



Review: [Untitled]

Reviewed Work(s):

An Annotated Checklist of the Fishes of the Chagos Archipelago, Central Indian Ocean by
Richard Winterbottom; Alan R. Emery; Erling Holm

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tropical penaeid prawn fisheries, K. Brander's clear description of the central issues of multi-species management in the Irish Sea, and K. Sainsbury's development of the ecological basis of multispecies fisheries and their management with specific reference to the demersal fisheries of the northwest Australian shelf.

To the student or practitioner of fisheries science, this volume provides a valuable list of references into the pertinent literature, although the text by itself is not intended as a primary reference. This book will undoubtedly be useful to readers outside of fisheries science who wish to gain insight into the problems of fisheries management and how different fisheries behave.

Some new concepts in fisheries management appear in this book along with improved understanding of the consequences of previous and current practices. The intriguing aspects of adaptive management proposed principally by Walters (1986) have been applied and presented in Sainsbury's chapter. This contributes significantly to the literature since documented applications of adaptive management practices are rare. In addition, both M. P. Sissenwine et al., and J. G. Shepherd discuss a newly derived reference point from stock recruitment relationships which corresponds to a point of "recruitment overfishing."

As can be expected with a collection of papers, there is considerable overlap in the coverage of some concepts. Chapter 2 deals with stock assessments and data, and Chapter 3 deals with collecting data for stock assessments. These two chapters complement each other but suffer in the clarity of their organization. In some instances, mixed messages occur between papers. For example, J. G. Shepherd recognizes the uncertainty involved in selecting a value for natural mortality early in an analysis but states that the important questions put to stock assessment scientists are not seriously inhibited by this problem. Conversely, J. A. Gulland discusses the serious problems associated with the uncertainty of natural mortality.

For the most part, the book is remarkably consistent, especially given the number of papers contributed from many diverse areas. A few minor errors were found. The names of two authors are misspelled in the author index, one label on a graph has the wrong units, and a paper cited as "In press" in one article is given the full published citation in another. These

errors are insignificant and do not detract from the overall cohesiveness of the book.

In summary, we highly recommend this book to anyone interested in a contemporary overview of the field of fisheries population dynamics and management. The case histories alone make the book worth its US \$50 price tag. As was the case with the first edition, J. Gulland has done an outstanding job of providing the fisheries community with an integrated overview of fisheries stock assessment and quantitative management, its past, present and future, seen through the writings of some of its most distinguished practitioners.

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- WALTERS, C. 1986. Adaptive management of renewable resources. Macmillan Publ. Co., New York, New York.
- J. IANELLI, AND R. C. FRANCIS, *Fisheries Research Institute, University of Washington, Seattle, Washington 98195.*

AN ANNOTATED CHECKLIST OF THE FISHES OF THE CHAGOS ARCHIPELAGO, CENTRAL INDIAN OCEAN. By Richard Winterbottom, Alan R. Emery and Erling Holm. Royal Ontario Museum, Toronto, Canada. 226 p. with 8 color plates and 454 figures, \$48.50 (Canadian) (softcover).—Because of inadequate documentation and collecting effort, locality records for Indo-Pacific fishes are often questionable. For the Chagos Archipelago these shortcomings are now not necessarily applicable. Winterbottom et al. have reliably erased uncertainty for many fishes, for what was frequently an inconvenient locality question mark in the center of the Indian Ocean. The most important aspects of this checklist are the specimen data and photographs from a 1979 collection at Chagos made primarily by Winterbottom and Emery. Compared to the effort that has gone into documenting this collection, the faults I find in the checklist are minor. Many large collections of Indo-Pacific fishes at key locations have been made in this century, but few are as easily assessed and accessible as the Chagos collection, because of the availability of this checklist.

The first impression of this book is that it will not only serve as an excellent locality checklist, but also as a taxonomic update for many species of Indian Ocean fishes. At closer inspection, however, it appears that the Chagos checklist was held up in press for quite some time. The publication date is Jan. 1989, but the authors apparently relied mostly on pre-1985 literature. The Literature Cited contains few 1985 references, and the only 1986 reference is by the first two authors. A number of relevant works on Indo-Pacific fishes were published between 1985 and 1989 that should have been used. A brief Errata and Addenda sheet is included but it makes no attempt to update the species names already in the book. I also note that the checklist makes no attempt to include deepwater species.

The checklist is divided into Contents (including an index to families), Abstract, Introduction, Materials and Methods, Checklist of Chagos Fishes, Discussion, Acknowledgments, Literature Cited, and Figures. I found this organization awkward compared to other recent checklists (Allen and Steene, 1979; Russell, 1983; Randall et al., 1985). All figures are appended at the end of the checklist and color plates are grouped in the middle of the species accounts. There is no species index or list of figures thus making it difficult for non-systematists to locate a particular species.

The Introduction is short, four paragraphs long, and contains (in order) descriptions of the location of the Chagos Archipelago, reef structure and associated fauna (very limited), the names of the Atolls in the archipelago, a description of the location of the archipelago with respect to other land masses and currents, and a very limited review of relevant literature sources and history of previous collections. This section would have been better served if the historical and environmental sections were expanded and treated under separate subheadings. I found it inconvenient to have to flip to the Figures section at the back of the book to refer to the map of the archipelago and reef profiles. These figures at least, should have been integrated near the relevant text. In view of the strategic biogeographic position of Chagos, it would have been useful to include a map of the Indian Ocean showing tectonic plates and major ocean floor topography. Considering the authorship and date of publication, I was disappointed not to read some background remarks on the marine zoogeography relevant to Cha-

gos, particularly with respect to faunal barriers and affinities between the East and West Indian Ocean.

The Materials and Methods section gives a brief account of the collecting effort and partially explains the format and terms used in the annotated checklist. The rationale and organization of the species accounts should have been more explicitly described, perhaps under a separate heading.

The checklist proper contains more useful information than other recent checklists of Indo-Pacific fishes. The species accounts are organized phylogenetically by family, and alphabetically by genus and species within families. The supraspecific taxonomy is reasonably up-to-date. An exception is that the family Caesionidae is not recognized as in all other contemporary publications. Species accounts contain the recently recognized genus and species, a literature reference to the original author of the species, a literature reference to a locality record for Chagos if available, a Material section if specimens were collected or, comments on the locality record if cited from the literature. The Material section lists the number of lots, the number of specimens, the size ranges of the specimens, collection locality, habitat notes, the size of specimens photographed (photographs not included in the checklist are indicated as available at the Royal Ontario Museum), and a geographic range for the species. These data will prove useful to any researcher interested in examining specimens from the Chagos collection at the Royal Ontario Museum. This section would have been more useful, however, if the museum catalogue numbers had been included.

The discussion is short, three paragraphs, and contains elements that would have been more appropriately included in a Results section. The number of taxa and specimens collected and percent composition of the different families are given here. Faunal affinity relative to the major Indo-Pacific distribution patterns are described, although there is no actual discussion or comment on faunal barriers or the zoogeography of Chagos with respect to the Indo-Pacific region. Also, if differences were found in distributions of faunal assemblages within the Chagos Archipelago, they were not discussed.

The 56 color and 452 black-and-white photographs of specimens collected are of mixed quality; most are good but some are not. The

authors are remiss in their failure to note collection damage to specimens in the figure captions (or anywhere in the book for that matter). Persons familiar with the normal appearance of a species will be able to recognize fin tears, missing scale patches and spear wounds, but others may have a problem using some of these photographs as a reference. For example, on the color photograph of the individual of *Caesio xanthonota* (plate 5D) there is a large dark blotch on the lower side that is probably a spear wound, and it should have been clearly noted as such. Pity the unsuspecting biologist who may have trouble identifying this species because the ones he collects do not have the large dark blotch! Regardless of this neglect, the authors are to be highly commended for having taken the trouble to photograph the specimens they collected and for including these photographs in the checklist. In research on fishes, the availability of a photograph and specimen together can be very useful in elucidating difficult systematic problems.

In terms of organization, quality of photographs, readability, amount of background information and discussion presented, the works of Allen and Steene (1979), Russell (1983), and Randall et al. (1985) are better examples of how checklists should be presented. The strengths of the Chagos checklist are in the annotations and numerous photographs that more easily allow evaluation of the locality record than many previous checklists. This book is an important reference for systematists working on Indo-Pacific reef fishes. The cost is high, no doubt because of the numerous figures and color plates, and some researchers will probably decide to rely on a library copy.

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- KENT E. CARPENTER, *Mariculture and Fisheries Department, Kuwait Institute for Scientific Research, PO Box 1638, 22017 Salmiya, Kuwait.*
- POPULATION GENETICS AND FISHERY MANAGEMENT. Nils Ryman and Fred Utter (eds.). 1987. University of Washington Press, Seattle, Washington. 420 p., \$35.00 (hardcover), \$17.50 (paperback).—The premise of this volume is to make the case for the integration of principles and practices of population genetics with the field of fishery management. The decimation of natural populations by means of modern harvesting technology and the mass production potential of modern hatchery technology are two of the most critical problem areas in fisheries today; both have genetic implications. Optimal management of our fishery resources must be based on genetic principles if these resources are to survive in the long term.
- The editors wished to target a multidisciplinary audience. This volume was intended to serve as: 1) a textbook for upper division or graduate-level university courses; 2) an information source (in part) for fisheries managers and geneticists; and 3) a stimulus for additional publications encouraging the application of integration of these fields. Individual chapters were intended to serve as reference sources for persons from a variety of fields who share an interest in population genetics or fishery management. Most, but not all, of these goals were achieved.
- The volume was divided into 15 chapters, authored by persons who "are principally geneticists rather than fisheries managers," thus limiting the perspective to one field extending its potential to another. These chapters cover relevant techniques and concepts, representative applications, and discussions of the present and future problems faced in the field. The usefulness of each chapter to the members of its broad audience varies considerably. A brief outline and critique for each is in order.
- Allendorf joined the editors of this volume in co-authoring an excellent introductory chapter covering the basic premise of the volume. One need read no further to be convinced of the necessity of population genetics in fishery management. The need to ascertain the population structure of species is a classic problem in fishery management, one that can be addressed optimally using modern genetic tools. This is the chapter that should be cited in your grant proposals.
- The potential of allozyme electrophoresis in fishery management is reviewed by Utter, Aebersold, and Winans in Chapter 2. Basic genetic principles and procedures are outlined at an