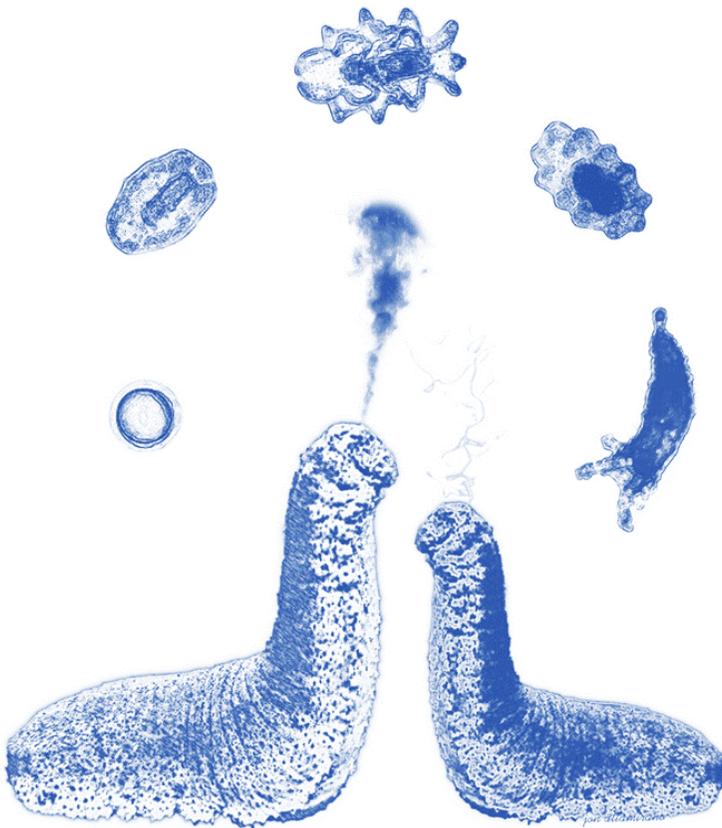


Hatchery Production of Sea Cucumbers (Sandfish *Holothuria scabra*)

Jon P. Altamirano
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Southeast Asian Fisheries Development Center
AQUACULTURE DEPARTMENT
Tigbauan, Iloilo, Philippines



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Aquaculture Extension Manual No. 69

July 2022

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ISSN 0115-5369

Published and printed by:

Southeast Asian Fisheries Development Center
Aquaculture Department

and

Australian Centre for International Agricultural Research

Disclaimer: This publication has been co-funded by the Australian Government through the Australian Centre for International Agricultural Research. The views expressed in this publication are the authors' alone and are not necessarily the views of the Australian Government.

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Aquaculture Department

Primary photography: J.P. Altamirano (unless specified)
Micro-photography: J.C. Rodriguez, Jr.
Graphics and Illustrations: J.P. Altamirano



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SEAFDEC Aquaculture Department Library Cataloging-in-Publication Data

Altamirano, Jon P.

Hatchery production of sea cucumbers (sandfish *Holothuria scabra*) / Jon P. Altamirano, Jesus C. Rodriguez, Jr. -- Tigbauan, Iloilo, Philippines : Aquaculture Dept., Southeast Asian Fisheries Development Center ; Australian Centre for International Agricultural Research, 2022, ©2022.

viii, 54 pages : color illustrations. -- (Aquaculture extension manual, 0115-5369 ; no. 69).

Includes bibliographical references.

1. Sea cucumbers--Cultures and culture media--Handbooks, manuals, etc. 2. Fish hatcheries--Handbooks, manuals, etc. I. Rodriguez, Jesus C. Jr. I. SEAFDEC. Aquaculture Department. II. Australian Centre for International Agricultural Research. III. Title.

SH 399 .T8 A48 2022

DLS2022-02

Foreword

Sea cucumbers are highly valued marine commodities traditionally collected from the wild. However, lucrative market prices promoted increased trade that led to their overexploitation in many countries. Some species have even been classified as endangered or vulnerable under the IUCN Red List of Threatened Species.

Fortunately, the aquaculture of sea cucumbers is making progress, which can help reduce the pressure on wild stocks and contribute to the market supply. It was in 2007 when SEAFDEC/AQD began work on the hatchery production of sea cucumber, specifically the sandfish *Holothuria scabra*, mainly for stock enhancement. In 2010, a small-scale sea cucumber hatchery was established at the research center's main station in Tigbauan, Iloilo, Philippines. At this same year, the first training course on seed and nursery production of sandfish was conducted.

After developing initial seed production techniques and producing hatchery-bred juveniles, SEAFDEC/AQD tested the potential of sandfish mariculture in community-based sandfish sea ranching sites in central Philippines from 2013. One pilot site in Negros Occidental, Philippines successfully sustained a stock of cultured sandfish up to the present, some even reached market size in as early as 2017. There, sandfish ranching is viewed to be a potentially sustainable source of alternative livelihood for coastal communities.

Fifteen years since sea cucumber research began at SEAFDEC/AQD, Dr. Jon Altamirano and his team have accumulated a substantial understanding of sandfish reproductive biology and developed significant refinements on the practical procedures of seed production of the species. This manual is a compilation of those techniques and technologies that continue to be developed at SEAFDEC/AQD's small-scale sea cucumber hatchery.

We hope that the hatchery technology described in this manual will be a useful guide for hatchery operators, technicians, researchers, and other stakeholders, and lead to a flourishing sandfish industry and the recovery of wild sandfish populations.



DAN D. BALIAO

SEAFDEC/AQD Chief

About the Manual

This manual, entitled Hatchery Production of Sea Cucumbers (Sandfish *Holothuria scabra*) includes the consolidated methods, practical protocols and good practices in sea cucumber breeding that were established within the past decade of research and development at the small-scale sea cucumber hatchery in the Tigbauan Main Station of SEAFDEC Aquaculture Department. Hence, this manual focuses only on demonstrating the technology, requirements and procedures in operating a small to medium-scale tropical sea cucumber hatchery.

This manual is written for potential sea cucumber hatchery operators, technicians, enthusiasts, researchers, and students with some basic experience and knowledge on aquaculture. However, even beginners may find this manual informative and useful, as it highlights the importance of sea cucumbers and their potential as an aquaculture commodity, particularly that of the tropical sea cucumber *H. scabra*, commonly known as the sandfish. This manual also serves as the primary reference material of the Training Course on “Sandfish (*Holothuria scabra*) seed production, nursery and management” offered by SEAFDEC/AQD. Hence, some specific descriptions of the actual facilities and existing equipment are detailed here.

The manual describes the various hatchery production methodologies that were specifically optimized for the sandfish *H. scabra*. These methods were designed to be practical and easy to implement. The materials mentioned herein are those that can be easily procured, otherwise if unavailable, can be fabricated from common materials.

The following are the main sections included in this manual:

1. Broodstock selection, collection, and conditioning
2. Natural food (microalgae) cultivation
3. Spawning stimulation and fertilized eggs management
4. Larval rearing and settlement
5. Harvesting of early juveniles, packing, and transport

Contents

<i>Foreword</i>	v
<i>About the Manual</i>	vi
1. Introduction	1
1.1. Ecological importance of sea cucumbers	1
1.2. Economic importance of sea cucumbers	1
1.3. The sandfish (<i>Holothuria scabra</i>)	3
1.3.1. Physical characteristics	3
1.3.2. Behavior, feeding, and defense	3
1.3.3. Reproduction and life cycle	4
2. The Sea Cucumber Hatchery	5
2.1. Location and structural layout	5
2.2. Facilities, equipment, and technical manpower	7
2.2.1. Primary seawater intake system	7
2.2.2. Secondary seawater pump, sand filter tank, and reservoir	7
2.2.3. Microfilter array and UV sterilizer	8
2.2.4. Aeration lines and air filters	9
2.2.5. Microscopes and implements	9
3. Microalgae as Larval Food	10
3.1. Microalgae species for larval sandfish	10
3.2. Live culture of microalgae in the hatchery	11
3.2.1. Initial culture of microalgae to 10 L	11
3.2.2. Scaling up to 200 L and 1,000 L	11
4. Broodstock Management	13
4.1. Field collection, selection, transport	13
4.2. Broodstock conditioning	14
5. Spawning	15
5.1. Spawning induction	15
5.2. Egg collection and monitoring	19
6. Larval Rearing	25
6.1. Hatching	25
6.2. Larval development	25
6.2.1. The auricularia stage	25
6.2.2. The doliolaria stage	27
6.2.3. The pentactula stage	27
6.3. Water management during larval rearing	30
6.4. Feeding management of sandfish larvae	32
6.4.1. Feeding schedule for larval sandfish	32
6.4.2. Feeding rate calculation	33

<i>7. Early Juvenile Production</i>	35
7.1. Settlement plates	35
7.2. Water management after settlement	37
7.3. Harvesting of early sandfish juveniles	38
7.4. Packing and transport	40
<i>8. Common Problems and Solutions</i>	41
8.1. Poor water quality	41
8.2. Limited microalgae supply	42
8.3. Bloodworms	44
8.4. Copepod infestation	45
8.5. Unstable water temperature	47
<i>9. Selected References</i>	48
<i>10. Glossary</i>	50
<i>Acknowledgment</i>	53
<i>About the Authors</i>	54