

Manual of fish eggs and larvae from Asian mangrove waters



M.J. Prince Jeyaseelan



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with the collaboration of

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Preface

Research and training leading to the rational management of mangrove ecosystems have been a part of UNESCO's environmental science activities for three decades. The Organization's erstwhile interregional Coastal Marine (COMAR) programme, launched in 1981 under the programme of the (then) Division of Marine Sciences, was motivated, amongst other considerations, by the emerging understanding that these ecosystems provide a wealth of natural resources, protection against devastating storms and breeding grounds for many species of commercial food value. Nowadays they are being recognized for their added value as a storehouse of marine biodiversity.

The present volume, *Manual of Fish Eggs and Larvae from Asian Mangrove Waters*, was planned and written in 1993. It constituted the final publication of the (former) Regional Mangroves Projects RAS/79/002 and RAS/86/120, co-sponsored by UNESCO and the United Nations Development Programme (UNDP). The broader utility of this manual was recognized in the intervening years and, following the advice of specialists who bore in mind the needs of the potential user community, UNESCO agreed to publish the volume in its present form. The production and distribution of the publication received support from the International Society for Mangrove Ecosystems (ISME) and the International Institute of Tropical Forestry (IITF) of the Forest Service, United States Department of Agriculture (USDA). The efforts of Dr Shigeyuki Baba, Executive Secretary of ISME and Dr Ariel E. Lugo, Director of IITF, were crucial in obtaining this assistance.

The Projects had, among other objectives: the development of worldwide awareness of the important ecological role played by the mangrove ecosystem, globally speaking; the promotion of scientific studies on mangrove flora, fauna and the ecosystem as a whole; and the application of the expertise acquired toward long-term sustainable use and management practices. The projects formed a programme which was in itself an integral component of the above-mentioned (former) COMAR Programme of UNESCO.

The mangrove programme, carried out over a period of eight years, benefited from the enthusiastic cooperation of the participating countries, which numbered nine at the beginning and twenty-two at the closure of the projects' activities. All countries established National Mangrove Committees, most of which are still active. Over thirty reports were prepared and nine Mangrove Ecosystem Occasional Papers were published. This is the fourth manual published by the projects, the previous three being: *Nutrient Cycles in Mangrove Soils and Waters*; *Mangrove Palynology*; and *Manual for Investigation of Hydrological Processes in Mangrove Ecosystems*.

Many of the types of mangrove activities, launched by the Mangrove Projects, are now being carried on and further developed by ISME. The Society's activities include: (i) the organization of training courses on the use and management of mangrove ecosystems; (ii) the production of videos, posters, photographic materials; and (iii) the publication of Occasional Papers, Technical Series and a *World Atlas of Mangroves*. ISME also prepares occasional exhibits on mangroves.

The publication project that resulted in this Manual was carried to its conclusion as a contribution of UNESCO's transdisciplinary endeavour on Environment and Development in Coastal Regions and in Small Islands (CSI), in cooperation with ISME and IITF. Launched in 1996, CSI serves as a platform for relevant cross-sectoral cooperative activities of the Organization. CSI's major objective is to work with Member States towards sustainable development of the world's coastal belt and small islands. Further information on these activities can be obtained from the Internet: csi@unesco.org, or <http://www.unesco.org/csi>

In 1997 UNESCO also published, as a CSI activity and with production support from ISME and IITF, a non-serial volume entitled: *Mangrove Ecosystem Studies in Latin America and Africa*, edited by B. Kjerfve, L. Drude de Lacerda and E. H. S. Diop.

The authors and editors are responsible for the choice of material and the presentation of the facts contained in this book as well as for any opinions expressed therein, which are not necessarily those of UNESCO and do not commit the Organization. This includes any specific equipment and materials as well as methods employed which may be mentioned in the text.

Distribution of this Manual

Copies can be obtained according to the following regional distribution plan. Requests should be sent to the respective distributor, who will indicate the applicable conditions.

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