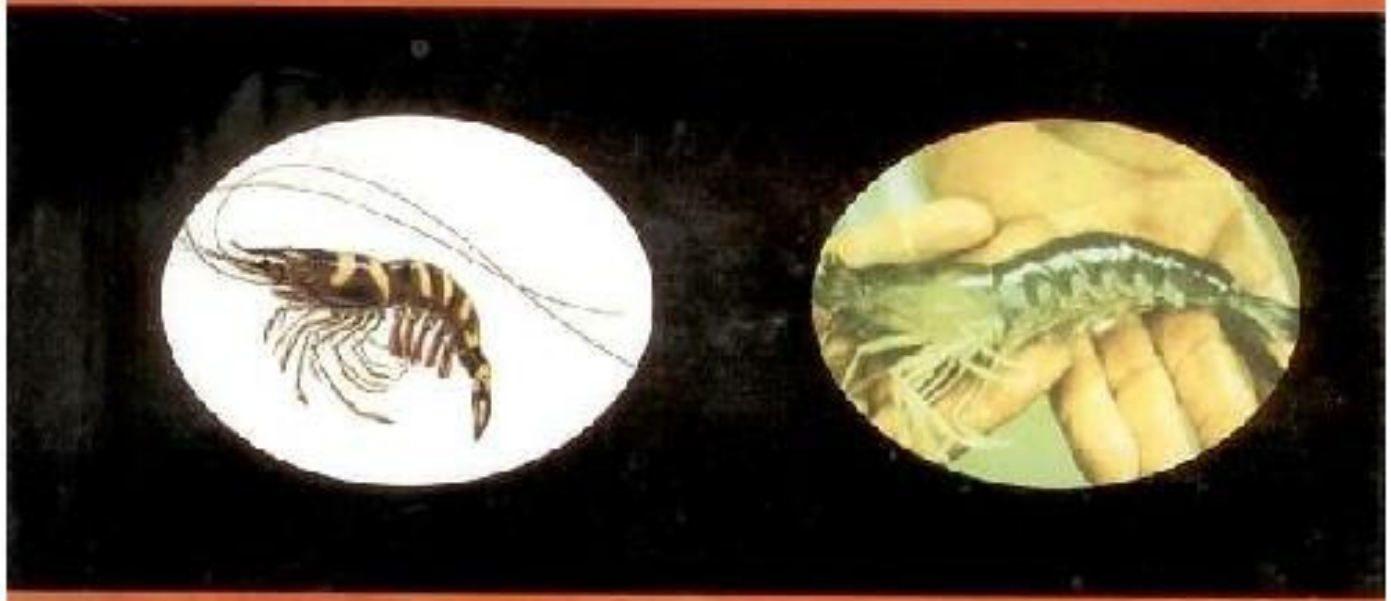
Identification of PRAWNS/SHRIMPS OF INDIA and their Culture



Dr. A.D. DHOLAKIA

Identification of PRAWNS/SHRIMPS OF INDIA and their Culture

Dr. A.D. DHOLAKIA
M.Sc., LL.B. (Sp), Ph. D.
(Retd.) Research Officer and Head
Fisheries Research Station,
Junagadh Agricultural University, Sikka
Gujarat, India

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Phone: +91-11-43549197, 23278134
Fax: +91-11-23243060
e-mail :info@astralint.com
website :www.astralint.com

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I am highly thankful to Shri A. U. Buch, Deputy Commissioner of Fisheries (Retired), Department of Fisheries, Government of Gujarat, Gandhinagar, for writing Foreword of this book. I am also highly thankful to Dr. D. C. Bhatt, Head Marine Sciences, Bhavnagar University, Bhavnagar for Recommending this book for the use of students and teachers.

Prof. Anshuman D. Dholakia

Foreword

I have seen the contents of this book and found that Prof. Dholakia has put tremendous and useful effort in identification of prawn and shrimp species of India. Early identification of the commercial species from the Mysis and Postlarvae will help to separate unwanted species from the culture batch. For precious identification at these stages, he has given drawing of each part of the body. For identification of adults he has given drawings and colour photographs wherever it is possible.

In this book he has given identification of 78 Marine water prawn and 17 freshwater shrimps totaling 95 prawn and shrimp species. Identification and culture activities were explained using 535 drawings, 87 colour photographs and 30 tables. Besides identification he has covered culture aspects also for this requirement of different parameters like Site selection, design and construction of culture pond, type of soil, stocking, feed nutrition requirement, feed preparation, method and quantity of feed distribution are explained and also possibilities of diseases observed in commercial cultured prawn/shrimp are given.

I know Dr. Dholakia since 1977. He has done his Ph. D. in marine Prawn Culture. He has done excellent work when he was in-charge of prawn culture laboratory at Okha. He has published many research papers. Looking to his experience, I am sure that this Book will be helpful to B. F. Sc. and M. F. Sc. students, teachers and research workers of Fisheries Faculty of respective colleges, technical officers/staff of fisheries, as well as to supervisors of prawn/shrimp culture farms. I wish him all success in his life.

Residence
"*Ashirwad" A/67-C Plot No 1006/2*
Opp. S. T. Depot. Sector–7 C
Gandhinagar – 382007, Gujarat

A.U. Buch
Deputy Commissioner of Fisheries, (Retired)
Department of Fisheries, Govt. of Gujarat.
Gandhinagar, Gujarat

Preface

Prawns are recognized as a major delicacy for the table and in many parts of the world prawn fisheries have developed extensively during the last forty years. Traditionally, prawning was a shallow-water fishery; prawns being trawled from coastal and estuarine waters; but with the increased demand for prawns, trawling and trapping have now been extended down to 400 fathoms.

The commercial prawns of India can be grouped in to Penaeid and non-penaeid. Penaeid form a little over 50 per cent of the total marine prawn catch, the rest being non-penaeid.

It is necessary to identify them and only commercially important and high demand prawn can be cultured for profitable business. In this book I have given identification of 78 Marine water prawn and 17 freshwater shrimps. Identification of prawn and shrimp of commercial importance is given from Mysis stage to Post larvae stages. Identification using carapace and how to identify prawn/shrimp in field are also given. I have tried to give justice to this subject with the help of 535 drawings, 87 colour photographs and 30 tables. In this book I have tried to cover identification of 95 prawn and shrimp species. The subject is justified using more than 90 references.

Different parameters like Site selection, design and construction of culture pond, type of soil, stocking, feed nutrition requirement, feed preparation, method and quantity of feed distribution, and some major diseases in commercial cultured prawn/shrimp are given. Culture method in details of marine prawn as well as freshwater shrimp is given. In this book the requirement of syllabus for B.F.Sc and M.F.Sc. approved by I.C.A.R. is also looked in to with respect to the subject of this book.

Details of selection of prawn/shrimp species for culture considering local condition are also discussed.

Looking to high demand of culture prawn due to eco-friendly and unpolluted environmental condition, business people would like to culture prawn/shrimp. This book will be highly helpful to them as well as to fishery students, teachers and research workers.

Prof. Anshuman D. Dholakia
201, Shashwat Apartment,
Nr. Vaibhav Laxmi Temple
B/H Drive-in-Cinema
Memnagar, Ahmedabad – 38 0052

Recommendation

I have seen the contents of this book. Looking to the high demand and taste of Prawn/Shrimps, it is necessary to know about them. Prof. Dholakia has tried to identify about 95 prawn/shrimp species in this book. He has also given the culture systems for both Marine as well as freshwater prawn/Shrimp.

In present days when day by day landings are decreasing, it is necessary to culture prawn/shrimp. It is my experience that many students and people are facing difficulty in identifying proper prawn/shrimp.

This is very important to identify prawn/shrimp properly before starting their culture. Efforts made by Prof. Dholakia is to be admired. I recommend using this book as reference book by students and teachers who are in this field may get proper guidance.

Prof. D.C. Bhatt
Head, (Marine Sciences) (Retd.)
Bhavnagar University, Bhavnagar

Contents

P.cornuta
P.hardwickii
P.maxillipedo
P.jerryi
P.balssi
P.tenella
P.uncta
Family Penaeidae
Solenocerid shrimp
Solenocera indica
Solenocera pectinata
S.hextii
S.choprai
Family Sergestidae
Acetes indicus
Key to sexes of Acetes
Acetes serrulatus
Acetes japonicas
A.johni
A.erythreaus
Family Sergestidae
Hippolysmate ensirostris
Aristeomorphawoodmasoni
Aristeus alcocki
Aristeus semidentatus
Atypopenaeus sternodactylus
Family Palaemoidae
Key tocommercially important coastal spp.of Palaemonidae

Fresh water Prawns

Classification
Macrobrachium rosenbergii
Identity and morphology
Mating and embryonicdevelopment
Selectedcharacteristics of Macrobranchium rosenbergii larvae and postlarvae
Macrobranchium malcomsonii
M.nipponense
M.lamarrei
Sexual dimorphism, Fecundity, Development in Prawn
Stages of Development
M.veliense
M.Kulsiense
M.nobilii
M.rude
M.idella
M.equidens

- Type of gates: Main gate,Secondary gates, Inlet gates, Out let gates
- Pond bottom conditioning
- Procedure fordrying the pond
- Pond bottom sterilization, Liming the pond
- Application of lime dosage
- Procedure toovercome the acid sulphate
- Problem
- Eradication of predators
- Chemical commonlyused as pisicides with dosages
- Deodar in pond water and itsremoval
- Recommended chemicals for deodar the pond

9. Selection of Species for Culture
   - Biological factors
   - Growth rate, Ecological adaptability
   - Distribution of species
   - Reproduction characteristics, Larval development,Hardiness of animal
   - Economical factors
   - Market demand, Market price
   - Advantages and disadvantages of important cultivable shrimp species
10. Freshwater Prawn Farming
   - Dates of beginning, peak and end of seasons
   - Polyculture and integrated culture
   - Outdoor (secondary)nurseries
   - General management and water quality
   - Systems of management in grow-out ponds for fresh water prawns
   - The continuous system
   - The batch system
   - The modified batch system
   - Monoculture in temperate zones
   - Basic requirements and facilities for freshwater culture
   - Holding tank
   - Indoor (primary) nurseryfacilities
   - Nursery cages
   - Outdoor (Secondary) nurseries
   - Filling and stocking ponds
   - Feeding strategy
   - Survival and growth rate
   - Harvesting, grading and transport
   - Multiphase nursery system
   - Nursing in cages
   - Defining the pond, choosing its area and shape
   - Choosing its depth
   - Constructing the pond banks
   - Ponds with grass turfs
   - Gravel filter for exclude fish eggs and larvae

Discharge water from the ponds
Outlet structure
Sizes of outlet pipes for ponds with monks
Time taken to drain ponds with different drain pipe size
Preparing pond
Aeration
Oxygen transfer efficiencies of basic type of aerator
Lime requirements for treating the bottom of ponds
Stocking
Holding post larvae before sale
Transporting post larvae
Pond size
General management, construction
Semi intensive monoculture in tropical zone
Stock estimation during the grow-out period
Size grading
Culture technology of Chapter10
Biology of Macrobrachium rosenbergii
Preparation of nursery and grow-out pond
Nursery pond management
Grow-out pond management
Economics of grow-out production of prawn
Eyestalk ablation
Protocol of rearing M.rosenbergii larvae
Brood stock collection and maturation
Incubation, hatching and fecundity
Larval rearing
Salinity, pH, Temperature, light,aeration, nutrition
Water quality management for
indoor nurseries
Stocking rates
Feeding strategy
Feed formulation
Feeding schedule
Dealing with problems of predation
Pond size
Eradication of predators
Application of Rotenone and Teaseed cake
Use of artificial substrate
11. Marine Prawn Fishery and Culture
Fishery
Penaeus indicus
P.monodon
P.merguiensis
P.semisulcatus

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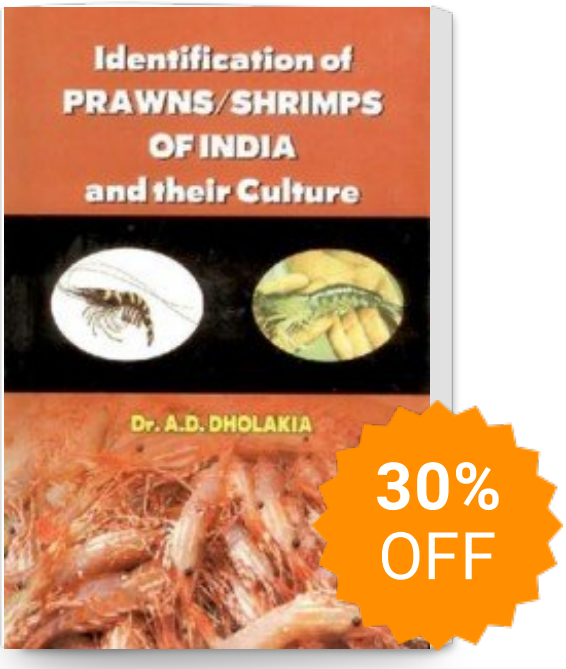

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Author : A.D. Dholakia