THRIPS BIOLOGY AND MANAGEMENT. *Based on a workshop held in Burlington, Vermont, 28–30 September 1993. NATO Advanced Science Institutes Series A: Life Sciences, Volume 276.*

Edited by Bruce L Parker, Margaret Skinner, and Trevor Lewis. Published in cooperation with NATO Scientific Affairs Division by Plenum Press, New York. $145.00. xvi + 636 p; ill.; thrips species and subject indexes. ISBN: 0-306-45013-5. 1995.

My thesis adviser believed that each of his students should become an expert with a particular group of organisms, such that their question-based science became enriched by the profound diversity found within every higher taxon. This book explores questions and problems within the idiosyncratic insect order Thysanoptera, some 5000-odd described but mostly obscure species that include fascinating research animals and devastating pests.

The main strength of the book is its remarkable range of topics, from plant-insect relationships (4 chapters), ecology and behavior (3 chapters), and development and genetics (3 chapters), to pest management (50 chapters on pest problems, biological and chemical control, and integrated pest management), vectoring of pathogens (12 chapters), and field and laboratory methods (11 chapters). No other volume offers such range and depth of topics in thrips management, and as such this book is essential for entomologists doing battle with these, and perhaps other, minute and fecund enemies.

A special feature of the book is the opportunities it provides for cross-fertilization between "pure" and applied areas; as workers in each area browse the articles of the other, they should gain insights and new appreciation for the questions, methods and challenges of their taxonomic compatriots. As for many other edited volumes, especially those based on conference proceedings, the chapters vary widely in approach, usefulness and scientific rigor. But for keeping current on research into the diversity within Thysanoptera, the book is unmatched.

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PLANT-PARASITIC NEMATODES: A PICTORIAL KEY TO GENERA. *Fifth Edition.*

By William F Mai and Peter G Mullin; photographs by Howard H Lyon and Kent Loeffler. Ithaca (New York): Comstock Publishing Associates (Cornell University Press). $49.95. ix + 277 p; ill.; index to genera and subgenera. ISBN: 0-8014-3116-6. 1996.

This volume focuses primarily on plant-parasitic genera commonly encountered in forest and agricultural situations. The generic pictorial key has been changed only slightly, and updates the out-of-print, 1976 vintage, fourth edition. The specific drawings and photographs used to illustrate characteristics of genera are of high quality and very useful in determining genera affiliations. The key is user-friendly primarily because of the liberal use of referenced picture examples of characters that can readily be compared with those of actual specimens.

The addendum of Selected References to Genera of Nematodes Not Included in the Key to Genera (with Pictures), gives a single reference to numerous plant-parasitic, insect-associated, and plant-associated nematode genera not included in the pictorial key; it includes most genera from the orders Tylenchida, Aphelenchida, and Dorylamida. This useful addendum gives students a more complete perspective of the array of nematodes associated with plants.

The inclusion of four different nematode classification schemes provides beginning nematology students with a much needed introduction to the phylum Nemata and to the three orders (Tylenchida, Aphelenchida, and Dorylamida) in which plant-parasitic nematodes occur. The Selected References section is an extensive list of taxonomic references to the genera of the pictorial key.

This book fills a definite need, not only as a textbook for beginning nematology students but also as a valuable taxonomic reference source for nematologists with little taxonomic expertise. However, it must be noted that it is of limited value to experienced nematode taxonomists and identifiers. I highly recommend this book to new students of plant-parasitic nematode taxonomy.

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COPEPODA: INTRODUCTION TO THE COPEPODA. *Guides to the Identification of the Microinvertebrates of the Continental Waters of the World, Volume 7.*

By B H Dussart and D Defaye. Amsterdam: SPB Academic Publishing. $75.00 (paper). viii + 277 p; ill.; no index. ISBN: 90-5103-098-3. 1995.

This is the seventh volume in a series of guides to invertebrates of continental waters, and the third about copepods. Copepods found in continental waters are not a monophyletic lineage but instead comprise representatives from six of ten orders. This guide focuses on the many free-living taxa; the parasitic copepods are ignored. Two long sections on copepod morphology and on familial and generic keys, with diagnoses of some families and genera, are complemented with shorter sections about general biology, reproduction, ecology, dispersal, and distributions. The authors have published about 100 titles on freshwater copepods.

The book is well presented and readable, but many illustrations are by other authors or were published previously, so they vary significantly in style

and detail. The shorter sections are informative, but there are too many unattributed statements. A general presentation, including what is known about marine copepods, would have been more useful, especially for sections on behavior and reproduction. The section on morphology contains several unique interpretations (e.g., the mandibular gnathobase is a praecoxal rather than coxal endite), and alternate hypotheses of Von Vaupel Klein in 1982, or Huys and Boxshall in 1991, should have been discussed. The interpretation of thoracic somites and their appendages is almost correct; swimming legs are not called thoracopods; they are thoracopods 2-5, and P6 is the appendage of the seventh thoracic somite. However, the authors do not follow their own interpretation consistently in the diagnoses, and this is confusing.

Among the keys there are many simple and complex errors, some of which are illustrated by the following example. On page 74 the family Pseudocalanidae Gurney, 1931, is introduced as composed of calanoid copepods whose females lack a fifth leg. The author of the family name Pseudocalanidae is Sars in 1901, not Gurney in 1931, but there is an older family group name; Clausocalanidae Giesbrecht, 1892 is the name used today. On page 80, two genera of Pseudocalanidae are introduced: *Senecella*, whose females do lack a fifth leg (but this genus belongs in the family Aetideidae), and *Drepanopus*, whose females possess a fifth leg, as the authors correctly state.

This book presents keys and diagnoses to most families and genera of copepods in continental waters, so its scope makes it quite attractive. Because the book contains both a great number and variety of errors, it should be used only with extreme caution.

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ZOOLOGICAL CATALOGUE OF AUSTRALIA. *Volume 33: Echinodermata. Australian Biological Resources Study. Volume Editor: A Wells. East Melbourne: CSIRO.* $74.95. xiii + 510 p; ill.; taxonomic and common names indexes. ISBN: 0-643-05696-3. 1995.

The waters surrounding Australia are graced with a rich and diverse assemblage of echinoderms. Until quite recently, this fauna was not particularly well characterized. An early compilation from just over a century ago listed 114 species, while the current tally stands at 1154. The authors estimate there are actually closer to 2000 Australian species, representing nearly a third of the extant global echinoderm fauna.

The heart of this beautifully produced volume is a review of the formal taxonomic status, coupled with a compilation of data from collecting records, for each echinoderm genus and species currently known from Australian waters. For each entry, the authors provide detailed taxonomic information: the reference for the currently valid name, the reference for original name and reasons for synonymy where applicable, the type species (for genera), the type locality, and the status and current location of the type specimen(s). The entries also provide geographic and bathymetric range information (including the extralimital range for nonendemics) and very brief comments on ecology (for example, "benthic, continental shelf, suspension feeder").

Taxa are organized alphabetically by class, family, genus, and species. I initially found this organization annoying, since closely related genera are often many pages apart and there is no way to know whether one has located all the families in an order. But an alphabetical listing does have the virtue of de-emphasizing current, often sketchy, phylogenetic schemes that may change considerably with time. Another awkward feature is the inclusion of full literature references within the text rather than in a comprehensive bibliography. Although convenient for browsing, this has added considerably to the length of the book (the full reference of H L Clark's crucial 1946 treatise occurred on 18 of 20 pages I surveyed at random). Illustrative material is limited to a few beautifully executed drawings that accompany the introductory notes to each class. I would have enjoyed seeing more drawings or some photographs, but space and cost clearly precluded comprehensive illustrations of the 577 genera covered.

The authors have performed an outstanding service in bringing together the vast store of information contained in this volume. It will be an essential reference for many years to come for anyone interested in the echinoderms of Australia and the Indo-Pacific region.

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AQUATIC SCIENCES

PHYSIOLOGICAL ECOLOGY OF PACIFIC SALMON. *Edited by Cornelis Groot, Leo Margolis and W Craig Clarke. Vancouver: UBC Press.* $95.00. xii + 510 p; ill.; index. ISBN: 0-7748-0479-3. 1995.

The future of Pacific salmon stocks is a very current concern in the worlds of fisheries science and environmental awareness, and in the relations between the United States and Canada. People have long been impressed by the extraordinary feats accomplished by these species, with their homing to their natal streams, their lengthy migrations to the sea