

The future of mariculture: a regional approach for responsible development in the Asia-Pacific region

FAO/NAFCA Regional Workshop
7–11 March 2006
Guangzhou, China



Cover photo: Finfish cage mariculture in China (courtesy of Chen Jiaxin).

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The future of mariculture: a regional approach for responsible development in the Asia-Pacific region

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Preparation of this document

This document contains the proceedings of the regional workshop entitled “*The Future of Mariculture: a Regional Approach for Responsible Development in the Asia-Pacific Region*” held from 7 to 11 March 2006 in Guangzhou, China, and organized by the Fisheries and Aquaculture Department of the Food and Agriculture Organization of the United Nations (FAO) and the Network of Aquaculture Centres in Asia-Pacific (NACA). It includes the workshop summary as well as all the papers presented. The papers provide up-to-date information on the status of mariculture in the Asia-Pacific region, major opportunities and constraints, and recommended actions for its future responsible development.

This publication is aimed at fishers, farmers, researchers, managers and policy-makers. It is hoped that it will assist international and regional development organizations and national governments.

The papers, submitted by the participants at the regional mariculture workshop, have been technically edited by FAO and NACA.

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Abstract

Aquaculture in the southeast Asian region has been growing steadily over the last few decades, requiring more space to accommodate it. The search for additional areas to expand the aquaculture industry as a whole and the identification of new farming species of commercial value to satisfy the growing local and export markets are pushing the sector in some countries to expand its activities in the sea, including further offshore where more space is available and where, to a lesser extent, competition is currently not so intense. During the latest session of the FAO Committee on Fisheries (COFI) and the Sub-Committee on Aquaculture (COFI-SCA), members requested that FAO look into issues related to the sustainable development of coastal aquaculture and in particular mariculture.

The FAO Fisheries and Aquaculture Department in collaboration with the Network of Aquaculture Centres in Asia-Pacific (NACA) organized the regional workshop entitled “*The Future of Mariculture: a Regional Approach for Responsible Development in the Asia-Pacific Region*” from 7 to 11 March 2006. The workshop, held in Guangzhou, China, was conducted in collaboration with the Bureau of Fisheries of the People’s Republic of China and the Guangdong Ocean and Fisheries Administration.

Fifty-one participants from governments, business, non-governmental organizations (NGOs), universities and regional and international organizations from mariculture-producing countries around the Asia-Pacific region attended the workshop.

The workshop was convened in response to requests from FAO and NACA members to identify key trends and issues affecting mariculture growth in the Asia-Pacific region and to strengthen regional collaboration for future responsible development of mariculture. China’s hosting of the workshop recognizes the status of China as the leading mariculture-producing country in the world and a major market for mariculture products from around the Asia-Pacific region.

The workshop was organized in complementary sessions. The first consisted of a series of presentations and discussions on country trends and thematic reviews on selected key issues. The second continued with three working groups focusing on important topics, namely: 1) Market, Demand and Trade; 2) Livelihoods, Producer Organizations, Technology Transfer and Communications; and 3) Mariculture Species and Systems. The third session comprised a “farmer dialogue” and a “trader and marketing dialogue”. The farmer dialogue was conducted at a large mariculture farming area near Guangzhou, while the trader and marketing dialogue was conducted at the largest live-seafood market in Asia. These dialogues yielded valuable insights and recommendations from farmers and traders.

The final plenary session brought together the working group findings and identified opportunities for regional collaborative action. The workshop participants proposed the establishment of a regional “Asia-Pacific Mariculture Cooperation” initiative to support the development of sustainable mariculture in the Asia-Pacific region. The initiative will facilitate cooperation among the countries of the region by promoting responsible mariculture farming technologies, capacity-building, market access and effective transfer of knowledge. The platform for the initiative would be the “Asia-Pacific Marine Finfish Aquaculture Network”, which is already promoting cooperation in marine fish farming around the region and has been widely seen as a successful programme. FAO and NACA were requested to facilitate and support the development of this new mariculture initiative.

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The graphic layout of this publication was prepared by Koen Ivens.

Abbreviations and acronyms

ADB	Asian Development Bank
APMFAN	Asia-Pacific Marine Finfish Aquaculture Network
APRACA	Asia-Pacific Rural and Agricultural Credit Association
AR	Artificial Reefs
ARMM	Autonomous Region in Muslim Mindanao
ASEAN	Association of Southeast Asian Nations
ATIC	Agriculture Technology Information Centre
BDSP	Business Development Service Providers
BFAR	Bureau of Fisheries and Aquatic Resources (Philippines)
BFFDA	Brackish water Fish Farmer's Development Agency (India)
BIMP-EAGA	Brunei Darussalam-Indonesia-Malaysia-Philippines East ASEAN Growth Area
BKC	benzalkonium chloride
BMN	baculoviral mid-gut gland necrosis virus
BMP	Better Management Practice
CAA	Coastal Aquaculture Authority (India)
CBA	Capture-based aquaculture
CCRF	Code of Conduct for Responsible Fisheries
CFRDCs	Coastal Fisheries Research and Development Centers
CIBA	Central Institute of Brackishwater Aquaculture (India)
CIFRI	Central Inland Capture Fisheries Research Institute
CITES	Convention on International Trade in Endangered Species of Wild Flora and Fauna
CMFRI	Central Marine Fisheries Research Institute (India)
CSMCRI	Central Salt and Marine Chemical Research Institute (India)
COC	Code of Conduct
CRZ	Coastal Regulatory Zone
CSR	corporate social responsibility
DANIDA	Danish International Development Agency
DFID	Department for International Development (United Kingdom)
DO	dissolved oxygen
DOF	Department of Fisheries
DGA	Directorate General of Aquaculture (Indonesia)
DWCRA	Development of Women and Children in Rural Area
EEZ	exclusive economic zone
EIA	environmental impact assessment
EIS	environmental impact statement

EAMAR	Ecosystem Approach to Mariculture
EMC	Executive Management Council
EMMP	Environmental Monitoring and Management Programme
EU	European Union
FAD	fish aggregation device
FAO	Food and Agriculture Organization of the United Nations
FCR	food conversion ratio
FDA	Food and Drug Administration
FMIRI	Fishery Machinery and Instrument Research Institute
FOB	freight on board
FRA	Fisheries Research Agency (Japan)
GAA	Global Aquaculture Alliance
GAP	Good Aquaculture Practice
GDP	gross domestic product
GIS	Geographic Information System
GSP	generalized scheme of tariff preferences
HACCP	Hazard Analysis and Critical Control Point
HDPE	high-density polyethylene
HPV	hepatopancreatic parvovirus
HRD	human resource development
HRV	hirame rhabdovirus
IAM	Institute of Marine Aquaculture (Malaysia)
IAS	Information Access Survey
ICAHR	Institute of Coastal Aquatic Health Research (Thailand)
ICAR	Indian Council of Agricultural Research
IFC-PENSA	International Finance Corporation-Program for Eastern Indonesia Small and Medium Enterprise Assistance
IFI	international finance institutions
IFPRI	International Food Policy Research Institute
IT	information technology
IVLP	Institution Village Linkage Programme
JICA	Japanese International Cooperation Agency
KCS	Knowledge Consuming System
KDS	Knowledge Disseminating System
KGS	Knowledge Generating System
KUSTEM	Kolej Universiti Sains dan Teknologi Malaysia
LFTV	Live Fish Transport Vessel
LGU	Local Government Unit
LHRH	Luteinizing Hormone-Releasing Hormone
LIFDCs	Low Income Food-Deficit Countries
MAC	Marine Aquarium Council

MBV	monodon baculovirus
MFPRC	Marine Finfish Production and Research Centre (Malaysia)
MFRD	Marine Fisheries Research Department (Singapore)
MFRDMD	Marine Fisheries Resource Development and Management Department (Malaysia)
MOMAF	Ministry of Maritime Affairs and Fisheries (Republic of Korea)
MoU	Memorandum of Understanding
MPA	marine protected area
MPEDA	Marine Products Export Development Authority (India)
MSC	Marine Stewardship Council
MSME	Micro, Small and Medium Enterprises
MTCP	Malaysia Technical Cooperation Programme
MTPDP	Medium-Term Philippine Development Plan
NABARD	National Bank for Agricultural Development (India)
NACA	Network of Aquaculture Centres in Asia-Pacific
NAFIQAVED	National Fisheries Quality Assurance and Veterinary Directorate (Viet Nam)
NAPFRE	National Prawn Fry Research and Production Centre (Malaysia)
NCAP	National Centre for Agricultural Economics and Policy Research (India)
NCSE	National Center for Stock Enhancement (Japan)
NFRDI	National Fisheries Research Development Institute (Republic of Korea)
NGO	non-governmental organization
NICA	National Institute of Coastal Aquaculture (Thailand)
NMFS	National Marine Fisheries Service (United States of America)
NORAD	Norwegian Agency for Cooperation and Development
NSSO	National Sample Survey Organization (India)
OIE	World Organization for Animal Health (formerly Office International des Épizooties)
PCR	polymerase chain reaction
PFO	Provincial Fisheries Officer
PGMA	President Gloria Macapagal Arroyo
PL	postlarvae
PSB	photosynthetic bacteria
PSP	paralytic shellfish poisoning
RCC	reinforced concrete cement
PCR	polymerase chain reaction
PKNU	Pukyong National University (Republic of Korea)
R&D	research and development
R,D&E	research, development and extension
RGCA	Rajiv Gandhi Centre for Aquaculture (India)

RRSEA	Reefs at Risk in Southeast Asia
SAUs	state agriculture universities
SCUBA	Self-Contained Underwater Breathing Apparatus
SEAFDEC	Southeast Asian Fisheries Development Center
SFH	Small Fishery Household
SHG(s)	self help group(s)
SIDS	Small Island Developing States
SMEs	Small and Medium Enterprises
SPC	Secretariat of the Pacific Community
SPF	specific pathogen free
SPLAM	Skim Pensijilan Ladang Akuakultur Malaysia - Farm Certification Scheme (Malaysian acronym)
SPS	sanitary and phytosanitary
SRC	semi-refined carrageenan
SUMA	Support to Marine and Brackishwater Aquaculture (of DANIDA)
TIUs	technical implementation units
TL	total length
ToT	transfer of technology
TSV	Tara syndrome virus
UNEP	United Nations Environment Programme
UNP	University of Northern Philippines
USFDA	United States Food and Drug Administration
UV	ultraviolet light
VAs	volunteer agencies
VHS	viral hemorrhagic septisemia
VNN	viral nervous necrosis
WB	World Bank
WSD	whitespot disease
WSSV	white spot syndrome virus
WWF	World Wildlife Fund
YAV	yellowtail ascites virus

