

Management of Scombroid Fisheries

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Management of Scombroid Fisheries

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The National Workshop on Scombrotoxicosis organised and conducted by Central Marine Fisheries Research Institute at Kochi in September 2000 was intended to provide a common platform for researchers, entrepreneurs, industrialists and policy planners to discuss and debate our strengths, weaknesses and opportunities for exploration and exploitation of valuable scombrotoxic fish like skipjack tuna, yellowfin tuna, bigeye tuna, albacore, billfishes, seerfishes, mackerel etc. and to empower our capture fisheries subsector with more meaningful information and data support, besides identifying the information lacunae and prioritize areas of research needed. Besides the papers presented at the workshop some relevant information pertaining to the scombrotoxic fish has been incorporated in this publication.

The Editors thank the referees for critically evaluating the papers and the authors for complying with the referees requirements. The Editors take this opportunity to thank the publishers of the book "*Tuna and billfish: Fish without a country*", Inter American Tropical Tuna Commission, Scripps Institute of Oceanography, California, USA for permission to reproduce some of the pictures in this book. We are grateful to Prof. (Dr.) Mohan Joseph Modayil, Director, CMFRI for his continued support and guidance until the publication of this book. For helping in the art work we are thankful to Shri K.K. Sankaran, Artist, CMFRI, Kochi. Thanks are also due to Smt. K.J. Malathidevi and Smt. N.R. Letha Devi for the secretarial assistance. We hope this book will serve as a good reference volume to students, researchers, policy makers, entrepreneurs and all those connected with the development of scombrotoxic fisheries.

The Editors

FOREWORD

Scombroids support a very important commercial and recreational fisheries as well as substantial artisanal fishery throughout the tropical and temperate waters of the world. World catch have oscillated between 4.9 and 6.1 million tonnes during the last two decades. All over the world they are considered as one of the esteem table fishes. Scombroids are economically important pelagic resources in India and their demand in the domestic and export markets is on the increase. Among the potential resources of the EEZ of India, the stock size of scombroids has been estimated as 758,000 tonnes. Our present exploitation is to the tune of 300,000 tonnes and the production gap is quite large. Among the scombroids, tunas and allied resources are the least exploited groups. In India there is no directed fishery for these species except marginal exploitation by pole and line tuna fishing around Lakshadweep waters. Besides the tuna fisheries potential within the EEZ, India is well placed to harvest the oceanic tuna resources in the international waters extending beyond the EEZ. Although the tuna resources, their fishery and development have been discussed at various levels in the past, these have not made an impact on the fishing industry and tangible actions are yet to be taken for commercial exploitation of this resource. The current knowledge of the exploration and status of exploitation of different scombroid species of our waters is quite inadequate when compared to that of other countries bordering the Indian Ocean. A thorough knowledge on the status of the exploited stocks, population parameters, stock structure, exploitable potential, harvest and post-harvest technologies, product development and marketing is a prerequisite for further developing and managing for responsible scombroid fishery in our country. It would therefore be appropriate and timely to bring out a comprehensive publication entitled 'Management of Scombroid Fisheries', which would definitely serve as a reference book for students, researchers, policy planners and industries. The Director, Central Marine Fisheries Research Institute, researchers of scombroids who contributed research papers and Editors of this book deserve all appreciation for bringing out a publication of this nature and its release on time.

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PREFACE

Sustainability has been accepted globally as the key management criteria for all finite natural resources exploitation/harvest. Thus all management efforts focus to ensure access to safe and nutritious food from the wild, as the root cause of undernutrition and food security is poverty. The fisheries sector, world over, faces a continuous decline since the nineties mainly due to population growth and the finite nature of fisheries resources which will severely constrain any further increase in landings. The marine capture fisheries sub-sector is subject to overfishing of not only high priced and long living species but also small pelagics and target species of low volume high export value. In many developing countries this situation will continue and worsen due to population growth, lack of alternate employment opportunities and short term socio-economic consequences. Further, the technology creep have had the result that the same number of vessels can exert a much higher fishing mortality than previously. The capture fisheries sub-sector of the country presently shows the need for a sustainable management, preferably a community based management practice in the coastal waters together with resource enhancement through coastal aquaculture; while the oceanic realm, within the EEZ and beyond, requires major exploratory surveys and resource utilization.

Among the pelagics, scombroids consisting of 15 genera and 49 species of tunas, seerfishes, billfishes, mackerels under the group are the dominant exploitable resource in coastal as well as oceanic pelagic realm. The larger species among them undertake extensive migration even transoceanically and hence their fisheries management is important internationally. Although the annual catchable potential of scombroids in the Indian EEZ is estimated around 758,000 t, the present yield is only about 300,000 t, worth more than Rs.10 billion, with a wide production gap favouring intense exploration and exploitation of tunas in the oceanic realm through responsible fisheries management. Among the exploited scombroids, mackerels constitute 70 % followed by tunas and seerfishes, 15% each. In view of their greater relevance in the socio-economics, the subject was taken up as an issue of vital dominance in fisheries management at national and global levels for strengthening research and prioritization of key issues relevant to each region. CMFRI being the nodal national agency for marine fisheries research, development and management, took up the task of conducting a National Workshop on Scombroids so as to bring together all researchers on this group from various agencies for greater interactions, discussions, debates on the status of exploitation, biology, migrations, shoaling, remote sensing to locate stock concentrations, stock assessment, indicators for stock accumulations, management strategies, inter-institutional

collaboration and prioritization of research areas, environmental/resource modelling, harvest, post harvest, marketing etc. by subject specialists.

All research results presented, discussed and deliberated in the National Workshop by scientists, industrialists and policy planners centre around exploration, exploitation, conservation and management of small and large scombroids. In view of national priorities and global needs, the matters presented in the Workshop, further strengthened with vital and basic information related to the group, are brought under the title 'Management of Scombroid Fisheries'. As many large scombroids are migratory and straddling stocks, responsible fishing require international cooperation of all bordering countries and an appropriate management regime to suit the behaviour of the species and characteristics of their ecosystem. Pelagic sharks also generally coexist and share the prey in the oceanic pelagic realm along with tunas and hence invariably form a major by-catch in gears set for scombroids. Therefore, a couple of articles on pelagic sharks are also included in the book.

I hope that this book on Indian Scombroids will provide major information base to future researchers, students and policy planners. Since the available knowledge is limited, much work is contemplated to strengthen the database on a priority basis through regional and multi-national co-operation in the coming years, so as to make their fishery sustainable ecologically and economically.

I am delighted to thank the Chairman and the Rapporteurs of various Sessions and the members of various Committees who were responsible for the successful conduct of the Workshop. I also thank Dr. P.P. Pillai, Principal Scientist and Dr. N.G.K. Pillai, Principal Scientist and Head, Division of Pelagic Fisheries who functioned as the Co-ordinators of the Workshop. I am grateful to the Co-sponsors Association of Indian Fishing Industry, Dept. of Ocean Development, Fishery Survey of India, Marine Products Export Development Authority, Space Applications Centre and to the Editors to concise the contents in the book form.

MOHAN JOSEPH MODAYIL
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