Book Reviews

The Value of Conserving Genetic Resources
Margery L. Oldfield
388 pp., $19.95 (paperback)
ISBN 0-87893-649-1

Conservation, by Oldfield's definition, "is the wise use of natural resources," and she hastens to say that genetic resources need to be carefully managed so that they are not directly overexploited or the processes and habitats necessary for their replenishment are not destroyed. She began drafting this book in 1975, and by contacting lists of experts she has compiled informational chapters on plant resources and food production; medicinal plant and animal resources; tree resources; natural rubber; and natural sources of industrial oils and waxes, wild biota, and other economic activities. With this information she challenges the reader with the social and economic consequences of our current behavior and uses of genetic resources and suggests alternative responses.

In an industrialized society, most citizens are oblivious to the variety of ways in which we are dependent on wild and domesticated genetic resources. For example, Oldfield's point that crops (or livestock) that originated in one country are likely to be more productive in a suitable foreign environment is illustrated by the Hereford (origin Africa) X Brahma (origin India) crossbred steer grazing on Kansas wheat (origin Ukraine) and fattened on grain sorghum (origin Africa). We are equally oblivious to the stability or rate of eradication of such resources. Oldfield states, "If the energy crisis does not destroy the backbone of modern industrial economics, the impending genetic crisis eventually will."

Some may not accept her assertion that there is really no such thing as a useless plant or animal; rather there are organisms for which a use has yet to be discovered. She also says that each year an estimated 200 deaths and 45,000 cases of accidental human pesticide poisoning occur in the United States, and that costs of insecticides in the 1970s increased at such a rate as to predict that by the year 2000 they might cost $440/kg! These statements are probably based on information gained from interviewee opinions rather than firm statistics. She was on target when she reviewed the National Academy of Sciences (1972) report on genetic vulnerability and identified a major cause of vulnerability as being producer, market, and consumer demand for uniformity.

The book contains comprehensive tables and supporting narrative on such things as folk and modern uses of major medicinal fungi and plants, endangered or threatened crop genetic resources, extinct or threatened wild relatives of domesticated mammals and birds, commercially imported tropical timber trees, and human-induced causes of direct and indirect species extinction.

Oldfield recommends that the United States should:
- support global gene-resource conservation efforts;
- implement a national gene-resource conservation program;
- strengthen extant conservation legislation;
- convene national conferences to bring together people from government, industry, conservation organizations, and the scientific community, as well as interested citizens for purposes of achieving these conservation aims; and
- institute a public education program.

These changes are being implemented.

What's in it for J. Q. Entomologist? When ESA was formed by the merger of AAEE and ESA, the discipline of genetics was not assigned to the purview of any section. When we consider the current number of Drosophila laboratories, it looks like we missed an opportunity. The reason for that statement is the hope that readers will obtain this reasonably priced paperback and use it to determine how their entomological activities relate to the question of conserving genetic resources, which are very much in the public eye today in such manifestations as the Endangered Species Act and Low Input Sustainable Agriculture. Also, who knows about the genetic diversity of insects other than Drosophila?

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Soil Biology Guide
Daniel Dindal [ed.]
Wiley, New York, 1990
1,349 pp., $99.95

For those who revere—or at least remember—Ward and Whipple's 1918 book Fresh-Water Biology and Edmondson's 1959 revision, this is a companion volume with a similar format that treats terrestrial biota. It is a guide to the alpha taxonomy of soil organisms; illustrated keys to family, genus, or species constitute most of the text. Any person working with soil biota will find this volume invaluable, because it provides an entry into the taxonomy, literature, and in some chapters, biology of soil organisms.

Each of the forty-three chapters reflects the expertise, idiosyncrasies, and state of knowledge of the author or authors. Most chapters are well written and current, but since this large volume was eleven years in preparation, chapter updating is variable. References at the end of each chapter provide clues. In general, references extend to 1987 or 1988, but some chapters cite 1987 papers as in press, and others have the most recent reference dated 1974 or 1980. In some chapters, work published since completion of the manuscript is listed but not otherwise mentioned. In others, the manuscript has been revised, while in others the text appears as originally submitted with no obvious updating. The reference citations vary with each author; most annoying are those which omit article titles and pagination—this should not have been allowed.

Chapter styles and coverages vary greatly. All contain a taxonomic key and references (some chapters have nothing else), others have variously more complete coverage with a maximum of two dozen pages detailing morphology, life history, collection, and study techniques. Some chapters appear perfect, while others have poor grammar, misspellings, poor punctuation, odd sentence structure, and even conflicting data. For example, adults of one taxon are said to have 24–27 antennal articles, but the illustrations of adults have 15, 21, and 28; the centipede family Geophilidae is called a millipede; an appendage is identified as a body segment; a key couplet requiring at
The introduction by editor Daniel Dindal is followed by chapters on bacteria (two chapters), fungi, algae, protozoans, planarians, nematodes, snails, oligochaetes (four chapters), leeches, tardigrades, and arthropods (twenty-eight chapters). Absent or mentioned in passing are the soil and litter nemerines, amphipods, decapods, burrowing crickets, cicadas and other homopterans, chrysomelid beetles, weevils, ant larvae, bees, and wasps. Even the least likely of these, the nemerine worms, have four or more genera in the United States and turn up almost anywhere, as I discovered when I dug one up in my backyard in central Ohio.

Arthropods occupy 873 pages, about two-thirds of the text. The chapters and level of taxonomic keys (to adults unless stated otherwise) are: (16) Scorpions, Solifugae, and Associated Desert Taxa (key to the larger arachnid orders; key to four scorpion families); (17) Litter Araneae (genera); (18) Pseudoscorpionida (annotated key to genera); (19) Opiliones (species); (20) Acarina: Mesostigmata (genera); (21) Acarina: Prostigmata (families); (22) Acarina: Astigmata (genera); (23) Acarina: Oribatida (families); (24) Terrestrial Isopoda (genera); (25) Chilopoda (families); (26) Diplopoda (annotated key to families); (27) Pauropoda (species); (28) Symphyla (genera). All the remaining groups, the hexapods, are considered insects: (29) Protura (genera, with a few annotations); (30) Microcoryphia and Thysanura (annotated key to genera and some species); (31) Diptera (annotated key to subfamily or genus); (32) CollMBOLa (annotated key to genera); (33) Isopoda (key to species); (34) Psocoptera (species); (35) Coleoptera: Carabidae, adults and larvae (annotated keys to genera); (36) Coleoptera: Ptiliidae (annotated key to genera); (37) Coleoptera: Silphidae (annotated key to species); (38) Coleoptera: Staphylinidae, adults and larvae (genera, the key to adults annotated); (39) Coleoptera: Pselaphidae (genera); (40) Coleoptera: Scarabaeidae, larvae (subfamilies); (41) Diptera, adults (key to families); (42) Diptera, larvae (families); and (43) Hymenoptera: Formicidae (genera). I found the annotated keys particularly useful. The index which completes the volume has fifty-five pages.

Most of the keys have copious illustrations, but the craftsmanship is very variable. The utility of the keys varies with the taxon and the author; most are good to excellent, but some are inadequate, especially in chapter sixteen.

Two chapters seem odd and out of place. Chapter sixteen, on various desert fauna, is a nontaxonomic overview of the biology of desert snails and arthropods. It is very interesting, but it belongs in a different book. Also out of place is the beautifully illustrated, fifty-two-page treatment of adult Diptera. It would have been much more logical to include pertinent insect pupae, adult scarab beetles, negro bugs, cicada nymphs, and mole crickets and relatives, all of which are more frequent in the soil than adult flies.

In summary, this tome, with fifty-four authors each doing his or her own thing, is very uneven. There is, however, no other volume with similar coverage, keys, and illustrations. It fills, albeit unevenly, a huge gap and will be a standard reference for many years. I hope Dr. Dindal and his production editors produce a corrected version with complete literature citations. With a few changes, this major work would be even more useful.

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Catalog of the Diptera of the Australasian and Oceanian Regions
Neal L. Evenhuis [ed.]
Bishop Museum Press and E. J. Brill, 1989 1,155 pp., $100.00 ISBN 0-930897-37-4

Dipterists CAN REJOICE in the publication of this catalog, because it completes the cataloging of the Diptera of all zoogeographic regions of the world, except for a small number of families in the Palearctic and Neotropical regions. The Diptera are the first major order of insects to be cataloged on a world basis. Dipterists can also take pleasure in the quality of the work; it is exceptionally high in both editing and appearance. In addition, the book is available at an outstanding price for its size.

The geographical scope of this catalog coincides, appropriately enough, with the regions not previously cataloged for the Diptera; that is, the Australasian (Australian) region plus most land masses in the Pacific between the Hawaiian Islands and Easter Island (Oceanian region). Weber's Line, which takes a sinuous route through the Indonesian Archipelago, was chosen as the major line of demarcation between the Oriental and Australasian regions to match the southern extent of coverage of Dini- nado and Hardy's [(eds.] 1973. A catalog of the Diptera of the Oriental region, vol. 1. Seibener Nematozera. Univ. of Hawaii Press, Honolulu.) Oriental catalog of Diptera, thus simplifying comparisons between the fauna of these two regions. The exact limits of the Australian and Oceanian regions are shown on two maps. A list of geographical equivalents is included to aid the reader in finding localities mentioned in the older literature. The Diptera of the Antarctic and Subantarctic islands and fossil Diptera are included in two appendices.

The Diptera fauna of the Australasian and Oceanian regions totals 15,764 species, arranged in 2,021 genera and 116 families. A separately authored or coauthored chapter is devoted to each family. The catalog draws upon the expertise of fifty-four dipterists, most of them specialists on the families they cataloged. The editor was partially or fully responsible for thirty-one families, the introductory chapters, appendices, literature cited, and index.

A twelve-page chapter, "Explanatory Information on the Catalog Text," clearly details numerous nomenclatural and geographical matters in the text. This section is modeled after a similar one in the Catalogue of the Diptera of the Afrotopical Region, edited by Crosskey (1980. British Museum of Natural History, London). In fact, as Evenhuis states (p. 23), the entire Australasian and Oceanic catalog was designed to conform closely to the format of the Afrotopical catalog. Though the editing of that highly acclaimed work would be difficult to improve upon, the present volume ranks higher in terms of type appearance, space efficiency (particularly in the "Literature Cited"), and binding.

After the "Explanatory Information" there is a chapter on the classification scheme followed in the catalog and chapters concerning new names and type designations proposed in the catalog. The latter two are noteworthy because they gather important nomenclatural changes which might otherwise be overlooked by interested readers and abstracting journals.

The 116 family chapters comprise 746 pages, or two-thirds of the volume. They are nomenclaturally complete up to the end of June 1987, though many include references published after that date. The time between the final date for inclusions and date of publication was exceptionally brief considering the number of contributors involved and the size of the catalog. Each chapter begins with remarks about the biology and taxonomy of the family and is followed by a hierarchically arranged list of