

Synopsis and Recommendations of the ADB/ICLARM Workshop on Tropical Coastal Fish Stocks in Asia¹

G. SILVESTRE

*International Center for Living Aquatic Resources Management
MCPO Box 2631, Makati City 0718, Philippines*

D. PAULY

*International Center for Living Aquatic Resources Management
MCPO Box 2631, Makati City 0718, Philippines
and
Fisheries Centre, University of British Columbia
2204 Main Mall, Vancouver, BC, Canada V6T 1Z4*

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Abstract

A summary is presented of the results of a Workshop held in Manila on 2-5 July 1996 devoted to the 'Sustainable Exploitation of Tropical Coastal Fish Stocks in Asia'. Participants came from Bangladesh, Indonesia, Malaysia, the Philippines, Sri Lanka, Thailand and Vietnam, and from FAO, SEAFDEC, ADB and ICLARM. The regional overview and country reports document the prevailing coastal fisheries situation and the host of issues impacting the sustainability of, and improvement of benefits derived from, coastal fisheries in South and Southeast Asia. Management directions and interventions requiring increased attention include: limited entry and effort rationalization schemes; gear, area and temporal restrictions on fishing; improvement of marketing and post-harvest facilities; enhancement of stakeholders awareness and participation; reduction of coastal environmental impacts; institutional upgrading and strengthening; and enhancement of fisheries research and information.

Consensus was achieved on the usefulness of compiling and analyzing past trawl surveys to establish benchmarks for stock rehabilitation, supplement existing statistical baselines and improve management directions and strategies. A prototype database and analytic tool for this purpose (i.e., TrawlBase) was presented and evaluated during the Workshop using data from available surveys conducted in South and Southeast Asia. The potential scope for regional collaborative efforts in the area of coastal fisheries research and management was also evaluated given the background of (planned and ongoing) activities at the local, national and regional levels. Consensus was achieved on selected elements which can act as catalysts in assisting these countries in research and management of their coastal fisheries. An indicative framework for a regional project incorporating these elements is briefly outlined.

Introduction

The 'Workshop on Sustainable Exploitation of Tropical Coastal Fish Stocks in Asia' was conducted on 2-5 July 1996 at the Hyatt Regency Hotel, Manila, Philippines. The Workshop was organized by ICLARM with funding support from ADB. It aimed, as an initial step, to bring together fishery scientists and managers to evaluate the fisheries management situation and the relevant resource databases in the South and South-

east Asian region, and to propose directions for follow-up actions toward improved management of coastal fisheries. The specific objectives of the workshop were to:

- examine the status of coastal fish stocks and fisheries in the region and directions for their improved management;
- review previous fish stock surveys and their

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potential for retrospective analyses in support of management efforts;

- elaborate database guidelines for such retrospective analyses; and
- explore follow-up action and support activities for regional collaboration in coastal fisheries management.

The Workshop program and list of participants is given in Appendix I and II, respectively. A total of 27 participants attended the Workshop. Of these, 12 were representatives from seven of the ADB's developing member countries, namely: Bangladesh, Indonesia, Malaysia, the Philippines, Sri Lanka, Thailand and Vietnam. Three of the participants were from international fisheries organizations with major involvement in the region (FAO and SEAFDEC). The other participants were staff members of ADB and ICLARM, and observers from various fisheries institutions.

To realize the objectives of the Workshop, the program was divided into four sessions: (1) status of coastal fisheries in tropical Asia; (2) coastal fisheries management issues, strategies and actions; (3) retrospective analysis of trawl surveys; and (4) workshop summary and recommendations. The papers presented and the discussions during the first three sessions were intended to provide inputs to five inter-related working group discussions on: (1) management issues, (2) management strategies and actions, (3) scope for regional collaborative efforts, (4) trawl database guidelines/prototype, and (5) indicative planning for follow-up regional collaboration.

Management Issues and Interventions

The overview paper by Silvestre and Pauly (this vol.) and the seven country papers in this volume (i.e., Khan et al. - Bangladesh; Priyono and Sumiono - Indonesia; Abu Talib and Alias - Malaysia; Barut et al. - Philippines; Maldeniya - Sri Lanka; Eiamsa-ard and Amornchairojkul - Thailand; and Thuoc and Long - Vietnam) provided regional and country-specific updates of the coastal fisheries situation. These were supplemented by perspectives from representatives of two important international fisheries organizations (i.e., Martosubroto - FAO; Mansor and Mohd-Taupek - SEAFDEC) involved in the region. These contributions provided the key inputs to the first two working group discussions on management issues, strategies and actions.

The working group discussions on management issues covered a multiplicity of issues impacting coastal fisheries in South and Southeast Asia (Table 1). The consensus was that the coastal fish stocks and fisheries in the region sorely need improved management to sustain and/or improve the benefits derived from them. The main issues requiring attention are:

- overfishing, i.e., excessive fishing effort;
- inappropriate exploitation patterns;
- post-harvest losses;
- large vs. small-scale fisheries conflicts;
- habitat degradation;
- information and research inadequacies; and
- institutional weaknesses and constraints.

The working group discussions on management strategies and actions covered a number of interventions to resolve or mitigate these issues. A range of management directions and interventions were discussed (Table 2). It was acknowledged that some policies and programs of action in line with the interventions listed in Table 2 do exist in the developing countries of South and Southeast Asia. The concern, however, is about the adequacy of the scale and scope of these to reverse or mitigate the problems which have been identified.

There was consensus on the need for increased attention in the following areas:

- i. limited entry and effort rationalization schemes;
- ii. gear, area and temporal restrictions;
- iii. improved marketing and post-harvest facilities;
- iv. enhancement of stakeholders awareness and participation;
- v. reduction of coastal environmental impacts;
- vi. institutional upgrading and strengthening; and
- vii. enhancement of fisheries information and research.

Several of the contributions to this volume discussed these issues. The developing member countries of the ADB and the relevant international organizations were encouraged to support and strengthen their programs in these areas.

The host of management interventions requiring increased attention entails concerted action at various levels of the institutional hierarchy. Consensus was achieved that enhancement of research and information inputs into the policy and decision-making process, however, deserves higher priority to facilitate progress in the other intervention areas. For instance, the failure to properly assess and/or communicate the gravity of the resource situation in many areas has held up the adoption of effective entry and effort rationalization schemes, and relevant gear, area and temporal restrictions on fishing. Coastal environmental impacts which aggravate the fisheries resource situation are subsequently viewed with less urgency -- given limited appreciation of resource conditions. Lack of information on the distribution (both spatial and temporal) of resources and landings, as well as

Table 1. Summary of major issues affecting coastal fisheries in selected countries in tropical Asia.

Key issues/constraints	Countries							
	Bangladesh	Indonesia	Malaysia	Philippines	Sri Lanka	Thailand	Vietnam	Others
Overfishing	✓	✓	✓	✓	✓	✓		✓
Inappropriate exploitation patterns		✓	✓		✓	✓	✓	
Use of destructive fishing practices		✓	✓	✓	✓			✓
Small- and large-scale fisheries conflicts	✓		✓	✓	✓		✓	
Post-harvest losses								✓
Siltation/sedimentation	✓	✓	✓	✓	✓		✓	✓
Coastal soil erosion			✓		✓			
Flooding	✓	✓		✓		✓	✓	
Habitat degradation/destruction	✓	✓	✓	✓	✓	✓	✓	✓
Mangrove conversion			✓	✓				✓
Reduced biodiversity	✓	✓		✓	✓	✓	✓	✓
Industrial pollution	✓	✓	✓	✓	✓	✓		✓
Toxic mine tailings	✓	✓		✓				✓
Agrochemical loading	✓	✓	✓	✓	✓	✓	✓	✓
Domestic/sewage pollution	✓	✓	✓	✓	✓		✓	✓
Oil spills	✓		✓	✓	✓	✓	✓	✓
Inadequate information/research support for management				✓				✓
Inadequate policy and legal framework								✓
Limited personnel and technical capabilities							✓	✓
Limited resources/funding								✓
Lack of institutional coordination/collaboration								✓
Insufficient/ineffective law enforcement				✓	✓			✓

Table 2. List of key management interventions.

 Limited entry and effort reduction

- zoning or establishment of marine protected areas
- restructuring of relevant policy and regulatory frameworks
- redirection of systems of subsidies/support
- direct exit interventions
- enhancement of alternative livelihood and occupational mobility

Gear, area and temporal restrictions

- technological control/limitations (i.e., trawl ban)
- gear selectivity
- spatial restrictions (i.e., marine sanctuaries)
- temporal restrictions (i.e., seasonal closures)

Improvement of marketing and post-harvest facilities

- strategic location of salt, ice and cold storage facilities
- enhanced private sector participation
- improved processing and handling techniques
- strategic rural road infrastructure
- extension, training and credit support

Enhancement of awareness and participation of stakeholders

- stakeholder participation in the decision-making process
- enhancement of fishers organizations
- education/awareness programs
- devolution/decentralization of management authority

Reduction of environmental impacts

- adoption of ICZM and integrated coastal fisheries management approaches
- adoption of multiple use zonation schemes
- coastal habitat restoration/rehabilitation
- ban on destructive fishing methods
- establishment of EIA systems and precautionary approach
- enforcement of regulations and penalties/incentive systems

Institutional strengthening/upgrading

- technical, personnel and facilities upgrading
- improvement of financial capability and mandates of organizations
- enhancement of organizational coordination/collaboration
- improvement of transparency, accountability and participation in decision-making process

Enhancement of research and information

- appropriate size and siting of fish sanctuaries or marine protected areas
 - resource enhancement and habitat rehabilitation techniques
 - selective fishing
 - appropriate fisheries management reference points
 - ecosystem modeling
 - policy and institutional studies
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the extent of post harvest losses, has impaired progress in improving marketing and post-harvest facilities. These in turn have affected the urgency of making the requisite institutional reforms and fostering stakeholders participation in the management process. Obviously, problems must first be assessed and perceived as one before solutions to them may be prescribed. Information and research are indispensable in this process of 'problem-solution' identification and the empirical debate that fisheries management entails.

Substantive discussions were generated relative to the limited resources and support given to research

and information activities in many South and Southeast Asian countries. Moreover, it was noted that full utilization of available information and research results for improved management requires emphasis. Particular attention in this regard was drawn to the numerous trawl surveys conducted in South and Southeast Asia from the 1960's to the 1980's. Much of the data generated during these surveys have been analyzed only superficially and much of their information content remain underutilized. While enhanced support and resources for information and research remain largely valid, full utilization of information for which resources have already been expended deserve

Table 3. Main activity areas for expanded regional collaborative efforts in coastal fisheries research and management.

•	Research/information activities
a.	Trawl survey database development
i.	national workshops
ii.	database programming/improvements
iii.	data inputting
b.	Trawl survey and related data analyses
i.	population/stock analyses
ii.	community analyses
iii.	biosocioeconomic analyses
•	Management policy/planning
a.	National strategies and action plans
i.	strategic coastal fisheries management reviews
ii.	strategic policy and management planning
iii.	action planning and indicative investment programs
b.	Regional strategies for resources rehabilitation
i.	resource baselines comparative analyses
ii.	issues/interventions reviews
iii.	problem/opportunity structures reviews
iv.	action planning and indicative investment programs
•	Training and networking activities
a.	Training/networking
i.	stock assessments (particularly methods standardization)
ii.	community analyses
iii.	biosocioeconomic analyses
iv.	fisheries policy analyses and planning
b.	Workshops
i.	regional (comparisons, lessons, synthesis)
ii.	national (database development/planning)

increased attention. Consensus was achieved that assembling and analyzing extant trawl surveys in the region can help elaborate, among others, the following:

- resource condition, potential and exploitation level through time essential for limited entry and effort rationalization schemes;
- spatio-temporal trends for operationalizing gear, area and temporal restrictions on fishing;
- resource distribution for strategic location of marketing and post-harvest facilities;
- combined effect of fishing and environmental impacts on resource condition;
- historical (i.e., sustainability) baselines as benchmark for resource rehabilitation; and
- improved agenda for resource research and monitoring.

These elements, in turn, can help foster attention on the requisite institutional intervention areas.

Trawl Database Prototype

The contribution by Gayanilo et al. (this vol.) and McManus (this vol.) provided key inputs for the working group discussion on database guidelines/prototype. The former presented a prototype for a trawl survey database (TrawlBase) - an important tool to assemble and analyze the numerous surveys conducted in the region which remain largely underutilized. The latter illustrated the utility of ecological community structure analysis (which can be conducted using extant surveys) in developing improved management strategies/actions. Trawl surveys conducted in the region (Appendix III) and representative data sets from these surveys were examined for both resource trends and improvement of the database prototype. The resource trends that we identified were incorporated into the country-specific contributions to this volume and the suggested database revisions were incorporated into the TrawlBase prototype of Gayanilo et al. (this vol.).

The consensus was that the retrospective analysis of these surveys and their collation into TrawlBase (in terms of stock size, community structure, bio-socioeconomic and management implications) hold great potential for improvement in the management of coastal fisheries. Moreover, TrawlBase can serve as a resource database, independent of existing fisheries statistical systems, to provide a baseline for sustainability and help improve information inputs into the management process. Ensuring the regional coverage of TrawlBase will strongly supplement national and regional (e.g., FAO, SEAFDEC) initiatives to strengthen the fisheries statistical systems of developing countries in South and Southeast Asia.

Scope for Regional Collaboration

Substantive inputs were elicited during the working group discussions on the potential scope for regional collaborative efforts. The primary emphasis was given to initiatives which can act as catalysts in the efforts of the developing countries of South and Southeast Asia to address the seven management issues listed above. These initiatives were considered in the light of efforts and activities (both planned and ongoing) at the local, national and regional levels, so as to avoid duplication and assure complementarity. A preliminary list of activities for regional collaboration was assembled and refined through several stages of discussion. Following the working group discussion on database guidelines/prototype, the list was finalized and the results are summarized in Table 3. The potential activities for regional collaboration include elements for research and information support, management policy and planning, and training and networking.

Table 4. Indicative framework for regional collaborative project in the area of coastal fisheries research and management.

Design summary	Target
<p>1. Sector/area goal</p> <ul style="list-style-type: none"> • Help improve management and sustainable utilization of coastal fishery resources in developing countries of South and Southeast Asia. 	<ul style="list-style-type: none"> • Enhance personnel capabilities and information at the national level and develop action plans for improved coastal fisheries management.
<p>2. Objectives</p> <ul style="list-style-type: none"> • Enhance resource databases and management information consistent with resource management needs of developing South and Southeast Asian countries. • Assist selected countries in South and Southeast Asia in developing appropriate strategies and action plans for improved management of coastal fisheries. • Strengthen national capabilities in coastal fisheries assessment and management. 	<ul style="list-style-type: none"> • Develop a trawl survey database (TrawlBase) and elaborate national and (South and Southeast Asia) regional resource situation. • Elaborate national/regional fisheries situation and development of strategies and action plans (including indicative investment program) for improved coastal fisheries management. • Training of national staff in TrawlBase use and relevant analytic tools, and provision of requisite hardware/software support and technical advice.
<p>3. Components/activities</p> <p>3.1. Research, information and training</p> <ul style="list-style-type: none"> • Trawl database development <ul style="list-style-type: none"> - TrawlBase design, programming, revisions and distribution - national data inputting - regional database consolidation • Training <ul style="list-style-type: none"> - training of national staff in the use/elaboration of TrawlBase - national staff training in stock assessment, ecological community analyses, biosocioeconomic analyses and CRM/fisheries policy and planning • Data analyses/assessments <ul style="list-style-type: none"> - analysis of resource situation using TrawlBase and related information - stock, community structure, biosocioeconomic and policy analysis, and implications for fisheries management - national/regional trends, issues and interventions 	<ul style="list-style-type: none"> • Development of TrawlBase in support of resource assessment and management efforts. • Upgrading of technical/personnel capabilities in resource assessment and management. • Detail and update assessment of coastal resource and fisheries situation in support of management planning.
<p>3.2. Management policy and planning</p> <ul style="list-style-type: none"> • National and regional workshops <ul style="list-style-type: none"> - national strategic action planning and consultative workshops - regional strategic action planning and lessons/synthesis workshops • National strategies and action planning <ul style="list-style-type: none"> - strategic national fisheries management reviews incorporating research results - strategies and problem-opportunity structures - action planning and indicative investment programming • Regional strategies and action planning <ul style="list-style-type: none"> - strategic regional fisheries management reviews incorporating research results - regional strategies and problem-opportunity structures - regional action planning and indicative investment programming 	<ul style="list-style-type: none"> • Facilitate consultation and adoption of management strategies and action plans (including indicative investment program) at the national and regional levels. • Draft national management strategies and action plans. • Draft regional management strategies and action plans.
<p>4. Inputs/indicative cost</p> <ul style="list-style-type: none"> • US\$3.3 million 	<ul style="list-style-type: none"> • Contributions by national governments and international donors/organizations.

The working group discussion on indicative planning for follow-up regional collaboration elicited substantive inputs on the nature, scope and scale of a future regional project for coastal fisheries management. Building upon the results of the four other working group discussions, the elements of a project framework emerged after several iterations. The results of the final iteration are summarized in Table 4. They outline the goal, objectives, components/activities and corresponding targets (as well as funding input) for a collaborative regional project.

The project requires collaborative work among multidisciplinary teams of scientists from select developing member countries of ADB and from ICLARM, to be performed in close coordination with managers at the national level and the staff of concerned international organizations. The scope of the proposed regional project includes the following main activities:

- training in the use of TrawlBase;
- development of resource databases principally on extant surveys and their consolidation into a single TrawlBase with regional coverage;
- regional training courses (involving national scientists and/or managers) in the fields of stock assessment, assemblage/community, and biosocioeconomic analyses, and CRM/fisheries policy analysis and planning;
- review and analysis (including stock, community, and biosocioeconomic) of the resource base and related information in terms of their management implications;
- national workshops for data consolidation/generation and consultative planning;
- strategic review of the fisheries management situation and programs at the national and regional levels (including resource/management trends and opportunities);
- regional workshops to consolidate results of data analyses and to elaborate on regional trends, strategies and action programs; and

- development of strategies, action plans and indicative investment programs at the national and regional levels, based on the reviews and assessments conducted during the course of the project.

The consensus was that the proposed regional project will be invaluable in assisting the developing countries in South and Southeast Asia in formulating resource databases and action plans for the improved management of their coastal fisheries.

ICLARM was requested by the Workshop participants to build upon these elements and package a proposal for funding by ADB and other interested donors².

Conclusion

The results outlined above were discussed and revised during the last plenary session of the Workshop. The participants acknowledged that improved coastal fisheries management in South and Southeast Asia rests largely on the support that will be made available for the purpose in the context of other equally pressing social and developmental needs in these countries. The general consensus was that focusing available resources on the management intervention areas outlined above should pay substantive dividends for the region. Moreover, support for the regional collaborative efforts will assist these countries in strengthening institutional capabilities and developing policy interventions for the improved management of, and sustained benefits from, their coastal fisheries.

Acknowledgements

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² A detailed project proposal to this effect has been prepared by ICLARM and submitted to ADB for possible funding.