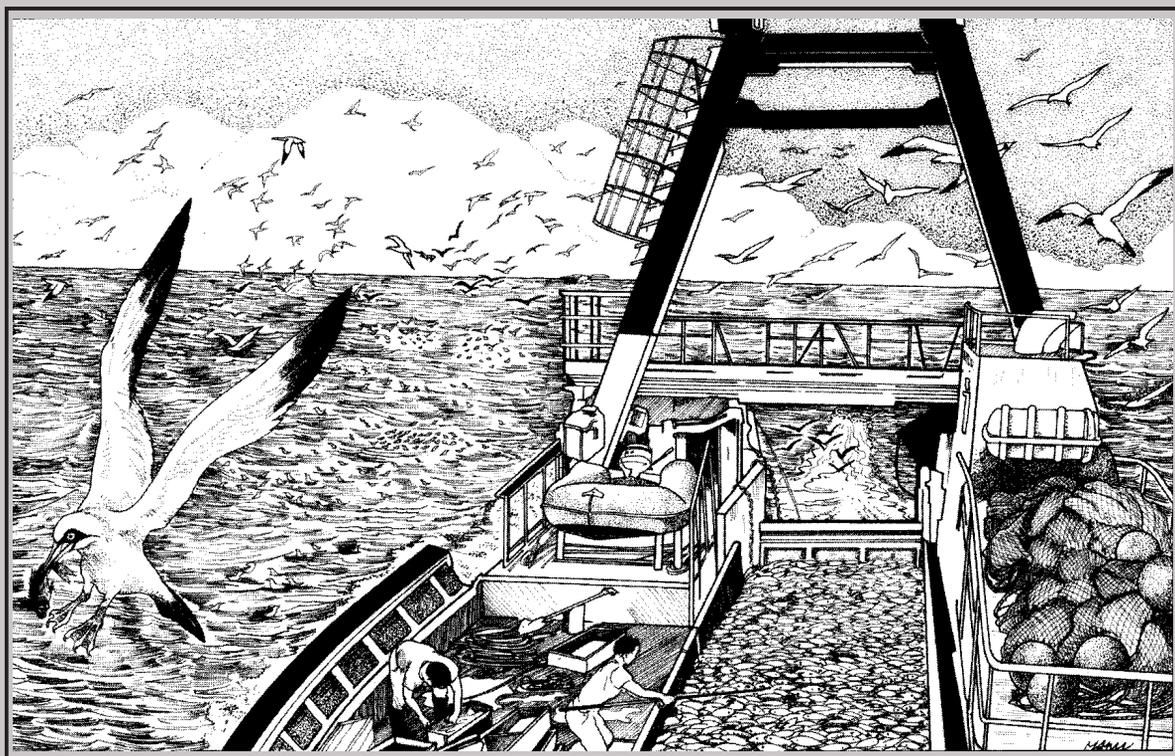




FAO SPECIES IDENTIFICATION GUIDE FOR FISHERY PURPOSES

ISSN 1020-6868

FIELD GUIDE TO THE LIVING MARINE RESOURCES OF NAMIBIA



Food
and
Agriculture
Organization
of
the
United
Nations

NORAD
Norwegian
Agency for
International
Development



FAO SPECIES IDENTIFICATION FIELD GUIDE FOR FISHERY PURPOSES

THE LIVING MARINE RESOURCES OF NAMIBIA

by

G. Bianchi

Institute of Marine Research
P.O. Box 1870, N-5024
Bergen, Norway

K.E. Carpenter

Department of Biological Sciences
Old Dominion University
Norfolk, Virginia 23529
USA

J.-P. Roux

Ministry of Fisheries and Marine Resources
P.O. Box 394
Lüderitz, Namibia

F.J. Molloy

Biology Department
Faculty of Science
University of Namibia
Private Bag 31
Windhoek, Namibia

D. Boyer and H.J. Boyer

Ministry of Fisheries and Marine Resources
P.O. Box 912
Swakopmund, Namibia

With the financial support of

NORAD

Norwegian Agency for International Development



INDEX

FOOD AND AGRICULTURAL ORGANIZATION OF THE UNITED NATIONS
ROME, 1999

The designations employed and the presentation of material in this publication do not imply the expression of any opinion whatsoever on the part of the Food and Agricultural Organization of the United Nations concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries.

M-40
ISBN 92-5-104345-0

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying or otherwise, without the prior permission of the copyright owner. Applications for such permission, with a statement of the purpose and extent of the reproduction, should be addressed to the Director, Publications Division, Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, 00100 Rome, Italy.

© FAO 1999

PREPARATION OF THIS DOCUMENT

This field guide was prepared under the direction of the Species Identification and Data Programme of the Marine Resources Service, Fishery Resources and Environment Division, Fisheries Department, Food and Agriculture Organization of the United Nations (FAO), Rome, Italy. Preparation was supported by the Norwegian Agency for International Development (NORAD). The editorial coordination for this second edition was done at the Department of Biological Sciences, Old Dominion University, Norfolk, Virginia, USA.

The inspiration to produce this guide came from the survey cruises of the Norwegian research vessel "Dr. Fridtjof Nansen" which is directed from the Institute of Marine Research in Bergen. During survey work, the need for a guide specifically for Namibia became obvious. Previous guides are designed for regions north or south, but Namibia has a unique fauna derived from elements of both these neighbouring regions. The need for a revised edition became evident following the development of the orange roughy fishery which occurred after the first edition was published. This guide covers those species that are commonly caught in this new fishery in more detail.

The number of species covered in this guide far exceeds those that are currently being exploited in Namibia on a commercial basis. However, many species are caught incidentally in commercial fisheries or by sports anglers and are potentially significant. In addition, it is often important to consider non-target species for ecological considerations, general management of resources, and for better understanding and management of primary target species.

As would be expected in an undertaking of this magnitude, there is undoubtedly room for improvement. Users are encouraged to correspond with the authors and editors to help improve future versions of this guide.

Project director: P. Oliver, FAO, Rome.

Technical editors (this edition): K.E. Carpenter and T.R. Wasaff, Old Dominion University, Norfolk, USA.

Technical editors (first edition): K.E. Carpenter and A.-L. Agnalt, FAO, Rome; G. Bianchi, Institute of Marine Research, Bergen; and D. Boyer, Ministry of Fisheries and Marine Resources, Namibia.

Illustrations (new for this edition): E. D'Antoni, FAO, Rome.

Illustrations (new for first edition): P. Lastrico, FAO, Rome.

Page composition and indexing (this edition): T.R. Wasaff, Old Dominion University, Norfolk, USA.

Page composition and indexing (first edition): G. Sciarappa-Demuro and M. Kautenberger-Longo, FAO, Rome.

Editorial assistance (this edition): N. De Angelis and M. Kautenberger-Longo, FAO, Rome.

Cover illustration: E. D'Antoni, FAO, Rome.

Bianchi, G.; Carpenter, K.E.; Roux, J.-P.; Molloy, F.J.; Boyer, D.; and Boyer, H.J.

FAO species identification field guide for fishery purposes. The living marine resources of Namibia.

Rome, FAO. 265 p., 11 colour plates.

SUMMARY

This field guide covers the major resource groups likely to be encountered in the fisheries of Namibia. These include seaweeds, shrimps, lobsters, crabs, bivalves, gastropods, cephalopods, hagfishes, sharks, batoid fishes, chimaeras, bony fishes, turtles, seabirds, and marine mammals. The introduction outlines the geographical, environmental, and ecological factors influencing fisheries, and the basic components of the fisheries of Namibia. As an aid to identification to higher taxonomic levels, a pictorial index to families is included and most groups are preceded by an illustrated guide to orders and families. Each resource group includes general remarks, an introduction to the technical terms and measurements pertinent to that group, and a guide to species likely to be encountered in fisheries. Each species account provides scientific nomenclature, FAO common names, sizes, notes on fisheries, habitat and biology, diagnostic features, and one or more illustrations. An annotated checklist of sharks, batoid fishes, chimaeras, bony fishes, and marine mammals, and a list of important references are appended. The introduction and guide sections are fully indexed. Finally, 88 colour photographs are presented of fishes caught mostly by trawl.

Author's credits: Introduction by G. Bianchi and D. Boyer; seaweeds, bivalves, and gastropods by F.J. Mollay; shrimps, lobsters, crabs, and cephalopods by G. Bianchi and K.E. Carpenter; hagfishes, sharks, batoid fishes, chimaeras, bony fishes, and turtles by G. Bianchi, K.E. Carpenter, H.J. Boyer, and D. Boyer; seabirds by J.-P. Roux and D. Boyer; marine mammals by J.-P. Roux; checklist of fishes by K.E. Carpenter and H.J. Boyer.

Acknowledgements: We thank: Oddgeir Alvheim (Institute of Marine Research, Bergen) who reviewed several versions of this guide, provided very helpful advice for making this guide useful on board research vessels in Namibia, and provided many new photographs for the second edition; Jeppe Kolding (Department of Fisheries and Marine Biology, University of Bergen) who provided most of the colour photographs used in this guide; Martina A. Compagno Roeleveld (South African Museum, Cape Town) for valuable taxonomic and natural history advice on the cephalopod section of this guide; Johannes Holtzhausen and Carola Kirchner (Ministry of Fisheries and Marine Resources, Swakopmund) for very helpful advice on recreational fish and fisheries; Laila Linde-Lossius (Luderitz Fisheries Research Center) for valuable fisheries and natural history information for the shrimp section of this guide; Lima Martens (Ministry of Fisheries and Marine Resources, Swakopmund) for advice on the monkfish; Rudi Cloete, Charlton Heinrich Lesch, Lizette Voges, and Stephanus Voges for advice on fisheries; Johnny Gamatham (Ministry of Fisheries and Marine Resources, Swakopmund) for many improvements on the field use of the guide; Alfred Kronitz (Swakopmund) for information from a highly experienced angler's perspective; Charles Beyers (Ministry of Fisheries and Marine Resources, Swakopmund) for advice on crustaceans; Bronwen Currie (Ministry of Fisheries and Marine Resources for Swakopmund) for advice on invertebrates; Deon Louw (Ministry of Fisheries and Marine Resources, Swakopmund) for help with photography; M. Eric Anderson (J.L.B. Smith Institute of Ichthyology, Grahamstown); Leonard J.V. Compagno (South African Museum, Cape Town), Ofer Gon (J.L.B. Smith Institute of Ichthyology, Grahamstown), Phillip C. Heemstra (J.L.B. Smith Institute of Ichthyology, Grahamstown); Percy H. Hulley (South African Museum, Cape Town), Tomio Iwamoto (California Academy of Sciences, San Francisco), John R. Paxton (Australian Museum, Sydney), Stuart G. Poss (Gulf Coast Research Laboratory, Mississippi), William J. Richards (National Marine Fisheries Service, Miami), and William F. Smith-Vaniz (National Biological Survey, Florida) who provided valuable taxonomic advice on fishes; Thang Do-Chi, David Die, and Luca Garibaldi (FAO, Rome) for their help on FAO common names; Burger Oelofsen (Ministry of Fisheries and Marine Resources, Windhoek), and Ben Van Zyl (Ministry of Fisheries and Marine Resources, Swakopmund) for help, support, and advice during the revision of this guide.