additionally, extensive meteorologic and topographic information was compiled since, again, few data were available.

It is clear that many aspects of the floral, faunal, topographic, and meteorologic components that directly or indirectly impacted *V. olivaceus* were addressed. Where data were lacking, even if not directly of a herpetological nature, it was collected. Synthesis of this huge data base has given birth to a magnificent biological work-of-art.

The volume also contains an enlightening discussion of the systematics and evolution of Southeast Asian monitors, including a biogeographical analysis of the region. Recommendations for conservation and preservation are also made.

The layout and typesetting are very good. I suspect

that the selection of natural breaks for chapters was difficult to make at times. The information is so highly interrelated that use of the Table of Contents may not lead to all the information a reader might require. Use of the Index is advised. Considering the overall high quality of this book, any complaints border on trivial. The discussion of internal anatomy and relative weights (pp. 20–22) might have been better placed in the chapter on Internal Morphology rather than in External Morphology and Color. Typographical errors are remarkably rare. *Lamprolepis smaragdina* is misspelled on p. 62 and not present in the Index. *Hydrosaurus pustulosus* is misspelled in the Index. *Varanus indicus* is not italicized on p. 226. The abbreviation 'el' is not defined in the Table of Abbreviations. The citation Auffenberg and Auffenberg (1987) is incomplete despite the fact that this book and the above were published in 1988.

The nomenclature has had a mildly confusing history. Perhaps this is the reason that Alcalá (1986) referred to the species as *V. grayi* despite the fact that Auffenberg had been working on *V. olivaceus* in the (Republic of the) Philippines since 1976. Interestingly, the dust cover of Auffenberg's book refers to the species as *V. grayi* while the text refers to *V. olivaceus*.

I unhesitatingly recommend this book to anyone interested in biology as the wealth of information contained in this work will have broad appeal to many disciplines. Botanists to herpetologists will find the book rewarding and entertaining reading. Both the author and the publisher should be lauded for producing a book that is clear, informative, and free from errors.

References

- Alcalá, A. C. 1986. Guide to Philippine flora and fauna. Vol. X. Amphibians and reptiles. JMC Press, Inc. Quezon City, Philippines. 195pp.
- Auffenberg, W. 1981. The behavioral ecology of the Komodo monitor. Univ. Presses Florida. Gainesville. 406pp.
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