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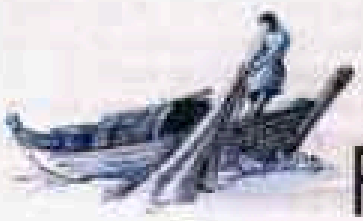
How does stewardship make Coastal Zone Management (CZM) effective? Everyone concerned with fisheries must say through their actions: "I am a steward. I take care of the fishery resource." Artist E. Amalore interprets CZM. See articles on pages 8 to 17.

"I am a STEWARD":



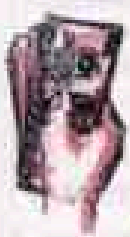
FISHERMAN: *"I avoid small-mesh nets. I respect zoning laws."*

TOURIST: *"I don't go to restaurants that serve banned/ endangered fish species."*

CONSUMER: *"I eat every edible part of the fish."*

FISHER WOMAN: *"I don't buy or sell gravid crabs or immature, under-sized fish."*

ADMINISTRATOR: *"I set up marine parks and fishing zones."*



DONOR AGENCY: *"I don't allocate funds for projects that impact negatively on fisheries or its habitat."*

MIDDLEMAN: *"I give the fisherman fair prices and extend fair credit."*

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A Word from the Editor

The Environment—from Ignorance and Indifference to Awareness to Roused Conscience

We know, therefore
We participate.

– King of Lesotho, on the U.N's 50th Anniversary, 1995

It is often said that ignorance is bliss! Today, however, ignorance cannot be blissful anymore. The damage wrought on the planetary environment such as ozone depletion, the greenhouse effect, sea level rise and acid rain, and depletion of resources, concerns all of us. Damage control and crisis management are human endeavours which have been refined over time. They can be put to good use in restoring hope for a sustainable planetary environment for all

Ignorance and indifference can be remedied by creating, building and spreading awareness. Such awareness can be mobilized into public opinion, which in turn can influence behavioural changes in all producers and consumers at the first instance. Also in the specific roles that these producers and consumers assume at home, the recreation spot and the work place.

What is at stake? Especially for fisheries in our Bay? Simply put, it is the source of direct livelihood for over 10 million fisherfolk and close to a quarter of the world's population who rely on fish and related resources for food and employment. It is also the ecosystem of the Bay, including its land-water-atmosphere/air interlace. Plus all the resources it offers for human need and comfort.

In this issue of *Bay of Bengal News*, we have focussed on promoting responsible producer and consumer behaviour by promoting stewardship at the individual and collective level, as well as on the basis of local, national, regional and international intervention.

From the beginning, we have been poor learners or we have chosen to ignore the lessons so starkly put in front of us by Mother Nature as we continue our predatory ways. Who is the 'we', asks Stephen Olsen, author of the article 'Symbiosis between Fish and Fisheries', which appears elsewhere in this issue. It is 'us', each one of us on this Planet Earth, we all have a stake in our Earth's future.

Olsen likens the fisherman-fish relationship to that between the gardener and the garden. Flowers and vegetables are harvested only when they are ready and not before. Nor do gardeners use bulldozers to harvest them, like we do with trawlers in harvesting fish. Rewards of responsible behaviour are many: one of them is development sustainability through careful stewardship. Stewardship however, arises only out of concerned and involved stakeholders.

What if the gardener is hard up — as most fishermen and fanners in our region are, impoverished and marginalized as they have been for years? Even poor hard-up fisherfolk can profit from becoming custodian, steward and manager of the fisheries and coastal resources. They may not reap any immediate benefits from resource stewardship. But in the long run, they clearly stand to benefit.

Donna Nickerson's two articles on public stewardship (one of which is jointly authored with selected administrators and fisheries and environment managers from the region) argue that people who take responsibility for the resources they care about can make a difference! To make a difference however, the largely anonymous public must be brought into the decision-making process from the beginning. To sustain their active interest and participation, it is important to keep them informed and empowered through a free exchange of ideas. Ensure that their opinion matters — and will be reflected in the final decisions.

K. C. Chong's article on promoting responsible consumption of fish to strengthen fisheries management provides a much needed post-harvest perspective in mobilizing consumer power to exert pressure on fishermen and fish distributors.

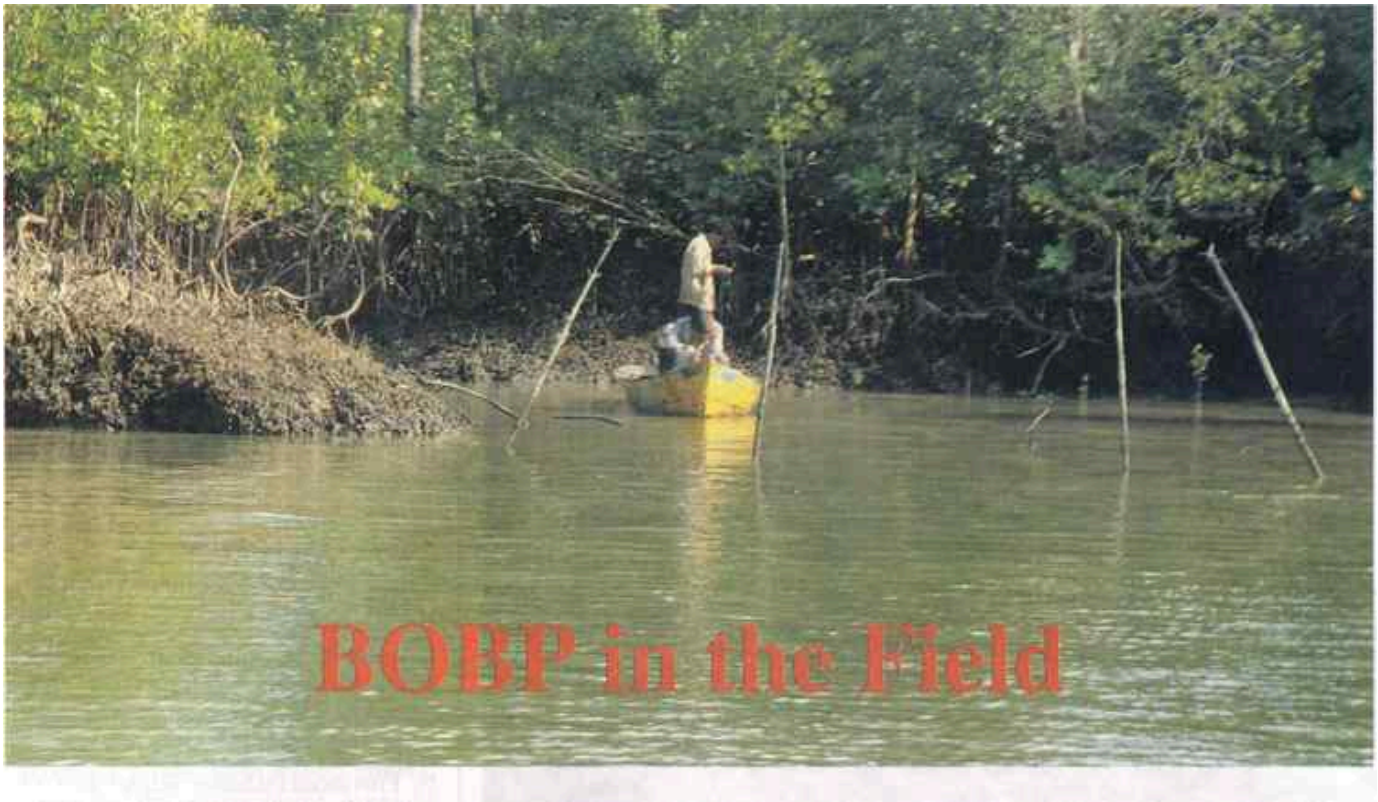
All in all, each and every one of us can play a stewardship role.

The BOBP's experience shows that fisheries is a useful tool to bring coastal states straddling the Bay together for a dialogue on possible regional mechanisms to manage and conserve the Bay's resources and ecosystem. Thus, fisheries is uniquely positioned to rally common interests, issues and problems in fisheries and establish common goals and objectives for the sustainable use of the Bay.

Public awareness, education and enlightenment build responsible stewardship. Ecosystem management and environmental protection to ensure resource sustainability is no longer a luxury. It concerns both the haves and the have-nots.

Ignorance can no longer be an excuse. In fact, it has never been. So is indifference! The choice is before us—in our hands, so to speak.

Kee-Chai CHONG



BOBP in the Field

Here's a brief round-up of BOBP-assistedfield activities in member-countries executed by national agencies. The activities are based on a "situation analysis" carried out at the beginning of BOBP's Third Phase.

Activities in Bangladesh

A two-day "National Workshop on Fisheries Resources Development and Management" was held 29 October-l November 1995 in Dhaka. It was organized by the Ministry of Fisheries and Livestock in collaboration with FAO/ BOBP and ODA, and supported by Japan Trust funds and ODA. Nine major scientific papers were presented at the workshop. Topics ranged from management of open water and marine fisheries to potential of aquaculture, land resource utilization, fisheries research, credit, marketing, and legal regimes for fisheries management. A report is being finalized.

23 staff of the Department of Fisheries and the Fisheries Research Institute and four NGO trainers presented their findings of **stakeholder analysis** at a meeting in Chittagong. How do stake-holders perceive their problems? What are the solutions they recommend? What communications media do the stakeholders empathize with? These questions were discussed. And, out of this workshop evolved a detailed workplan for BOBP-assisted activities in Bangladesh.

A one-day consultation was held in Kumira village north of Chittagong with fisherfolk who take part in both push net and set bag net fisheries. The idea was to improve understanding of their circumstances and problems and obtain their views on possible solutions.

Discussions were also held with several NGOs and private sector groups about two activities: One is a study to identify new alternative income opportunities for estuarine setbag net (ESBN) fishers. (This is important because ESBN is a resource-damaging fishery, and it's necessary to draw some of the thousands of fishers presently engaged in it out of the fishery.) Another activity is developing awareness and communi-cation materials for the Department of Fisheries. A few groups who can develop such materials have been short-listed. They will submit detailed proposals and budgets.

Activities in India

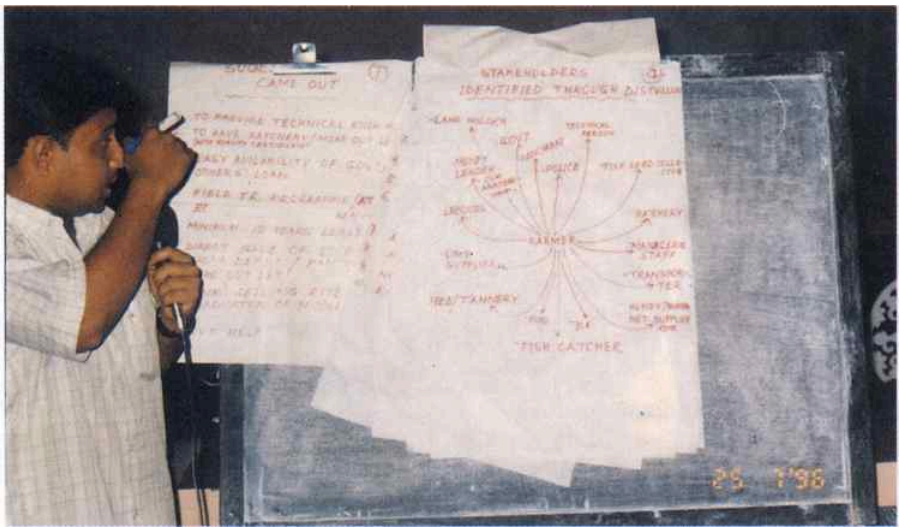
Workplans were developed for the four East Coast States of India following discussions with senior fisheries officials about problems being faced in coastal fisheries and coastal aquaculture. BOBP's Programme Coordinator visited New Delhi to discuss these plans with senior GO1 staff. The perceptions and priorities of Central and State Governments in problem-solving for the fisheries sector were brought out and a consensus forged.

A "skill gaps analysis and training needs assessment" is to be carried out for the four East Coast States. This will guide and give direction to the institutional capacity-building component of the project. A consultant has been tentatively identified to undertake the study later this year.

A collective of NGOs working with fisheries in Tamil Nadu held a one-day workshop. It reviewed the work of a special State Government committee to evolve a policy for fisheries development and management and fisherfolk welfare. BOBP's Communications Adviser took part in the workshop.

Selected fisheries staff from Kanniya-kumari and Madras districts of Tamil Nadu took part in a 4-day orientation on participatory fisheries management approaches. They were also trained in identifying and analysing stakeholders, and in studying their perceptions and communications. The orientation was held in Nagercoil during July 1996. Four priests of the Roman Catholic Kottar Diocese who work closely with fishers in Kanniyakumari district assisted in the orientation.

As part of their training, participants designed a 6-week exercise on stake-holder studies based in their respective districts.



What do stakeholders think about fisheries management? Training programmes in stakeholder analysis at Nimpith, West Bengal (above). Below: Trainers and researchers study stakeholder perceptions in fisheries management in Bangladesh. Pix Syed Rakibul Moin Rumi

Likewise, a training programme in stakeholder identification and analysis and in stakeholder perception and communications analysis was held in July at Nimpith, 12.5 km from Calcutta. 29 officials of West Bengal from three pilot districts — Midnapore, South 24-Parganas and North 24-Parganas — took part.

A similar training programme was held 19-23 August at Baleshwar, 225 km from Bhubaneswar. 28 officials of the Orissa Department of Fisheries from two pilot districts, Cuttack and Baleshwar, took part.

Activities in Indonesia

About a dozen officials took part in a workshop held in Medan in January 1996 to present the findings of stakeholder analysis conducted late 1995. The workshop also reviewed the findings of earlier stakeholder analyses undertaken by Provincial Fisheries Service staff. On the basis of its findings, the workshop developed "problem maps" on mari-culture, anchovy liftnet fishery and small-scale fisheries. Detailed workplans for four years were developed. Budget allocations were finalized.

The Directorate-General of Fisheries, Indonesia, has expressed interest in disseminating leamings from the BOBP project. It has suggested that BOBP develop a manual on stakeholder analysis to facilitate participatory fisheries management. It has also requested a

national workshop to discuss the needs, benefits and methods of community-based participatory fisheries management.

The Government of Indonesia, through its Directorate-General of Fisheries, also spearheaded an innovative programme on a "model fishing village" for this archipelago. The "model fishing village" approaches the problems of its lisheries sector through an integrated multi-pronged strategy: solutions are sought not only within the fisheries sector but also outside it. BOBP assists in this effort in the Tapanauli Bay project area.

Activities in Maldives

The 4-day Integrated Reef Fish Resources Management (IRRM) Workshop was held in March 1996 in Male after a year of preparation. There was strong participation from nearly 10 Ministries and from the Attorney General's office, from public interest groups and the private sector. A unique aspect of the workshop was sessions for students aged 14 to 18. Working groups of school children presented recommendations for IRRM education in schools.

The workshop made several recommendations. They related to reef fish resources, bait fishing for tuna pole-and-line fishery, coral mining, tourism/fishery interactions, and comprehensive management of the resources. From these recommendations, a list of high-priority follow-up actions has been developed. A collaborative management plan, which groups recommendations by issues, roles and responsibilities at various levels, has also been drawn up. A draft IRRM implementation framework has also been prepared.

The workshop report has been approved by the Fisheries Advisory Board. Technical editing of the report has been completed. The report and the workshop proceedings will be published jointly by the Government of Maldives and BOBP. The report and abstracts of the papers are also being translated into Dhivehi to prepare for IRRM implementation in the atolls.

Activities in Sri Lanka

Work has been initiated to produce identification catalogues on ornamental fish. These will facilitate export and management of the fisheries. There will be three types of catalogues — a waterproof card, a poster, a manual. Format and contents have been finalized.

Fisheries in Indonesia (above). The Governmentplaces high emphasis on participatory fisheries management. Below : The March 1996 workshop on integrated reef fish resources management held in Male drew participants from several government and private groups.

Fisherfolk children from Thailand take part in a resource awareness programme.

Pic : Department of Fisheries, Thailand

A consultation planned for September will bring together all government stakeholders in the ornamental fish sector. A study to review the status of ornamental fish resources and habitats and current trends has been planned. A fisheries management orientation and refresher course is being planned for later in the year.

Activities in Thailand

The workshop on Community-Based Fisheries Management (CBFM) held during February 1996 was a success. This is the first time fisheries officials and fisherfolk have met in Thailand to plan fisheries management. Department of Fisheries and FAO staff presented 15 technical papers. Fisherfolk described their experiences in management initiatives.

The workshop generated a lot of enthusiasm. Several villages requested that they be allowed to join the project. The project has therefore expanded its geographic scope from the 11 villages initially selected to cover all the villages in the Phang Nga Bay.

Follow-up meetings and public events are to be held with fisherfolk in Phang-Nga Bay to implement CBFM. These will relate to mangrove replanting; resource mapping for zoning of the Bay's intertidal area; resource conservation training and follow-up including the publication of a local Bay-wide newsletter.

Five individuals who have key roles in implementing CBFM were trained in ecosystem management at the international workshop "Creative Approaches to Managing Bays and Estuaries" in the U.S. A site visit to two national estuary programmes enabled the individuals to gain practical experience in ecosystem management approaches. US sources and an NGO funded the training and the site visits.

Activities in Malaysia

The Pulau Payar Marine Park, established seven years ago, is located about 35 km from Kuala Kedah in the State of Kedah. It consists of four uninhabited islands, which possess the only clear-water coral reefs on the west coast of peninsular Malaysia. The reefs, abundant in commercial and non-commercial fish species and other marine life, were a favourite haunt of fishermen till fishing was prohibited in 1985.

However, it is only the offshore waters that are protected by Marine Park law. Many of the stresses to the Park come from land-based sources on the mainland, some 35 km away. Under the DOFM/ BOBP project, Pulau Payar Marine Park and surrounding areas have been chosen as a model for a Special Area Management Plan (SAMP) that integrates the management of land and water. SAMP will assess the effect of the Park on the area's marine resources and on the livelihood of fishermen.

SAMP will be implemented through a two-tier process. At the first tier, a consensus-based draft of SAMP will be developed through discussion with national-level representatives of fisheries and other ministries. This draft will be used as a platform for discussion at the second tier, which will bring in other stakeholders, fisherfolk, hotel owners etc, with jurisdiction and commercial interests in the coastal zone.

The Tier I Committee is currently formulating the Plan's components. It will determine SAMP's geographic boundaries and the ecological benefits of potential management options for the SAMP area. The Committee is guiding the scientific characterization and institutional/legal review. These will help to provide the information base for solutions under SAMP. Sharing early results from these reviews with the public through interactive sessions will be an important task of the Tier I Committee.

A fisheries staffer who will play a key role in SAMP's development was trained in integrated coastal zone management in Rhode Island, US. An orientation visit to agencies involved in ICZM implementation followed the course. The training and the site visit were jointly funded by US sources and the Directorate of Fisheries, Malaysia.

Documentation and Communication

Publications out include the first and second issues of the Third Phase *Bay of* ***Bengal*** News; BOBP REP/7 1, "Towards Sustainability -Needs and Concerns of Aquatic Resources and Fisheries in the Bay of Bengal Region and Project Ideas to Facilitate Their Sustainable Management"; and BOBP/REP/70, "Report of the 19th Meeting of the Advisory Committee". A draft concept paper, "Sustainable Environmental Management of the Bay of Bengal Large Marine Ecosystem" was circulated to member-countries. Brochures highlighting BOBP's mandate, role and activities have been brought out.

Can an entertainment medium such as theater serve as a tool for awareness-building in fisheries management? Discussions were held with Mr Pralayan, a leading activist and theater-person of Madras. He will attempt to provide theatre skills to fishers in Madras to enable improved communication with and among fisherfolk. If successful, the activity may be replicated in other pilot areas.

The use of ***therukoothu*** (street theater in Tamil Nadu) as a tool to build awareness on the need for, benefits and methodologies of fishcries management is to be explored.

Regional Activities

Preparation is on for a Workshop on Precautionary Approaches to Fisheries Management, also for a Stakeholder Analysis Workshop on Communication Channels, Skills and Mechanisms, to be held in Indonesia and Bangladesh.

A skill gaps analysis and training needs assessment is to be undertaken in all member-countries. The first in the series will be carried out in India and in Sri Lanka. Terms of reference have been circulated for comments.

Pic : Department of Fisheries, Malaysia

Top: In Sri Lanka, identification catalogues are *being produced on ornamental fish species in danger of extinction whose export is banned. Above: The Pulau Payar Marine Park in Kedah, Malaysia model for a management plan that will integrate land and water management around the Park. The* ***plan*** *will also assess the Parks impact on the resource.*

The Concept of Stewardship: Turning Local Concerns Into Action

by Donna J. Nickerson

Coastal Zone Management Adviser. BOBP

During 1994, a budget crisis hit US Government agencies. Funding for the popular and successful National Estuary Programme (NEP), which seeks to improve the management of estuaries, was cut 25% by the US Congress. A few NEP directors were quickly informed by the government agency overseeing the Programme. They in turn contacted the other directors through the NEP network. The news caused widespread dismay — not merely among the 2 1 directors of the NEP throughout the country but also among the NGOs, business groups, fisherfolk, farmers, landowners and others, who are members of Citizen Advisory Committees (CACs) that report to the NEP Management Committees.

Members of the CACs as well as the wider public reacted strongly against the measure. There was an outpouring of protest. Letters and telephone calls inundated the Congress, urging it to reconsider its decision. The Congress bowed to public opinion. Within a week, the budget cut was restored.

Two lessons can be drawn from the experience. The first is about something called stewardship of coastal resources. It's the notion that people will take responsibility and action for the resources they care about. Stewardship evokes further action too — in this case it also influenced the government to act and reverse its own decisions. The second lesson is that public stewardship is even more effective when a mechanism for stewardship of the coastal resources exists — a mechanism in which public citizens, the private sector and government are partners.

The NEP belongs to all the participants. It provides them a better way to manage the resources they use and care about. The NEP encourages the citizens to become stewards by bringing them into the management process early and sustaining their participation. It empowers stewards through exchange of ideas and information, interaction with scientists, and through a sense that their contribution to the decision will matter.

A vital part of the NEP is the CAC, comprising key opinion leaders from the public. It keeps the wider public involved in the programme and ensures strong stakeholder participation at each step of the process.

Normally, decision-making on common property resource use is hierarchical in character. But the NEP is an approach to ecosystem management that turns the hierarchical structure on its side, enabling everyone involved, all the stakeholders and government decision-makers, to talk to one another about the estuarine ecosystem.

Examples of effective public stewardship can be provided from the Bay of Bengal region too.

In Phang-Nga Bay, Thailand, local communities help manage the artificial reefs in the Bay. The fisherfolk have become stewards of the artificial reefs, monitoring the reefs for fishing effort, change in species composition, and illegal fishing by 'outsiders' of the community who use poisons to drive the fish out to surrounding nets.

Farther to the south east, in the seemingly quiet and placid Tamarind village of Sikao Bay, several communities have joined together in stewardship of the

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dugongs that live in the sea grass beds in the nearshore coastal areas. The fisherfolk and community leaders of Tamarind village united nine villages under its banner and initiated a ban on the use of beach seines which were destroying the dugong habitat. (The dugong is a marine mammal, sometimes referred to as sea cow.)

Dugongs are highly revered by these fisherfolk communities. There is a herd of 30 or so dugongs that the stewards of Tamarind village regularly monitor. Since the dugongs are protected, so is their environment — the sea grass bed ecosystem that contains hundreds of other important but less conspicuous species. The stewards of Sikao Bay know they are protecting a lot more than the dugong; they have seen the results too. A lot more juvenile fish are seen in the waters, now that the sea grasses are left undisturbed by beach seines.

Effective public stewardship of coastal resources is a goal of integrated coastal zone management (ICZM).

What builds stewardship?Awareness and education help. But to sustain stewardship, the aware need a mechanism for directing action to get results. While ICZM and other integrated governance approaches for coastal areas target a single geographic area, and often a single ecosystem, its focus is on people and their activities.

As Dr. Thomas E. Lovejoy of the Smithsonian Institution puts it: "Man can't play God with the ecosystem. It is driven by its own natural forces. We are fooling ourselves when we think we are managing the environment. The best we can do is manage our impact on the environment".

ICZM has grown worldwide from the community level. How did it begin? According to many accounts of ICZM, it all began along the coasts of Oregon State in the US. A concerned public assumed a greater stewardship role in helping to solve problems in the coastal zone. It wanted government to become more active and accountable in its own 'professional stewardship' role. Early public initiatives focused primarily on controlling unfettered development along the coast, ensuring public access to the coast, and on greater public involvement in living marine resources management.

> *" We are fooling ourselves when we think we are managing the environment. The best we can do is manage our impact on the environment. "*
>
> **— Dr. Thomas E. Lovejoy**

ICZM sounds like a 'think-tank' concept but isn't. It is a phenomenon tried and tested at the grassroots. It is quite a practical approach to a complex management problem. The five essentials of ICZM are public involvement; a comprehensive ecosystem approach to identifying and solving problems: integration of disciplines, skills and knowledge: decision-making by consensus as much as possible; and flexibility. It is likely that ICZM goes farther back than Oregon. It can perhaps be traced to traditional systems of governance that have been documented around the world; from Asia, Africa and South America, to Micronesia and Polynesia, all based on community resolution of local resource management issues.

Public thinking about our actions and their subsequent effect on our ecosystems have come a long way since the 1992 Rio Conference on Environment and Sustainable Development. New institutions have risen throughout the world; they harness the increased environmental awareness generated worldwide by this Conference. **What is now** urgently needed are management approaches that can turn this awareness into durable and sustainable mechanisms for an improved social welfare and ecosystem health.

The article that follows, on regional stewardship, looks at such approaches. It reflects the ideas and experiences of a diverse group of authors — environmental, coastal and marine resource managers around the region about innovative approaches to integrated resource management at local and regional community levels in the Bay of Bengal region. We know we have only scratched the surface, but hope that these ideas will promote further thinking on this issue.

Stewardship in practice in Thuilund. At Tamarind village of sikao Bay, dugongs (marine mammals) and their environment enjoy protection. The fisherfolk community monitors the status of the dugongs.

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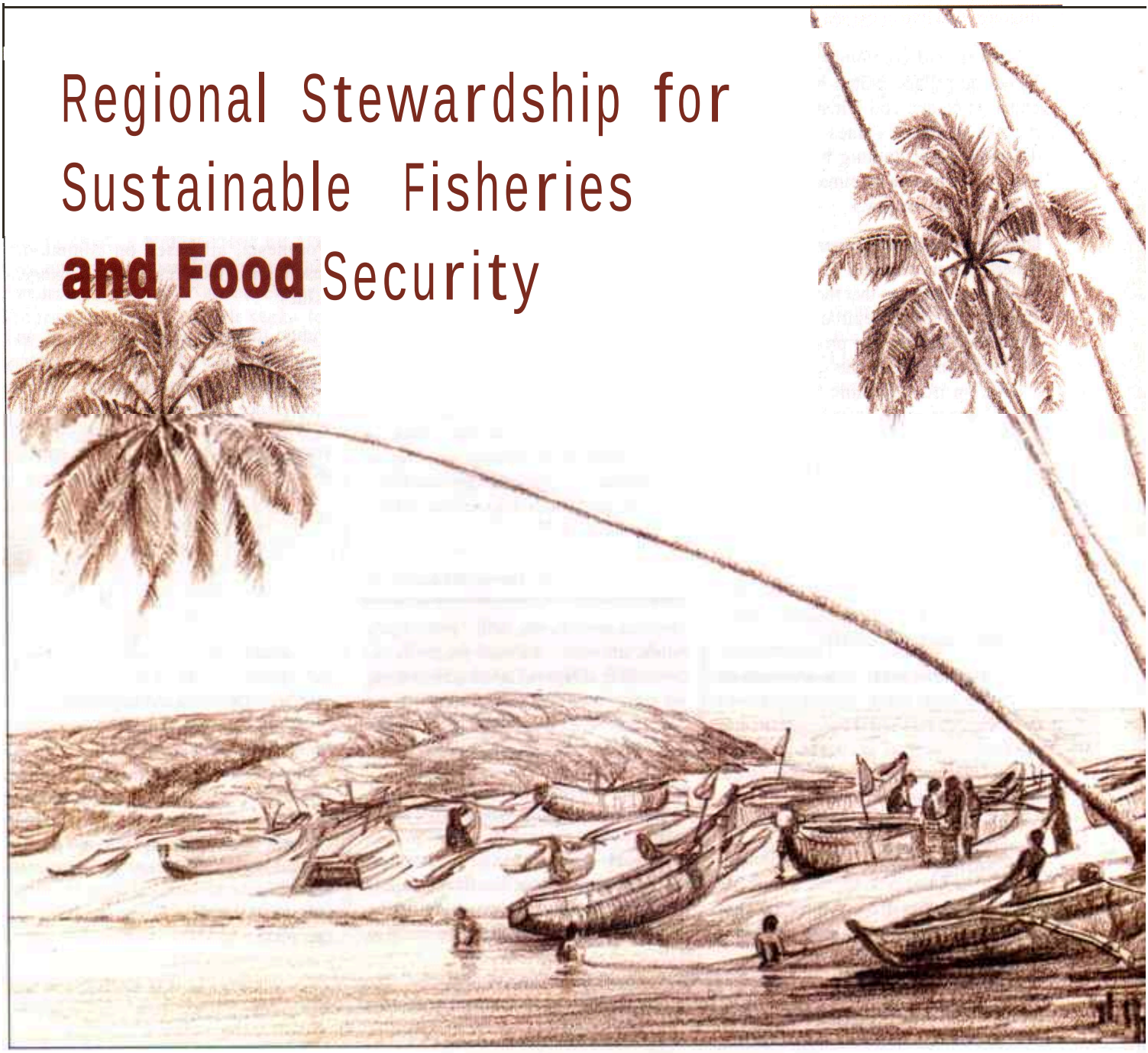
Regional Stewardship for Sustainable Fisheries and Food Security



Ahmad Hazizi b. Aziz
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Luqueman Ahmed
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Simad Saeed
Ennie Soetopo
Suseno
Y.S. Yadava

In a remarkable joint exercise, the authors — key fisheries and environment administrators and experts from the Bay of Bengal region — together examine the question of sustainable fisheries and food security in the region, which is the main aim of the BOBP. This goal can be attained only if the millions of people who have a stake in the Bay's fisheries turn 'stewards' to help care for fisheries and the supporting marine ecosystem. BOBP has over the years integrated environmental and socio-economic concerns into its member countries' national pilot programmes. Can the Programme now bring about an "ecosystems thinking" approach towards resolving Bay-wide issues — an approach necessaryfor true stewardship? The question is significant because member-countries of BOBP recently urged a stronger regional focus in addressing common fisheries and ecosystem issues. The authors take an inward look.

The Bay as a Shared Ecosystem

The Bay of Bengal is one very large and extraordinary ecosystem. It is about the same size as the Mediterranean Sea. It encompasses the continental shelf off the Maldives, Sri Lanka and Indonesia, where tuna are abundant; the nutrient-rich upland riverine basins and the unique Sunderbans mangrove ecosystem of India and Bangladesh that support a host of fin and shellfish species of commercial significance; and the valuable coral reefs of Malaysia, Thailand, and Myanmar. The Bay has definite and distinct features — relating to bathymetry, hydrography, productivity, and trophically dependent populations — that characterize it as a large marine ecosystem (LME) (Sherman 1994). Unlike other seas and LMEs that have historically been broken up for management along political lines, the BOBP has followed the lines of the ecosystem-the 'scientific boundaries'.

Each component of the Bay contributes a unique and essential component to the ecosystem. Coastal and riverine forested areas of Sri Lanka and Malaysia are 'hotspots' of biodiversity (Wilson 1992) — they have a large number of endemic plants, animals and fish species that are threatened. These areas can benefit from an integrated management approach that considers the influences to the marine environment from land-based sources.

In addition, one of the most extensive mangrove areas in the world, known as the Sunderbans, can be found in the northwest corner of the Bay, adjoining West Bengal in India and Bangladesh. Mangrove areas of the Sunderbans provide shelter and food for many species of important food fishes during their early life stages. Not all of these food fishes living in the Sunderbans estuaries during their early life stages will stay on in coastal areas of India and Bangladesh. Many will migrate to other parts of the Bay during different seasons, to offshore banks and inshore areas in the southern and eastern reaches of the Bay, as part of a feeding and spawning migration cycle spread along the entire large marine ecosystem.

Fisheries issues in the Bay of Bengal are ecosystem issues, not limited either to individual natural resources (land, water, estuaries), or to individual countries. Political boundaries conform to Mother Nature's boundaries in the Bay of Bengal. BOBP reflects this boundary of Mother Nature where countries may come together under a regional umbrella to address common fisheries concerns. No longer can we isolate ourselves in water-tight compartments.

The United Nations Law of the Sea Convention (UNCLOS) came into force in 1994. The Agreement on Straddling Fish Stocks and Highly Migratory Fish Stocks, the Code of Conduct on Responsible Fisheries, the Compliance Agreement, etc. urge countries to initiate conservation and management measures and to organize sub-regional, regional and international cooperation. Effective stewardship and greater community participation will enable these international initiatives to be implemented.

New and emerging regional issues have recently been identified by BOBP member countries. These establish closer links between the health of the ecosystem and the fisheries resource. The "situation analysis" by member countries of BOBP, one of the first exercises undertaken during the Programme's present "fisheries management" phase, revealed several common issues throughout the region. These include environmental stresses on the Bay's water quality; degradation of many of the coral, mangrove, wetland and seagrass bed habitats that support fisheries; use of fishing gear that may affect the long-term sustainability of the resources; decrease in target fish species; conflicts between fisherfolk groups (large-scale and small-scale on the one hand; and small-scale users of different gear types on the other) and the need for awareness building and adaptive management approaches that can respond to these issues.

Active stewardship will be needed to address these important and complex issues. A stewardship that reflects the Bay as a single ecosystem requiring synchronized comprehensive planning and focused actions for change.

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Fisheries Drives Stewardship

While fisheries has often been a source of contention in many regions of the world, fisheries in the Bay of Bengal has always been a common concern that drives international co-operation between coastal states. Fisheries is largely seen by member-states as a regional issue rather than as a purely national issue among the Bay's coastal states, and a most essential one. With over ten million coastal small-scale fisherfolk, any change in the livelihood security of this sector will affect the region's social stability. In addition, the food security provided by the Bay's small-scale and commercial fisheries both to the region and to a wider global community are vital for the region's social and economic welfare.

There exists a close link between human activities and the ecological functions and services on which the region's economies depend. Coastal countries of the Bay of Bengal contain almost one fourth of the globe's population, much of which lives at or below the poverty level. An average of 65% of the region's urban population lives in large coastal cities (WRI 1990).

Stresses experienced in the Bay over the last decade are due in large part not only to the high population but also the fact that many of them settle along the coasts and depend on coastal resources for food and livelihood security. (Fish is one of the cheapest alternatives to foodgrains. The regional population depends on fish; in Sri Lanka, for example, 70% of the total animal protein supply comes from fish). The dependence on fish is likely to increase in future with population increases. To mitigate the anthropogenic stress, concerted action is needed to integrate planning and management and promote stewardship that converts regional solutions into local action.

Ensuring Sustainable Stewardship

There are numerous stakeholders in the fisheries of the Bay of Bengal. Those that come readily to mind include the fisherfolk, fish consumers, anglers, fisheries officials, everyone concerned (as owners, employees or users) with fishing craft, fishing gear, fish utilization, ice and freezing plants, the middlemen, people concerned with transport of fish. In addition, a new group of stakeholders small and big is fast emerging to harness the coastal ecosystem — both on the landward and seaward sides — for aquafarming.

Stakeholders become "stewards" when they are partners in decision-making, and a permanent part of the management process. ("Stewards" in integrated coastal management terminology are those who care for the resource and do something about it). Stewards are expected to take responsibility for changing attitudes and inducing change through action. When stakeholders are partners, more balanced decisions and an unified approach for action result. Ecosystems know no political boundaries; stewardship knows no boundaries either.

Ensuring sustainable stewardship begins with a simple and clear identification of the key stakeholders and bringing them into the management process from the start. When stakeholders are enrolled early as partners in coastal management, a better picture will emerge of issues and problems. Likewise, more informed decisions will be made. There will also be a better chance that the decisions will be implemented because the stewards have had a role in the decision-making. A strategy should therefore be developed to enable stakeholders to gradually evolve into stewards, with purposeful roles and responsibilities.

Several examples of effective integrated frameworks for fisheries management exist in the Bay of Bengal

The fishing populations in the Maldives (below) and Bangladesh (opposite page) often settle along the coasts and depend heavily on coastal resources for food and livelihood security.

region and outside. They help bridge the gap in perceptions and interests between the government and the public. They provide stewards with a forum for expression and collective action.

The integrated management frameworks existing in the region vary from country to country and even within countries. But they have some common features. All of them involve local communities. Traditional management systems in all of them are being affected more and more by external interference — such as socio-economic changes, mechanization of fishing craft, and tourism pressures. All of them need government to 'protect' these systems from such external interference.

India strongly protects its traditional systems. As far back as 1979, the Ministry of Agriculture (Department of Agriculture and Co-operation) prepared a Model Bill to regulate coastal fishing, and circulated the bill to all the coastal states of India. The Model Bill inter alia suggested demarkation of exclusive zones for traditional fishers — making it a very strong national-level initiative to protect the traditional fishing sector. All four states on the Bay have promulgated Marine Fishing Regulation Acts following this initiative. Malaysia, with its gazetted fishing zones, is another case in point.

Finding solutions through compromise and consensus, and obtaining government support for local level initiatives, is a cornerstone of effective frameworks for integrated coastal management.

Sri Lanka has one of the world's most comprehensive legal systems for Coastal Zone Management (CZM). Concern for coastal erosion has developed into a more broad-based management of the coastal habitat. Institutional arrangements to implement a CZM Plan were organized early. Immediate and long-term activities for building stewardship within government, the private sector and individual citizens were defined. Activities were assigned to certain lead agencies, and the national CZM Plan was adopted by the Sri Lankan Parliament in 1991. The plan works well. Strong local-level community programmes bring consensus-based solutions to government agencies at the national level. Legislation is passed wherever appropriate. Other supporting measures are taken. These assist implementation at the local level.

For example, to strengthen Sri Lanka's Integrated Coastal Zone Management (ICZM) process, a new Fisheries and Aquatic Resources Act is in force from this year (1996). The main objective is the management and conservation of resources. Through the provisions of this Act, the common property open-access fisheries of Sri Lanka is transformed into a properly managed industry. A licensing system will come into effect during the latter part of 1996 for all fishing operations including inland fisheries and aquaculture. High priority is accorded to the participation of stakeholders in the management process. In the new Act, this participatory approach is recognized and legal provisions are made for establishing "committees" of stakeholders.

Indonesia's approach to managing its vast coastal resources is holistic. It integrates local norms and traditions, modern science and technology, established political and social institutions, and legal and administrative arrangements. Reason: Indonesia recognizes the strong relationships between people, resources, technology and their environment.

Some six regulatory policies support and facilitate the development of ICZM. From the Fisheries Act of 1985 to the Conservation of Living Resources and Ecosystem Act of 1990, Indonesia has used these tools to build a strong philosophy of co-operation, co-ordination and integrated planning for the sustained use of its coastal resources. Community participation and partnership principles are inherent in these ICZM approaches.

The idea of extending stewardship to relevant government agencies is fundamental to ICZM. Often, the initiative for ICZM comes from government, based on the recognition that the activities of various government agencies, which often overlap, must be co-ordinated. ICZM approaches translate issues of concern to stakeholders into a single coordinated effort. ICZM enables government agencies to become more serious about their stewardship role in managing resources for public benefit. It improves on 'status quo' governance, and finds a new way of approaching decision-making. When stewards from all backgrounds are partners in the ICZM governance process, the potentialwelfare benefits are greater.

Traditional fisherfolk in Doddanduwa, Sri Lanka. The island has a comprehensive legal system for coastal management. (Pic. : S.R.M.)

In the Maldives too, the BOBP-assisted Integrated Reef Resources Management Programme (IRRM) seeks to build stewardship among government agencies. The majority of islanders here are fisherfolk. Stewardship of nearshore reefs and fishery resources has historically been very strong. Under IRRM, government bodies in the Atolls are to broaden the scope of reef resources issues they will address. They will also work more closely with fisherfolk.

Stewardship plays an important role in IRRM — in identifying issues, resolving them, and monitoring the results of actions. Citizens have been empowered with stewardship. They volunteer their monitoring efforts in many areas; involve student groups and the public; teach field science. The Maldives is a strong believer in involving student groups in governmental activities; and has the vision to foresee that these young students will one day be responsible stewards.

Malaysia utilizes a more structured but equally flexible approach in developing a Special Area Management Plan (SAMP) for Pulau Payar Marine Park under BOBP's Third Phase. (See article on "BOBP in the Field" elsewhere in this issue.) Under the SAMP approach, fisherfolk and other stewards living within the area come together with State and National government agencies to figure out how to approach issues in coral reef fisheries, land-based sources of marine pollution, and ensuring public participation. The SAMP will help to coordinate authority and the activities of all coastal zone sectors both horizontally and vertically with Malaysia's emerging National ICZM Programme.

Coastal zone management within Malaysia will benefit from its participation in a regional ecosystems approach-through a greater understanding of LME factors controlling nearshore production as well as local hydrological patterns that influence migration and larval dispersal in the reefs within and outside of the Marine Park. Such information can help lead to decisions on which reefs should be protected, and which reefs are suitable for fisheries management and other activities. Better understanding of the larger ecosystem will also enable a better plan of action for SAMP. It can, for example, help determine the causes and effects of trophic level changes in the biological communities that inhabit the Pulau Payar Marine Park.

Learnings from Integrated Coastal Management Approaches

Early Participation by Stakeholders

Bringing stakeholders into the management process early achieves the acceptance of solutions they have helped develop. This acceptance will mean they will help implement the solutions too, and see the results of their work. It builds and sustains stewardship.

Scientific Characterization

Science must be an open part of the management approach. This enables the public to participate in identifying and ranking priorities for action. The management approach offers many benefits. First, the stewards are a source of knowledge about the ecosystem and the threats to its valuable resources. Second, stewards learn from scientific findings and often change their original perceptions of the issues. Stewards have an important stake in the solutions. They become more aware of the issues and causes by participating in the characterization process. This strengthens their ability to contribute as stewards to sustainable use of the ecosystem.

One of the best ways to understand something is to 'get your feet wet', to

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COMMON ISSUES IN FISHERIES MANAGEMENT

Stresses on WATER quality

Degradation of HABITATS in coastal areas

DESTRUCTIVE fishing gear

Decline in target fish SPECIES

CONFLICTS between fisherfolk groups

Building AWARENESS on the whys and hows of management

Marine Fishing Regulation Acts in India have set apart exclusive zones for traditional fishers. *(Pic. S. Jayaraj)*

move out to the field and acquire first hand experience. People will protect something they care about; and they will only care about something they understand. This philosophy was also reflected by the students' recommendations at the IRRM Workshop in the Maldives. They asked for school field trips to the coral reefs, to better understand the reef ecology. They asked for environmental clubs in the schools to hold debates and poster competitions on coral ecology. These activities are a part of effective interactive scientific characterization. There are ways to maintain 'two-way' communication throughout the process. Keeping the wider public aware of early progress in the management approach-by issuing fact sheets, for example, or organizing public events-generates feedback from the public.

Habitat restoration was identified as an early activity by the fisherfolk of Phang-Nga Bay's villages in Thailand. In most cases, scientific analysis of the Bay's problems undertaken as part of the Community-Based Fisheries Management (CBFM) Project during BOBP's Third Phase, confirmed fisherfolk's perceptions and knowledge.

Thailand is using this opportunity to involve the public in the activity. Mangrove reforestation and seagrass planting by fishing communities is being combined with informal education about the relationship of the fisheries habitat to sustainable fish production. DOF scientists and fishing communities have jointly identified areas for the activity. They will soon replant these areas- 'getting their feet wet' together in stewardship.

Monitoring

Project monitoring is vital; it provides information to help revise and redirect solutions. Stewards can be effective monitors, particularly when it's they who will benefit from the data resulting from monitoring. Fish catches by local fisherfolk reflect how effective management solutions are. In the Philippines, monitoring over a 1 O-year period before and after the establishment of a marine reserve showed increased fish yields, fish diversity and improved coral condition (White1989).

Reefs at Looe Key National Marine Sanctuary in Florida, US, have been monitored since their protection. The increased fish abundance at the reefs has been linked to enforcement of fishing regulations. Malaysia will monitor the changing conditions of resources over time in the SAMP area. Monitoring will help answer whether the broad management objectives have been achieved-whether SAMP actions are able to increase fisheries resources and improve the livelihood of fisherfolk.

Using Fisheries to Save the Environment; Using the Environment to Save Fisheries

The environment is like a silver thread running through all that we do. An ecosystem approach towards fisheries management issues considers the influences of land-based sources of marine pollution, and of human activities in the riverine basins, the water, and the land environments. Solutions will benefit the coastal, sea and inland environmental components of the Bay of Bengal ecosystem. Such solutions can be many and varied. They challenge the knowledge and imagination of scientists and administrators.

In West Bengal, India, for example, a community-based aquaculture enterprise has been very successful. It uses sewage as fertilizer for growing algae and plankton, which in turn will serve as feed for finfish aquaculture (the candidate species are mainly the Indian major carps). The enterprise has proven that fish are an efficient bio-ameliorator of sewage, which is one of the major sources of estuarine and marine pollution in coastal countries throughout the world. Sewage loads in the Hooghly-Matlah estuarine subsystem of the Bay of Bengal have been reduced because of this innovative aquaculture. Sewage waste recycling for aquaculture could be a potential tool throughout the region to reduce stress on the coastal environment.

Following the West Bengal success, aquaculture that puts municipal sewage waste to use as fertilizer has been adopted as one of the popular practices of the Ganga River Action Plan. The Ganga is an important riverine system of the Bay. The large freshwater and nutrient input from the Ganga contributes to the unique hydrography and biological productivity patterns (of finfish, corals, shellfish, and seagrasses) of the Bay of Bengal ecosystem.

Those closest to the resource are often the first to see the link between fisheries and the environment. Environmental concerns led a few fisherfolk villages in Phang-Nga Bay, Thailand, to initiate a ban on push net fishing. These early initiatives have grown to what is now the DOF/BOBP/ CBFM Project. The recent CBFM Workshop in Thailand made the project and the idea of CBFM popular; the project has expanded not merely in subject scope but also in physical area to all villages throughout Phang-Nga Bay.

The Workshop also strengthened ties between organizations involved in community development and resources management in Phang-Nga Bay. As the Bay's villages have asked to be included in the project, so too have several agencies. The DOF, the Department of Environmental Quality Extension, the

Ministry of Science and Technology, NGOs, and universities have realized that coastal resources management cannot be carried out by any single organization- nor by any single village of the Bay. The CBFM project community and government decision-makers have pointed out that effective co-operation between villages on the one hand, and government and private organizations on the other, is essential to support the strong stewardship shown through CBFM activities in Phang-Nga Bay.

A healthy and vibrant fishery is one of the best indicators of the environmental status of the aquatic ecosystem, and LMEs in particular. Learning from success stories of approaches that link our actions and the Bay's ecosystem services closely together could also inspire other member-countries towards a regional approach that can better understand and tackle Bay-wide issues.

Conclusion

Regional stewardship of the Bay of Bengal begins with a recognition that each action, however great or small, will produce an effect elsewhere. That it is truly impossible to address a single component of an ecosystem in isolation. It is our challenge in the future to establish stewardship that reflects this fundamental truth.

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BOBP Advisory Committee Meets

The BOBP's 20thAdvisory Committee Meeting was held in Pulau Langkawi, Kedah State, Malaysia, 26-29 March 1996. The Director-General of Fisheries, Dato Shahrom bin Haji Abdul Majid, inaugurated the meeting. Mr. Lui Yean Pong from the host country chaired the Committee's proceedings. There were 28 participants.

The meeting agreed in principle to the 1996 workplans for each country. It suggested that the plans be refined and finalized in consultation with counterparts before implementation. The responsibilities of national agencies and of BOBP should be clearly stated, especially because of the emphasis on national execution of the workplans.

The meeting welcomed DANIDA's decision to release savings from the project's second phase for use of the Third Phase. Member countries confirmed support to the project's Information Service through annual contributions.

The meeting said the Project's focus — in enabling management of coastal resources — should be with users of the resources rather than with the coastal resources *per se.* The proposed study on values, perceptions and attitudes of fisheries and non-fisheries stakeholders towards ownership of the fisheries and fisheries management should be comprehensive — it should cover coastal aquaculture, mariculture and post-harvest fisheries. Training relating to fisheries capacity-building should wherever feasible be undertaken on a regional or sub-regional basis.

Member-countries strongly endorsed the project proposal for Sustainable Environmental Management of the Bay of Bengal Large Marine Ecosystem, and requested BOBP to continue regional coordination of the effort. Delegates said Ministries from their countries which oversee fisheries and environment would convey their endorsement of the proposal to the Global Environment Facility shortly.

A mid-term evaluation of the BOBP's core project is to be conducted early 1997. The six-week or eight-week mission will consist of nominees from Japan, DANIDA and FAO.

After 1999: A suggestion was made that BOBP should evolve into an inter-governmental agency to continue fisheries development and management work in the region. The Programme was asked to present a discussion paper on the subject at the next AC meeting in New Delhi, India.

The ODA informed the Committee that the third phase of the Post-Harvest Fisheries Project would come to and end in March 1998. It suggested that the Committee reflect on ways of addressing the post-harvest fisheries needs of the region after the project ended.

The report of the Advisory Committee meeting will be printed shortly.

Responsible Fish Consumers Can Strengthen Fisheries Management

Kee-Chai CHONG

Moderate consumption and trade in fish. Live within your environmental means. You may then help ensure that there is some fish for future generations, says the author; who is Programme Coordinator of the BOBP.

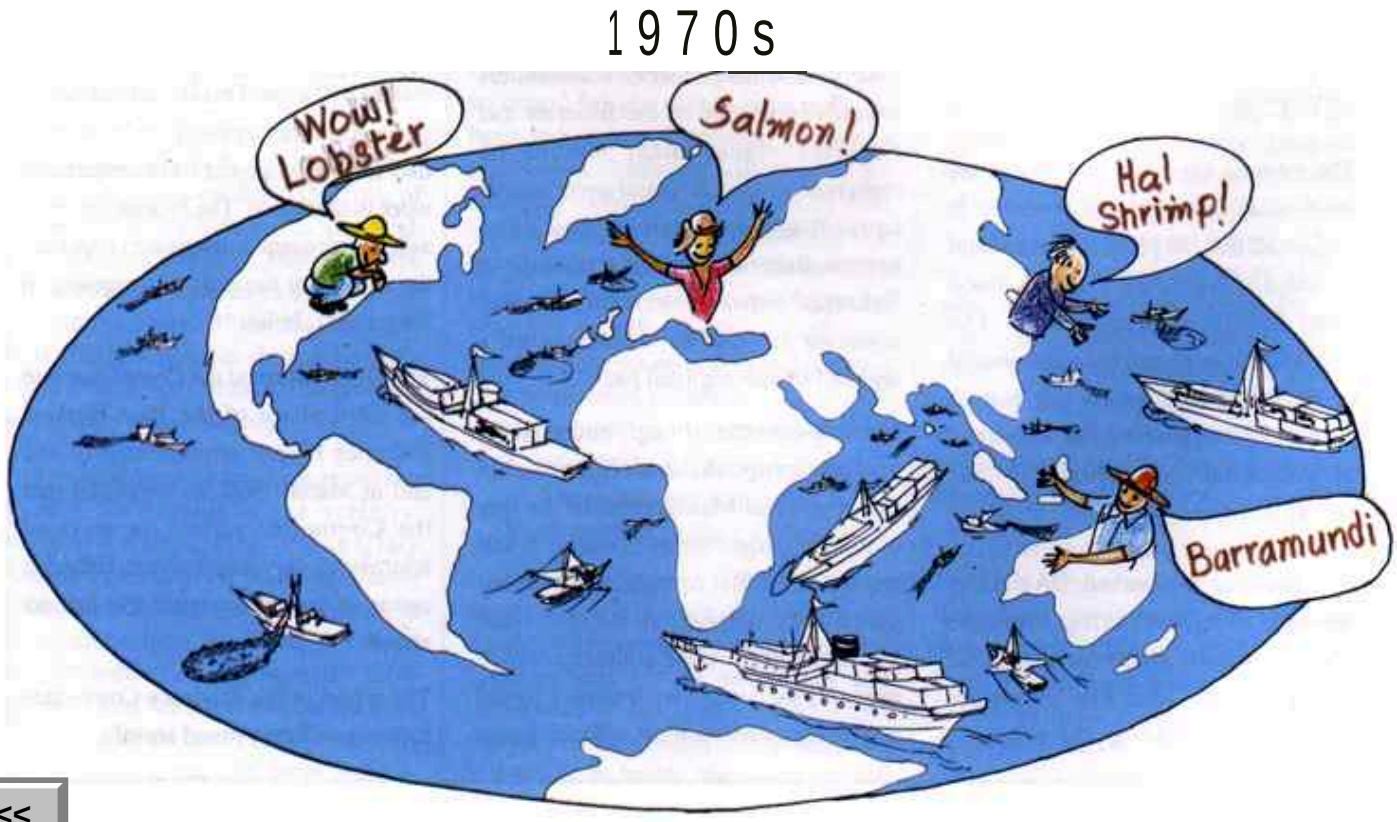
In spite of increasing public awareness that natural resources are finite and that the environment is deteriorating, human consumption accelerates at a mindless and alarming rate, especially conspicuous and wasteful consumption. Just like the old faith in technology 'solving' problems concerning food, shelter, clothing and other necessities of life such as clean water, air and fertile soil, a similar faith is reposed today on the power of the marketplace to meet the same needs. Such faith is worrisome, to say the least. There are definite limits to growth in the use of natural resources and the environment. By the year 2000, there will be 6.25 billion people in the world and in 2030, the population will reach 9 billion.

The human species cannot continue to place unwavering faith in modern scientific and technological advances on the one hand and market forces on the other. Current consumption trends cannot be allowed to continue unchecked. These 'excesses' in consumption or materialistic consumerism are spawned by an uncaring attitude — itself the result of the growing affluence of the burgeoning middle class in many countries, including the newly-industrialized developing countries. In the developed first world, of course, such excesses are ***passe.***

Fisheries as a Model and Case Study

Fisheries is a renewable resource, capable of supplying a flow of goods and services like food fish, raw materials for industrialization such as seaweed and fish feed, recreation/leisure from its standing **stock** or available biomass. When managed, such stock can be exploited on a sustainable basis. With management, fisheries can supply even more fish and higher income to the primary producers, in this case the fisherfolk. However, it is worth reminding ourselves that the fisheries resource renews itself only at its natural rate: its regeneration cannot be rushed, whatever the demand. Its exploitation can be stepped up to meet demand, but only at the risk of overfishing, collapse of the fisheries from decimation of the parent stock and insufficient recruitment. Also, fish supply today is not only constrained by its natural regeneration rate, it is also hampered by pollution and habitat destruction. In the meantime, growing economic affluence and health consciousness are strengthening demand for fish, thus putting more and more pressure on the fisheries.

As a self-renewing resource, fisheries is a good case study in promoting responsible resource user behaviour, whether she/he is a producer and/or consumer. The future of fisheries and the assurance of the future availability and supply of fish is thus critically dependent on how responsive we are as producers and consumers in reversing the rapidly declining fish population as well as managing and stewarding them. More important is our individual behaviour as responsible producers and consumers. Thus, one may add to the now famous saying "Think Globally But Act



Locally", the slogan "Think Collectively But Act Individually". This means that each and every individual has a responsibility to participate and contribute to the welfare of his/her community to act and not just react in the interest of his/her community.

Since relatively more effort is geared towards sustainable fisheries management at the pre-harvest level than at the post-harvest level, initiatives must immediately be taken to induce desirable changes in societal and social behaviour in consumption. Responsible consumption behaviour can go a long way towards reinforcing and strengthening responsible production behaviour.

Mobilizing Public Opinion about Responsible Consumption

This article is an attempt to create, build and mobilize **individual** awareness and **public** opinion among fish consumers and others at different stages in the fish marketing channel on the need for responsible consumption and commerce and trade in fish. In fact it is the consumers themselves who are voicing concern about the continuing disappearance of their favourite species of fish (used generically here to include all aquatic products) from the marketplace. As a matter of fact, species once regarded as 'trash' are today being bought for food; but they are no longer inexpensive. Fishermen, seafood processors, cold storage operators and fish traders are as frustrated as consumers. They are unhappy over the disappearance of market-preferred species. This is the price that has to be paid for irresponsible fishing and consumption.

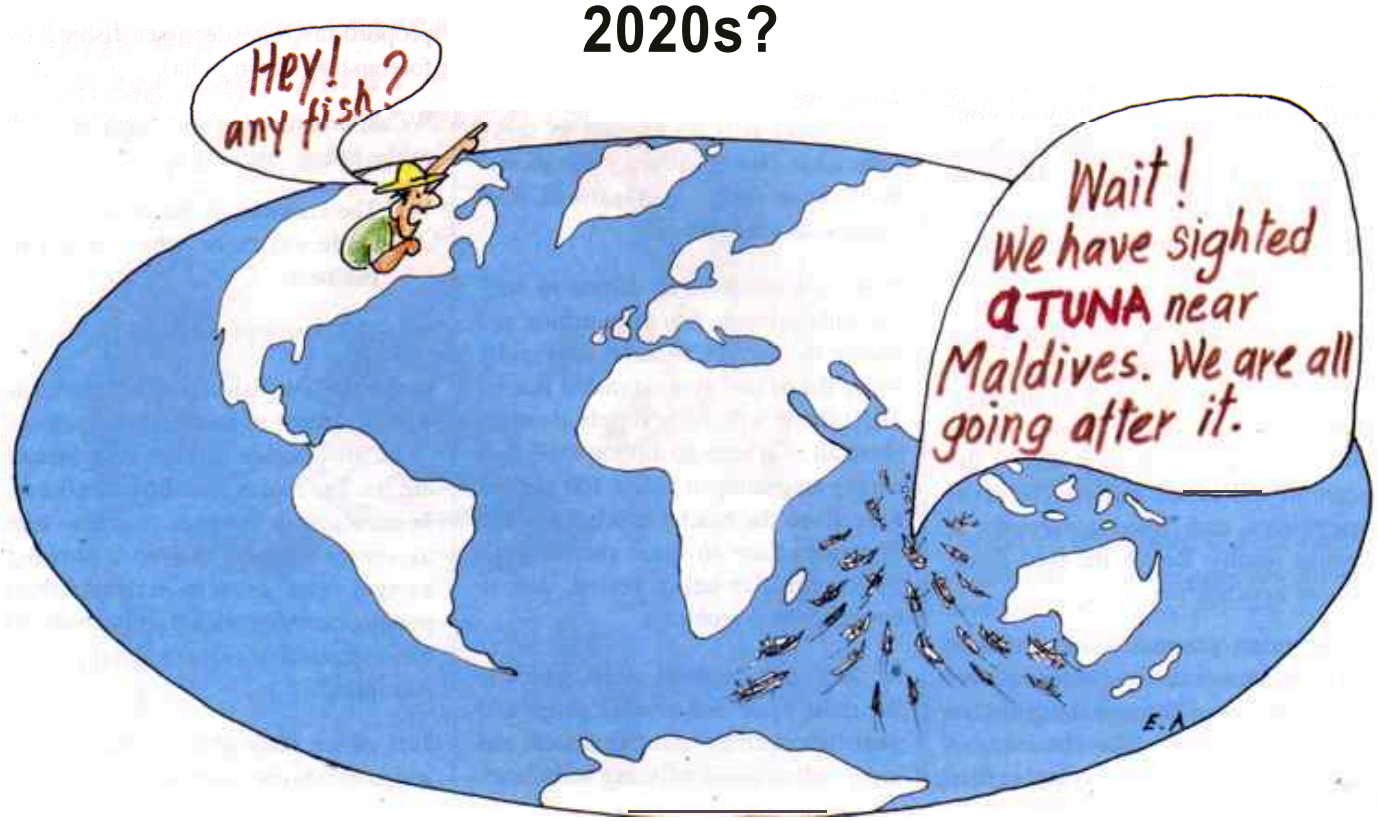
Since past effort at managing the fisheries at the pre-harvest or fisherman level has not been successful, implying that the benefits and returns on investment in fisheries management were not obvious, a more innovative and radical approach is called for. It is time to enlist the assistance of fish consumers to induce changes in production and marketing behaviour through their purchasing power, the prices they are prepared to pay for the fish. Consumer boycott through prices paid or not paid can send signals to the fisherfolk on what is 'acceptable' in terms of species and sizes, age at first capture or maturity and reproductive condition of the fish, whether they are banned or prohibited from landing, undersized, immature, egg-bearing or gravid fish, etc.

The recent consumer boycott of tuna caught along with dolphins in purse seines in the U.S. was a highly publicized and visible use of consumer purchasing power in inducing desirable producer behaviour among tuna purse seine fishermen. For example, the three major canners of tuna sold in the U.S. stopped buying tuna caught in purse seines. Similar pressure has been exerted on the use of long drift nets (up to 64 km long) which resulted in the death of non-target species. In 1992, the U. S. Congress banned the import of fish caught by such drift nets.

Escalating Fish Prices, Impoverished Fisherfolk

Meanwhile, fish prices continue to increase, in particular at the retail and wholesale levels, even for the less preferred species, not to mention the traditional market-preferred species, which are either getting more and more scarce or have even disappeared altogether. Today, more than one third of the 200 fisheries monitored by the FAO's Fisheries Department have been overfished. Besides having to be content with what is brought to the market, seafood consumers and connoisseurs seem quite willing to pay the going (high) prices for fish.

As far as fish traders are concerned, they continue to make their profit margins, if not even wider and wider margins. But many of the fishermen, especially those operating traditional small-scale fishing boats and crafts, have not seen any appreciable benefits accruing to them in terms of higher ex-vessel prices or higher income. As primary producers, the bulk of the small-scale fisherfolk shoulder greater risks, in particular the vagaries of the sea and weather, than their land-based colleagues. They go out to sea in



generally not-so-seaworthy fishing boats and crafts. The returns on their fishing effort simply do not allow them to build more seaworthy boats. Nor are they sufficiently compensated to keep them in production, except for the lack of alternative means of livelihood.

With favourable market demand and high prices, management of the resources can only bring greater profits and higher income to the industry, including fisher-folk. The market, consumers and connoisseurs alike, can and should begin to dictate what is landed. For this to take place, however, consumers must be made aware of their individual and collective responsibility to resource sustainability and food security.

To keep the fishermen in production, there is an urgent need to rationalize the industry by bringing all the different stakeholders together to examine the future of the industry. We have not even considered the impact of pollution and other environmental threats to the fisheries.

New Age Consumerism: Responsible Consumption

The Seventh World Conference on Sustainable Development through Community Education organized by the International Community Education Association at Jomtien, Thailand, from 31 July to 4 August 1995, declared that "sustainability was not possible if all people achieved the level of consumption presently practised in the North'. There is thus an urgent need to question existing consumption patterns. Mindless consumerism and materialism are clearly not sustainable. Over-eating and obesity in the first world and among the well-to-do in the third world are clear examples of over-indulgence.

Another example is the ostentatious display of position or wealth by reserving certain fish species, such as the Ikan Batak in Indonesia, for royalty or the elite. This species of carp was in the years of old meant strictly for royal ceremonies, and fished generously to indulge royalty. Result: the Ikan Batak is close to extinction.

These human 'excesses' in consumption, not to mention 'excesses' in production, can be reversed through imaginative public education, like the one so successfully mounted during earlier years to promote fish consumption. The 'Eat More Fish' campaigns have been so successful that there is now tremendous pressure on fisheries resources. Traditionally preferred species have long been fished out, followed by less and less preferred species.

Although fish has been consumed since the dawn of civilization, it was not very popular as food until recently. For a long time, fish as food was even dubbed the poor person's protein and because of this, almost everyone kept away from it for one reason or another. With some exceptions, its smell, flavour and taste kept many people, especially in the interior hinterland, in the mountainous region and the North away from it. The latter had kept away from fish because it is difficult to clean and prepare. More importantly, they found certain fish disagreeable because of the presence of tiny bones and spines in the flesh. It is only in the South that fish is consumed as a staple. Today, more than at any time in the history of humankind, fish is not only a highly sought-after item of food but there is willingness and ability to pay high prices for it.

The 'Eat More Fish' market promotion has clearly succeeded. Its popularity among consumers is growing by leaps and bounds, giving rise to an ever-widening demand-supply gap. Witness the growing popularity of live fish among the 'eating-away from home' seafood restaurant patrons. Only a decade or so ago, seafood restaurants were difficult to find. Today, seafood restaurants are found everywhere. Will these seafood restaurants still be around to serve delectable fare to future generations? Will these future generations love seafood as much we do?

Now that we have managed to successfully promote fish for nutrition and health, the world's fisheries are rapidly being fished out. It is estimated that by 2010 there will be a supply-demand shortfall of at least 30 million tons, with supply stagnating at about 100 million tons. Even the much-heralded promise of aquaculture to meet such supply deficiencies is being belied, due to environmental problems.

At the fisherman level alone, which is the most basic and crucial, more and more fishermen are resorting to more and more indiscriminate fishing techniques to catch fish just to make ends meet. All these developments, from the pre-to post-harvest levels, independently or combined, are placing unprecedented pressures on the remaining 'heavily-or over-exploited' fisheries resources. Emerging market forces stemming from the recent insatiable demand for fish; economic structural adjustments; growing affluence in the midst of economic stagnation; growing unemployment in different geographical regions and trading blocs-all these new phenomena further fuel the entry of fishing boats and fishermen.

Enlisting Consumer Power

Fisheries managers are generally so caught up in their work that they overlook the contribution consumers of fish can make to strengthen their hands in managing the fisheries. They should share information with not only consumers but also with researchers and scientists, formal and non-formal educators, media personnel, extension agents, middlepersons, traders and NGO agents — and involve all these groups in their work. Fisheries managers may be pleasantly surprised at the role these groups can play in improving their performance. Likewise, the fishing industry itself has not been very communicative. In many developing countries, the industry seldom acts or reacts to fisheries issues and problems-at least not until they reach crisis proportions (e.g. deep sea fishing by foreign trawlers in India).

We all have heard pronouncements such as the following:

- The customer is the reason why a trade exists or why we are in business.
- The customer is always right.

In the old days, fish was also regarded as a cheap source of protein and continues to be so labelled in even enlightened circles. The commonwealth of the ocean, in particular its fisheries, was also seen as source of food to feed a growing hungry and protein-malnourished population. Its expanded production and consumption was very deliberately subsidized.

Just as we once enlisted the help of consumers to eat more fish, we now have

to enlist their help in moderating consumption, to eat fish responsibly. Prudence in consumption is an age-old tradition and value of our ancestors, which was overlooked and forgotten in our pursuit of modernization. The public must believe in its power to compel change through its purse. It is quite obvious that in many developing countries, including BOBP member countries, the department of fisheries has not 'been sensitized to nor is provided with the wherewithal to manage fisheries, let alone enforce it. Thus, involving fish buyers and consumers in fisheries management/enforcement will not only reinforce but strengthen fisheries management.

Towards this end, the Marine Stewardship Council (MSC), established in the UK by the Unilever plc/nv, has pledged to source fisheries products only from sustainable well-managed fisheries by 2005. Also, by 1998, products from MSC-certified fisheries will be marked — enabling seafood buyers and consumers to select fish products they know come from sustainable sources. Fish sellers and other traders can inculcate desirable attitudes towards consumption in people.

A large supermarket chain in the UK, Tesco, has already embarked on such labelling.

All of us are only too aware of what **unsustainable fisheries production** is because we read, hear and discuss it. We experience it ourselves in our work with fishing communities and in our everyday shopping. Many of us see unsustainable fisheries production and development as largely the result of technology pushing up fish production. This over-reliance on technology, with little or no socio-economic assistance, had led to our present predicament of excess technological capacity. A basic question: why do fishermen use smaller and smaller mesh sizes when they realize that they are catching smaller and smaller fish which sooner or later will destroy the means of their livelihood?

R&D is crucial for developing sustainable practices and products. While technology is largely proprietory, information is in the public domain and quite easily accessible. Such information should be put into the hands of the end-users to develop an informed public which can take the right decisions. The active participation of resource users, including the consumers, combined with available scientific knowledge and technological advances, can bring about needed change.

Along with R&D and public education, preventive education on the need for fisheries management, and on the costs of mismanagement among school children and youth, can go a long way towards developing healthy lifestyles. Today's youth are tomorrow's adults. There is still time to correct our profligate ways and attain a secure future.

Conclusions

Responsible behaviour in general, and responsible fish production and consumption in particular, has to begin within each individual. Educated individuals who are aware of their surroundings, tend to be more responsive to new ideas and new norms of behaviour. As we enter the new millennium, sustainable human development calls for new norms of social behaviour.

Just as charity begins at home, responsible consumer behaviour must also begin at home and spread to more and more homes until the community and society are so persuaded through awareness building. New values and attitudes such as moderation in consumption and 'living within our environmental means' should be developed and inculcated not only among adults but more importantly among the younger generation. For example, eating lower on the food chain (e.g. vegetarian diet) is a healthy option. Excesses of modernization, such as materialism and consumerism, are partly the result of parental indulgence. The older generations want to spare their children the hard life and frugality they themselves experienced. Living within our environmental means and ecological considerations must now be given more weight and higher priority if the human species is to survive. There is time to mend our ways for a sustainable future.

The future of fisheries and the future availability of fish are critically dependent on how responsive we are as producers and consumers in reversing the decline in fish populations as well as in managing and stewarding them. Equally important is our behaviour as responsible producers and consumers.

PHOTO FEATURE

Issues and solutions in fisheries management

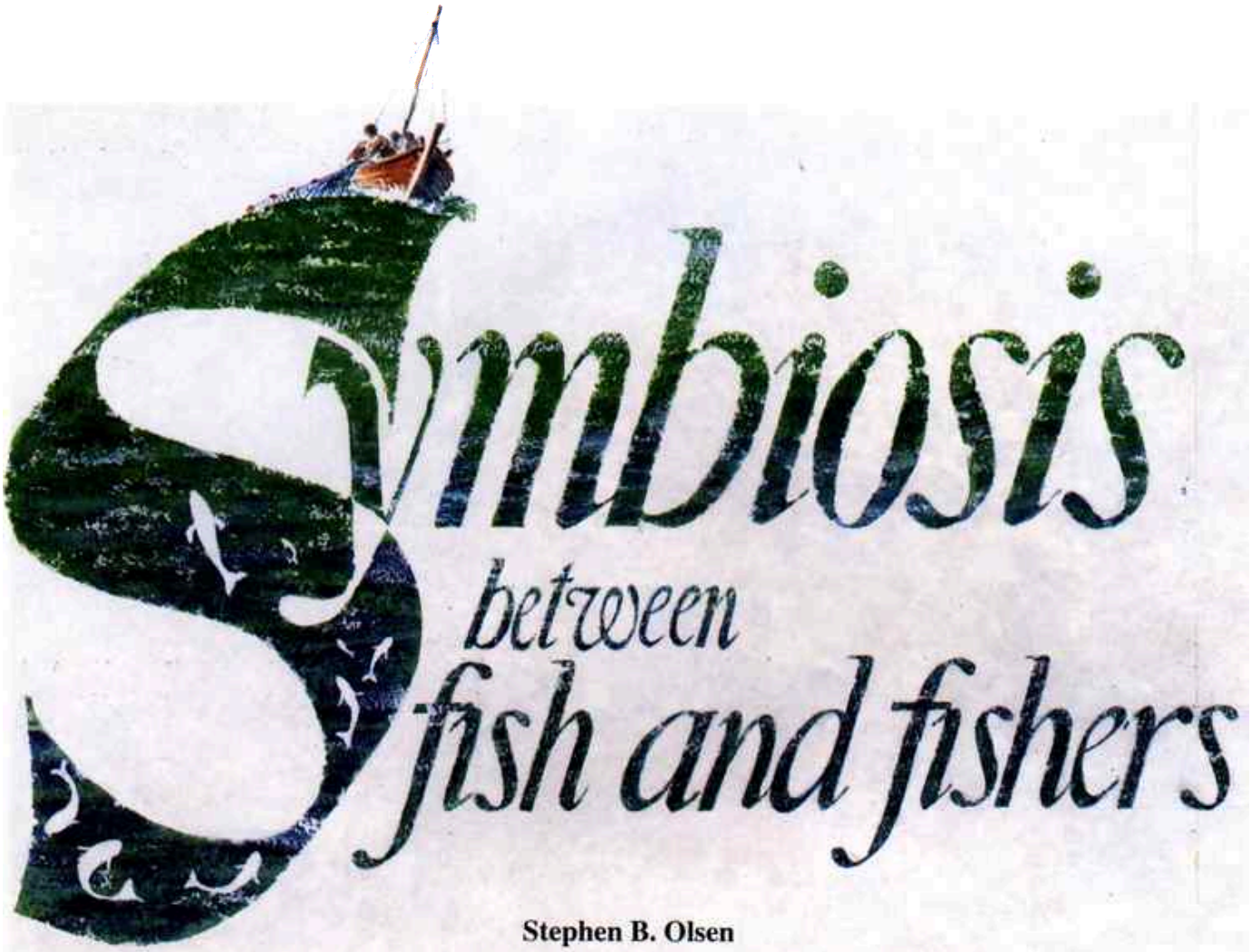
The issues in fisheries management are many and varied. A few of them are portrayed visually on these pages. Governments, with some assistance from BOBP are grappling with these issues and striving toward solutions. Photo features on fisheries management will henceforth appear regularly in Bay of Bengal News.

In Bangladesh, several thousand fsherfolk use estuarine set bag nets (left and push nets (below) to catch fish. Both gears are considered damaging to the resource. Studies and discussions are being held on drawing some of the fishefolk away from these fisheries by providing other livelihood or employment options.

Pix : Syed Rakibul Moin Rumi

In Malaysia, a SAMP (Special Area Management Plan) integrates the management of land and water in the Pulau Payar Marine Park. The Park's four islands possess clear-water coral reefs (above) which are a treasurehouse of marine wealth. (Pic: Department of Fisheries, Malaysia)

Seagrass forestation (left) and seu ranching (below left}, both in Thailand, enrich the marine environment and strengthen fish stocks. Enforcement officials in Malaysia (below) monitor the movements of the fishing fleet and ensure that tough zoning laws are observed. Boats that violate the law are sunk.



Stephen B. Olsen

"You don't harvest your garden with a bulldozer. Destructive forms offishing must be eliminated... Replace predation with symbiosis, mining with husbandry," says the author; who describes what happened to fisheries in New England, USA — an account that is very relevant to fisheries in the Bay of Bengal.

MANY OF US have been planting gardens lately. Any gardener knows that success lies in a symbiotic (not a predatory) relationship between a gardener and his garden. A symbiotic relationship has many feedback loops. The gardener harvests the flowers and the vegetables, but only when they are ready to harvest, and the harvest comes only after a long sequence of weeding, thinning, watering and keeping pests at bay.

There are many demands and many rewards for both the gardener and the garden. If there are no feedbacks and the gardener only takes — or mines — his bit of land, we all know what the result will be. After a season or two, a luxuriant* and beautiful garden becomes patches of bare earth interspersed with clumps of weeds.

We see a marine equivalent in New England's fishing grounds, which are among the most productive on the planet. But the desirable species, the cod family and the flounder family, have never been scarcer. Once-abundant species such as the mighty and delicious halibut disappeared long ago. It is the weed species, the skates, dogfish and sand eels, that today are wonderfully abundant.

As a result, many fishers are bankrupt and a way of life central to New England's culture and economy is as endangered as the fish stocks that supported them for generations.

This sad progression of overfishing and collapse is being repeated around the world. Yes, New England's fisheries are once again in crisis. But this is only another downward tread on a staircase that began many hundreds of years ago, when European fishers discovered and began to mine the extraordinary bounty of fish off New England's shores and northwards to the Grand Banks. Each step in this sustained decline has been marked by more intensive mining of (or predation on) a diverse and beautiful form of wildlife with an extraordinary ability to regenerate itself.

Each increment in the mining has usually been triggered by a more efficient technology. It began with the single hook and line and progressed through multiple hooks on ever longer "long lines" and set nets, and beginning in the 1930s ever more efficient trawls and electronic fish-finding equipment.

Now the most productive sea floor is being scraped over several times a year by heavy gear that sweeps up everything in its path. I have been a bit player in this massive failure. I began going out on commercial boats before I was in high school. By my mid-20s I'd fished in the Mediterranean, the North Sea and off Rhode Island. I loved the people, the work, the spells of boredom in a wide ocean, that particular camaraderie and interdependence that exists only on a fishing boat. Sometimes, I was humbled by my incompetence and my seasickness. In some countries, I shovelled "trash fish' overboard by the ton; in others, the "trash" was what we ate.

Twenty years ago, New England fisheries were in another crisis. Foreign fleets had vacuumed up our stocks. After a long struggle, the U.S. declared a 200-mile territorial sea and we all believed that the

time had finally come to do it right and to see our fishing fleets prosper. As the 200-mile limit approached, a colleague and I prepared a report that documented the evolution of Rhode Island's fisheries and suggested how this state could respond to the promise of a well-managed, rich and self-renewing resource.

One recommendation called for a Rhode Island Fisheries Council that would put the regulators, scientists and fishermen on a single body with broad powers to regulate fishing and conserve the stocks within our three-mile limit.

Soon thereafter, the federal Fisheries Management and Conservation Act of 1976 set up regional councils to manage stocks offshore. Both councils have failed in their fundamental mission, and today we must say that the high hopes of the mid- 1970s have been dashed. We missed a great opportunity, and are now paying a great price.

What went wrong? This is the time to rethink the relationship between fishers and fish. We must get back to basic principles. Perhaps the first step is to examine the goal. In the past, the goal was-in essence-to take as much as possible economically, biologically or whatever, a mining, and therefore predatory, approach.

We would proceed differently if the goal was to balance among (1) sustaining the quality of life of the fishers and (2) sustaining the qualities of the resources upon which they depend. The principle would be to replace predation with symbiosis, mining with husbandry. The challenge becomes making a stewardship ethic operational for the benefit of both the fishers and the fish. If we chose to follow such an approach, we would find that the guideposts to making this operational are fairly clear and well known.

We must recognize that approaching the goal can occur only through a series of strategic actions over many years. We will need clear, unambiguous objectives for each step back up the staircase that has led us down to the weedy garden that now confronts us offshore. We will have to learn because we will continue to make mistakes. Who is the "we"? It must be the scientists, the regulators and the fishers working together toward a common goal. We have learned time and again that stewardship or any other attempt to modify human behavior — succeeds only when the people involved (or most of them) believe in the goal. We also know that fishing effort must be in balance with a sustainable yield. You don't harvest your garden with a bull-dozer.

Destructive forms of fishing must be eliminated. That may mean replacing most trawling with less damaging and wasteful technologies. Perhaps most important is to worry about feedback loops between the fishers and the fish. The lobster trap fishery is doing well. Could the reason be the abundance of positive feedbacks? Every day, hundreds of tons of lobster are taken offshore. Undersized lobsters and lobsters with eggs are thrown back and most survive the trip to the surface. Lobster fishers believe in the regulations and enforce them by common consent. Quality of life for most lobstering families is pretty good. Here the goal is in sight.

Currently, the most popular definition of "the fisheries problem" is quite different from the one suggested here, and so is the proposed solution. Most believe that the problem lies not in the goal but simply in the fact that fish are common property. The prescription is to "privatize", and hand over ownership and responsibility for the fish to a smaller number of fishers who, driven by the desire to maximize their profits, will stop mining what they own and become stewards.

I'm skeptical. I think the problem lies in the paucity of positive feedback between the fishers and the fish. Meaningful stewardship calls for close attention to goals and a lot of hard work. But fishers — certainly the ones I know — are not afraid of work and care passionately about their way of life. It is hard to imagine this today, but perhaps New England's fishers could become a model for how human society can learn to prosper in balance with nature rather than offering us parables for our failures as stewards.

The traditional fishers, independent-minded and unruly as they are, just might embrace such a goal.

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Making Peace in Kanniya Kumari

Bickering groups in coastal areasf Kanniya Kumari get a mechanism to resolve their conflicts

Kanniya Kumari district in the State of Tamil Nadu, India is situated at the very tip of the Indian peninsula and has a coastline bridging the Arabian Sea, the Indian Ocean and the Bay of Bengal. The district has a long tradition of fishing, and over the years the intensity of fishing has increased dramatically-partly due to increasing fisher population; partly due to the lack of alternative income-generating opportunities; and partly due to motorization and mechanization of fishing crafts. One of the implications of this increase in intensity is a reduction in catch per unit effort, which some traders put as high as 60-75% over the last decade. The parallel increase in prices received for fish for a while protected the earnings of the fishers, who were landing less, but even this buffer is wearing off, resulting in decreased earnings. With the size of the resource pie decreasing and with more people to share the pie amongst, competition and conflict have got aggravated. The conflict amongst fisherfolk, competing for reducing resources, is beginning to spill over on to the shore, intensifying conflicts which express themselves in areas far removed from fishing.

Kanniya Kumari is a major tourist attraction; it is known for its rubber and coconut plantations and even for rare earths. But one aspect for which it is getting better known- something the people of Kanniya Kumari are not happy about-is the high levels of conflict which not only disrupt social life but occasionally even result in violence. The coast of Kanniya Kumari, mostly peopled by Roman Catholic fishers is a veritable laboratory for social and political scientists seeking to study conflict. The last two decades, have seen every variety of conflict; inter-caste, inter-religious, rich-poor, and between artisanal and mechanized fishers.

The traditional way of addressing a conflict was for the local government authorities to treat them as law and order issues. This unfortunately often aggravated the situation and while law and order seemingly prevailed, the conflict was rarely resolved and came back in different mutations to haunt the local public.

It was in this context that the Roman Catholic Diocese of Kottar, whose jurisdiction covers most of Kanniya Kumari, decided to intervene, to make peace, as it were. This was not an entirely new responsibility for the Church: traditionally, the Parish Priests and sometimes even the Parish Councils were seen as mediators, counsellors, and even judges, in the almost 100% Roman Catholic fishing communities of Kanniya Kumari. But things are getting more complex and occasionally out of hand. The number of conflicts, their very nature and variety, their intensity, and a lack of easy solution options to resolve the conflicts, brought enormous pressure on the Parish Priests, who often did not have the mediation and conflict resolution skills, and, more importantly, were beginning to lose their traditional legitimacy as the keepers of peace. The strategy evolved by the Church to make peace is interesting and innovative. There may be learnings in their experience that would help other communities facing increased resource-led conflicts.

In March 1996, the Diocese invited a large group of people from coastal areas of Kanniya Kumari for a consultation on how to make peace. The group included Parish Council members, political leaders, representatives of key organizations, and influential members of the communities. The 90 leaders who gathered proposed the establishment of a Coastal Peace and Development Committee to look into the matter and come up with a strategy. They went further and nominated from amongst themselves and from the community a 36-member committee, which included 8 priests working closely with fishers. This committee visited every single coastal village, spending almost their entire weekends in meetings and reported back to the Bishop, suggesting a strategy for peace-making.

The strategy proposed was at once simple and elegant. Its elements, as described by Father A. Selvaraj, who heads the Coastal Peace and Development Unit of the Diocese of Kottar, were:

1. Conflicts are ultimately resolved by the parties in the conflict sitting together, talking and thinking through their problems, coming up with solutions, agreeing to resolving their conflicts for mutually beneficial reasons and then enforcing their decisions upon themselves.

2. People need legitimate, credible representative groups to reach out to, who could help the parties to come together and mediate their discussions and negotiations.

3. Conflicts need to be addressed even as they were evolving, at their early stages, before they became serious.

4. The conflict resolution process has to be transparent and seen as a negotiated decision by the parties involved and not as some sort of a fiat imposed by authorities.

5. Conflict resolution need development to go hand in hand to ensure livelihood and food security, in increasingly resource-constrained situations.

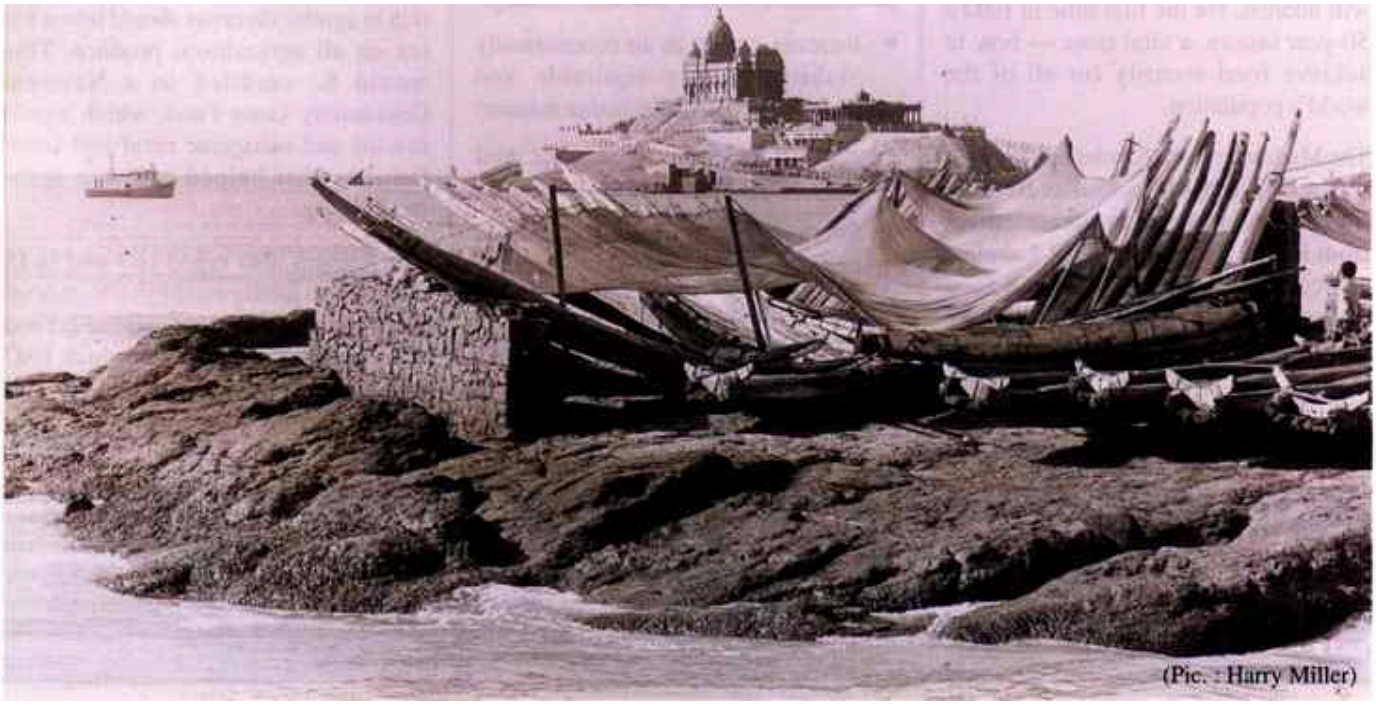
The structure that evolved out of this strategy was something as follows: all the 32 coastal villages which have elected Parish Councils/Village Committees, gave their Parish Councils the task of being the village level Coastal Peace and Development Committee. Five to six villages formed a zonal cluster, and representatives of the village level committees (five lay members and the Parish Priest from each village committee) formed the Zonal Coastal Peace and Development Committees. To speed up action and to reduce response time, the Zonal Committee elected an Executive Committee from amongst themselves, ensuring that each village was represented by one Parish Priest and one lay member in the Executive. Finally,

at the district/ diocesan level, a Diocesan Coastal Peace and Development Committee was formed using representatives (of two lay people and one Priest from each zonal Executive Committee), a few nominee priests from the Diocese to coordinate and facilitate the effort, and representatives of the fisher unions and organizations. What is interesting is that while the initiative was originally taken by the Kottar Diocese, and while the Diocese still facilitates the activity, the Coastal Peace and Development Committee is not seen as a Church-led activity but rather as a people's activity. This is important, as the Church in taking on an enabling rather than authoritarian role has gained more than it lost, by letting the people take the lead and retaining its role by being one of the stakeholders in the activity.

How does all this function in real time and life? Given the fact that it is a people's body, addressing people's needs, when a conflict arises, and often when people see a conflict coming along, they approach the local committee. The issue can go up to the Zonal or Diocesan level depending on who the parties to the conflict are. The committees meet separately with each of the parties to better understand the problems and motivate them to resolve the problem by sitting together. They then try and bring the parties together to think through and resolve their problems. The committees only mediate, and occasionally give their opinions or views when asked-they do not take part in the negotiation ***per se,*** nor do they take any decisions or enforce the decisions. All that is left to the parities concerned. The committees are available to the people literally 24 hours a day and 365 days a year.

Does it work? Amazingly enough, YES. People when asked said they were happy that there now existed a forum to take their grievances to, discuss their problems and to resolve them. They saw it as ***their*** organization. To give a fishery example of a conflict resolved: the artisanal fisherfolk and the mechanized tisherfolk had been feuding for long about depriving each other of resources, interfering with each other's fishing, destroying each other's gears. These conflicts had sometimes ended in violence and bloodshed. With the help of the Coastal Peace and Development Committee a negotiated agreement has been reached which specifies who can fish where, when and how. Department of Fisheries staff were brought into the consultation and their views considered. What's more, the artisanal fishers and mechanized fishers' unions have offered five boats each with crews to monitor and supervise the enforcement of their decision, thus saving the government the cost of enforcement! The solution seems to be holding, perhaps showing the way to how resource users can become resource managers. The Coastal Peace and Development Committee, believing in development as an important solution option for peace, works closely with the Kottar Social Service Society, the Diocese's development arm, and guides its efforts to make available land rights (pattas) for people to build their houses on, helps with provision of basic utilities such as drinking water and electricity, works with government to ensure road access to communities, and even helps provide credit to people to set up enterprises and acquire land and homes. In doing all this, it again works as an enabling and facilitating agent rather than a doer per se. The experiment in Kanniya Kumari needs to be closely studied and its learnings used, as it may be the rare beacon of hope in an otherwise gloomy scenario, and may well provide some answers leading to sustainability of resources and livelihoods. It may also encourage other communities to take responsibility for their own resources, problems and solutions, overcoming the creeping scepticism that forces people to look elsewhere for solutions to problems, when the answer lies amidst themselves.

— RATHIN ROY



(Pic. : Harry Miller)

Pic : E. Amalore

Scientists prepare paper for World Food Summit

Harness science and technology, and transform agriculture into an instrument for a "global evergreen revolution".

That sums up the message of an international summit of science academies held in Madras, 8-11 July. A declaration adopted by the summit will be further discussed and finalized at another meeting of scientists in Rome from 30 September to 2 October. The twin meetings will provide the substance for a World Food Summit to be held in Rome, 13-17 November, 1996. This summit of heads of state and government will address, for the first time in FAO's *50-year* history, a vital issue — how to achieve food security for all of the world's population.

The Madras Science Academies Summit was attended by 46 scientists from all over the world, including representatives from FAO, UNDP and UNEP. Labelled "Uncommon opportunities for a food secure world' it was organized by the M S Swaminathan Research Foundation, Madras, and sponsored jointly by the National Academy of Agricultural Sciences, New Delhi; the Academia Nazionale Delle Scienze, Rome; and the Third World Academy of Sciences, Trieste.

The Summit urged three social and economic policy measures to facilitate a "science for sustainable food and nutrition security movement" — stabilizing the population; agrarian reform in developing countries; and sustainable life-styles in industrialized countries.

The Summit called for a 10-point scientific and public policy agenda for sustainable food and nutrition security.

- Increase output in an economically viable, socially equitable and environmentally sustainable manner.
- Accord priority to science and technology for the public good.
- Formulate sound environmental policies.
- Ensure entitlements, asset reform and technological empowerment of the poor : essential to conserve natural resources, alleviate poverty and ensure food security.
- Integrate the gender perspective into technological development.
- Take the economic benefits of agro-processing and agn-business to poor families through rural value-added enterprise and partnerships with the private sector.
- Adopt a holistic view of production, distribution and consumption in framing macro-economic policies in the areas of pricing, trade and investment.
- Promote a learning revolution in agriculture. Disseminate extension information through computer-aided information shops operated by village youth. Vocational polytechnic institutes may be set up for the rural poor.
- Implement existing global conventions, including those on climate, biodiversity, desertification, and the oceans; and the global plan of action on population, gender, habitats, social development, plant genetic resources,
- Institutionalize procedures to focus on both food production and access to food.

The Summit urged industrialized nations to contribute an additional 0.01% of GNP as development assistance. This money would be credited to a Global Fund for Biodiversity for Sustainable Food Security. This money would serve as a trust fund to safeguard important biodiversity areas. Developing nations rich in agrobiodiversity should levy a 1% tax on all agricultural produce. This would be credited to a National Community Gene Fund, which would reward and recognize rural and tribal families that helped enhance agro-biodiversity.

The Summit also urged G-7 and G-15 countries tojointly establish a high-level Steering Committee for Sustainable Food and Nutrition Security, for which FAO could provide the Secretariat.

— **S.R.M.**

BAY OF BENGAL NEWS

Bay of Bengal News is a quarterly publication of the Bay of Bengal Programme (BOBP), a regional fisheries programme which covers seven countries around the Bay of Bengal — Bangladesh, India, Indonesia, Malaysia, Maldives, Sri Lanka and Thailand. The Programme plays a catalytic and consultative role: it develops, demonstrates and promotes new methodologies, techniques and ideas to help improve the conditions of small-scale fisherfolk communities in the member countries through more effective fisheries management. The BOBP is sponsored by the Governments of Denmark and Japan and by member governments in the Bay of Bengal region. The main executing agency is the FAO (Food and Agriculture Organization of the United Nations).

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