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Where do we go from here?

Some thoughts on the need to promote fisheries development and management in the Bay of Bengal region into the new millennium.

Some things we already know. The third phase of the Bay of Bengal Programme for Fisheries Management (BOBP) comes to an end in December 1999. The Indian Ocean Fisheries Commission (IOFC) and with it the IOFC's Cornnuttee for the Development and Management of Fisheries in the Bay of Bengal (BOBC), which was BOBP's parent body, as it were, have ceased to exist. Which leaves APFIC (Asia-Pacific Fisheries Commission) as the only regional body in this part of the world concerned with fisheries development and management, covering a vast area, all the way from West Asia to the Pacific. A small effort supported by the Global Environment Facility to evolve a programme to address cross-boundary environmental problems in the Bay of Bengal Large Marine Ecosystem is in the pipeline and may form the foundation upon which new regional efforts can be built. Several regional organizations exist in Asia, addressing fishery concerns and needs, such as SEAFDEC, NACA and ICLARM but their focus is more on South-East Asia, which leaves the South-Asian countries with their problems not wholly addressed.

The Bay of Bengal region is quite unique. It shares a large marine ecosystem. The

fisheries and fishers of the region in spite of their variety share several similarities in terms of concerns, problems and approaches to fisheries development and management. Most importantly, over the last twenty years of working together with the Bay of Bengal Programme (BOBP) the countries and their fishery agencies have evolved a close and convivial working relationship. So the questions, simply put are, what happens after the BOBP closes down? Are there needs in the region that can be addressed more efficiently and appropriately through a regional mechanism? And, if so, what kind of a regional mechanism or body does the region need? These are the questions the representatives of the Member-Countries of the BOBP will be grappling with at the 24th Meeting of the Advisory Comniittee of BOBP in Phuket, Thailand, 13-16 October 1999.

Sometimes it is useful to begin at the beginning. In 1979 when BOBP came into being fisheries development, at least for small-scale fisheries, was perceived as a need to evolve technologies that would increase production and therefore incomes, which is what BOBP did during the first phase. Along with introducing technologies the programme grappled with several socio-economic issues including credit supply, non-formal education for adults and children, extension, alternative income generation and women's issues. The second phase of BOBP which came into being in 1987 not only continued the work begun in the earlier phase but focused hard on fisher community development and on developing and strengthening the capacity of fishery agencies to address these needs through extension. Meanwhile the scenario in small-scale fisheries, in particular, was changing and countries began to notice some disturbing trends such as stagnating and even declining catches, reduction in average size of fish caught and changes in the species composition of catches, all ominous signs of fisheries stocks under stress. It was therefore natural, particularly with global fisheries also showing signs of trouble, for the member countries to start worrying about conservation and management. The third phase of BOBP, which began in 1994, reflected these concerns and the Programme's mandate was exclusively to enable and facilitate improved management of fisheries through awareness building, and building the capacity of fishery agencies to address management and technical assistance.

Today, with the new millennium around the corner, the three most important goals relating to the fisheries sector of the countries around the Bay of Bengal are, broadly speaking:

- Increasing fisheries production, not only to feed growing populations and provide livelihoods to millions of fishers but also to earn valuable foreign exchange.
- Safeguarding and enhancing fisheries trade by improving the quality of fish and fish products.
- Conserving aquatic eco-systems and better managing fisheries to ensure sustainability into the future and make the above two goals happen.

The third phase of BOBP has developed considerable awareness amongst stakeholders about the need for, the benefits of and the methods of fisheries management. But this is just the tip of the iceberg. Learnings from the pilot effects need to be extended to other areas within the countries and to the rest of the countries. The learnings from BOBP's efforts and consultations with stakeholders have given us a glimpse of the difficulties countries face. Fisheries management seems to be more about managing people than fish. The multiplicity of stakeholders in fisheries and the fact that aquatic eco-systems are used by a variety of competing and often conflicting sectors makes the task very complex. Fishery agencies need new skills to promote community-based and stakeholder management of fisheries. Legislation needs to be adapted to carry out these new measures. Stakeholders need to be made aware and persuaded through communications and consultations. Conflicts need to be resolved. New decision making platforms need to be evolved to carry new forms and approaches to management. Such groups need to be empowered to participate actively in fisheries management. To cut a long story short a lot of work remains in the drive towards sustainability of fisheries.

The question is can national fishery agencies cope with these new demands and, if not, is there a need for some sort of a regional organization to assist, facilitate and enable national efforts? There is considerable capacity in the fishery agencies of the Bay of Bengal region but it is unevenly distributed. Co-operation can not only benefit the countries but also more efficiently utilize existing capacity. Such co-operation, as BOBP has shown, can also be a valuable asset in dealing with new situations and problems that increasingly overlap jurisdictions, such as shared fish stocks, inter-country disputes and conflicts, environmental degradation that has cross boundary effects, to name just three.

What are some of the options?

- The Bay of Bengal Programme could be extended into a new phase with a new mandate to meet new needs, provided donors can be found to support such an effort. The documentation of learnings of the third phase of BOBP has clearly shown that a firm consensus exists amongst the member countries requesting that BOBP continue beyond its present phase.
- Most of the member countries evince keen interest in evolving an inter-governmental body, supported by contributions from the countries and supplemented by donor contributions. This would require a firm commitment from all the member countries and contributions to make it happen. Several examples where regional donor-assisted organizations grew into inter-governmental bodies exist to show the way, such as NACA and INFOFISH.

Whatever be the option, countries of the Bay of Bengal region need to come together and decide now, as time is running out. They have to decide on what the needs are into the future. They have to justify why these needs can be better met through regional mechanisms. They have to firmly commit themselves to developing and evolving such mechanisms and paying for them, at least partially, while looking for sources of donor support. If they can, we will have an answer to the question: Where do we go from here? The stakes are high. And the choice is ours. (See also BOBN Vol II, No 6, 1997 on "After 1999 Some Thoughts on BOBP as an Inter-Governmental Agency", and BOBN Vol II, No, 13, 1999, on "Indian Fisheries officials urge that BOBP continue as Inter-Governmental Programme")

Rathin Roy

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Documentation of Learnings from the BOBP's Third Phase

Two fisheries experts – Dr Garry Preston and Dr Y S Yadava – recently spent six weeks in the Bay of Bengal region, visiting offices and activity field sites of BOBP member-countries, talking to officials, scientists and fisherfolk taking part in the Programme's activities. Their mission: to identify and document the learnings and lessons from the BOBP's Third Phase. Here is a brief summary.

The BOBP's work over the past 20 years can be divided into three distinct phases. They concentrated, broadly speaking, on fishing technology, fisher community development, and coastal fisheries management. The first two phases focused mainly on facilitating higher fisheries production. During the third phase, the Programme shifted its emphasis toward management of coastal resources, mainly through stake-holder consultative and participatory approaches.

Lessons and Issues:

Participatory Approach to Coastal Management:

- *Time horizon:* All BOBP activities in member-countries have been based on the above approach, which consists of six steps: problem identification, stakeholder identification, stakeholder analysis, problem analysis, stakeholder consultations and negotiations; adoption and implement-ation of the management plan. Step six is itself not the end of the process, since management plans have to be periodically reviewed in response to changing circumstances.

  BOBP has had just about three and a half years to implement these activities, since the first 12 to 18 months of the Third Phase were spent in situation analysis and defining the BOBP's role during the Third Phase. A major lesson from BOBP is therefore that a five-year time-scale will not allow completion of a process as complex as management. A longer time horizon is needed.

- *Strengths and Weaknesses:* The participatory management approach may lead to more effective fisheries management arrangements and better compliance than a centralised top-down approach, but the likely costs of the first approach should not be under-estimated. Participatory management almost always needs an external input in terms of facilitation and funds – from government, an NGO or the BOBP. It may be more cost-effective to make existing centralised fisheries management systems more participatory than replace them wholesale with large numbers of locally-based fisheries management systems.

- *Large-scale issues must be addressed:* BOBP's work has focused on communities scattered along a coastline, around a bay or an island. In doing so, several external factors affecting fisheries have been identified, requiring a larger framework of analysis and action. Besides operating at the community level, environmental or coastal zone management initiatives must be put into place at a higher level. This is because land-based and sea-based activities outside the control of coastal communities (such as deforestation, excessive use of agro-chemicals, practices of urban sewage and waste disposal, oil spills, pollution from ships etc) may degrade coastal waters and seriously impact marine resources. Some BOBP member-countries suggested that it would have been more useful if BOBP had been mandated to assist governments to formulate broad coastal management policies or plans.

- *Technical interventions:* The participatory approach is an approach to a solution, more effective than a government-driven approach. But it is not the solution itself. It does not by itself solve coastal management problems or put management arrangements into place. It may identify solutions to problems, but these solutions (such as construction of small fishery harbours or landing sites, adding value to fishery products, deploying fish aggregating devices, setting up alternative income-generating activities, constructing schools and health centres) will need more money, specialised technical expertise or legislative effort. It perhaps should be made clear early in the participatory management approach that funds may not be available to implement final solutions – so that the stakeholders do not feel disappointed and let down.

- *Expectations:* Excessive expectations about the likely results of participatory management should be avoided. It should be made clear that management may not for example automatically raise the catch per unit effort (CPUE), though it could lead to other benefits (it could make fishing operations more profitable, it could slow the decline of CPUE). Likewise, high expectations of resource enhancement – from measures such as deployment of artificial reefs or release of juveniles for restocking – should be discouraged.

BOBP Implementation:

Regional approach: Member countries were unanimous that the regional approach such as BOBP's is valuable in addressing coastal management issues. Advantages: easy access to specialised advice, active information dissemination, learning from the experience of other countries. BOBP workshops enable personal

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contact among officials and experts of different countries. There is also a sense of pride from partnership with an international programme. Member countries were unanimous that the third phase should be continued in some way. expanded if possible.

- *Human and financial resources:* Member-countries have praised highly the advice, inputs and technical support provided by the Programme, but note that the small size and limited financial resources of BOBP limit the assistance BOBP can provide.

- *Pilotprojects: The Programme's pilot* activities are meant to serve as a base from which positive approaches and experiences spread to other areas. Except for 1 or 2 cases, neither BOBP nor member-countries has actively promoted such replication as yet (mainly because the activities have not been completed). In fact, experience-sharing appears to have been more effective at the international level than the national level. However, there have been spin-offs from the pilot activities in the form of other projects. Three projects in Bangladesh, supported by UNDP, DFID and the Bangladesh Government respectively, and one in Indonesia, supported by the Asian Development Bank (ADB), are spin-offs from the BOBP model and pilot activities. FAO/TCP and SPFS project proposals are under preparation for Thailand and Malaysia.

  Pilot activities at the national level have not been replicated, but training courses to introduce participatory approaches in dealing with stake-holders have been useful. A major problem has been the frequent transfer or promotion of officials trained by BOBP – the project loses their services. This has affected the implementation of BOBP-supported activities. The BOBP model of a stakeholder approach is steadily being pursued by member- countries.

- *Awareness-raising:* BOBP has had a strong impact on raising awareness about fisheries and coastal management issues. It is now recognised that marine resources are finite, and that management is essential if benefits are to be optimised. The creation of a core group of fishery officers at senior and middle levels in each country who are committed to improving fisheries management, is one of BOBP's major achievements.

  However, there is a diversity of views and opinions on what constitutes participatory management. Further, there is a big difference between awareness of the need for fisheries management and actual management. Awareness-raising is only the first step in the process of moving towards management of coastal resources in the region.

- *Information dissemination: A* particular effort was made to assess the value member-countries attached to the Programme's information activities. Most countries spoke highly of the information activities, particularly the Newsletter, *Bay of Bengal News,* which was the main channel for information-sharing. Some of the Newsletter's articles had been translated into local languages. The Programme's posters were seen in many of the locations visited by the team. The consensus was that these too were useful in spreading management awareness. National counterparts attached great value to local-language materials whose production was supported by BOBP.

- *Regional-level activities:* There was little specific comment on regional activities otherthan that of information dissemination. BOBP's regional workshops and seminars are considered a necessary adjunct to national-level projects.

- *Advocacy and leverage:* BOBP's advocacy role was emphasised in a number of countries. Its endorsement of a fisheries management initiative lent it credibility in the eyes of both fisheries stakeholders and govermnent decision-makers, and facilitated approval by a central government or an international agency. At the other end of the spectrum, the commitment of coastal communities to participatory management activities was greatly enhanced by the perception that their effort was being observed by other counthes.

BOBP member-countries:

- *Human and financial resources:* In most countries, national projects do not enjoy easy access to government funds. BOBP counterpart staff were therefore disappointed that the Programme's own fund allocations were less generous and more difficult to access than they had hoped. However, the allocations were in keeping with the mandate and spirit of national execution and cost-sharing, which are the modality of BOBP's catalytic intervention. To a greater degree, the success of BOBP activities in member-countries can be attributed to this spirit of national execution and cost-sharing which instils greater work and financial discipline.

  On most occasions, BOBP national coordinators have problems utilising government funds on BOBP-related activities, even when, technically speaking, funds have been allotted for the purpose. One difficulty is that the Programme's activities are somewhat unconventional, not in line with usual fishery agency activities, and therefore outside any established budget category or allocation.

  While financial control procedures are important, there is the risk that project activities may be delayed or cancelled because the national project co-ordinator cannot access either BOBP or local funds though both may be technically available. There's a need for BOBP to be vigilant on this issue and ensure that procedures do not hamper programmes.

- *National execution arrangements:* BOBP's operational philosophy is that it should support the development of national capacity to effectively manage coastal resources in member-countries. It has shown that national execution can and does work.

  BOBP's *modusoperandi* for national execution is that a national coordinatof takes responsibility for liaison with BOBP and management of national inputs. This arrangement puts the burden of responsibility on the national government and generates a sense of ownership and participation and responsibility about the activity. The flip side is that the national coordinator also has to take on other responsibilities. So he cannot devote as much time as he would like to the BOBP activity. This has at times delayed the implementation of BOBP activities.

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Another weakness relates to transfer, promotion, resignation or retirement of government staff assigned to BOBP. The Programme thereby loses an experienced national coordinator and gets some one else who needs to go through a learning process before he canbecome effective. This process has a significant negative effect on the Programme.

No perfect solution to this problem emerged following the study team's investigations. But a good arrangement would be for national coordinators to be paid by BOBP and seconded to the Programme. The national coordinator would thereby devote all his time to BOBP work. The money paid by the Programme can fund an additional staffer who will take over functions and duties discharged earlier by the national coordinator.

The participatory management approach often requires government officers to devote much time to travel and field work. They are unwilling to work outside office hours unless they are compensated, on most occasions, BOBP has provided some travelling allowances to the government officers to encourage field work.

Incompatible functions: Where fisheries officers administer welfare schemes, and can therefore dispense patronage, fishers become overly deferential to the officer. The process of frank two-way communication, essential for participatory management, suffers.

- *Involvement of NGOs:* Government departments are generally suspicious of NGOs. Where NGOs have taken part in BOBP activities, the attitude of the national fishery agency has ranged from lack of interest to hostility. It is said that NGOs should stay out of technical areas where they lack expertise, instead of creating confusion by offering advice contrary to that of the national fishery agency. NGOs should stick to social issues. On the other hand, NGOs are wary about a close relationship with government departments. They do not wish to be identified in the eyes of the community as being too close to them.

This is untortunate because NUOs have strong links with coastal communities. They are more flexible about field work during odd hours and do not demand special overtime or travelling allowances. They can be more responsive with stakeholders as they are not constrained by the curbs of officialdom. In some countries, external donors prefer to channel funds through NGOs for precisely this reason.

Tripartite working relationships between government, the fisher communities and the NGOs would be very useful.

The Future

BOBP may be said to have left a footprint in the region – it has influenced and changed behaviour concerning coastal resource management. *Member-countries have expressed a strong desire to see the work begun by BOBP continue qfter the currently scheduled closure of the externally supported programme on 31 December, 1999.*

BOBP's Third Phase pilot activity relating to fisheries management in Bangladesh has led to three Jbllow-up projects —supported by UNDP DFID and the Bangladesh Government respectively.

Fisheries and Aquatic Resources Management: Lessons not Learned Yet

by Kee-Chai **CHONG**

Governments have been involved in fisheries development and management over the past half a century. But poverty persists despite plenty. Environmental and resource problems are at the root of much of this poverty. Human beings inflict the greatest damage on the environment, and in the process victimise fellow human beings. This article reviews lessons not learned from history by many of us. It refers specifically to lessons not learned in fisheries and aquatic resource management.

What are the important lessons *not learned* (in current fisheries and aquatic resources management), in spite of the growing body of knowledge and experiences in the subject?

Lesson not learned, No. 1

To begin with, we have not realised *that fisherfolk are fast learners. They adapt* and adjust quickly to changing circuinstances that affect their way of life, their food and livelihood security. Their survival instincts are wholly rational, given their circumstances. It is the people who are paid to help them who have not learned their lessons. Fisheries poverty cannot be alleviated without fisheries sustainabiity.

Lesson not learned, No.2

Not enough emphasis is paid infisheries management to controlfishing effort and capacity. The expansion of both individual and aggregate fishing effort has been unrestrained and unchecked despite the realisation that controlling effort is crucial to ensure sustainability of fisheries. This expansion still goes on. With subsidies to boot!

Lesson not learned, **No.3**

There is a real need for fisheries managers and management to adjust to technology change – particularly technology advances in fisheries – at both the pre-harvest and post-harvest levels. Fishing technology should not displace labour and increase livelihood insecurity. It should augment and complement labour. Fish processing capacity – already excessive – continues to be installed, driven by the insatiable demand for seafood. This in turn brings in imported fishing capacity to add to existing local capacity. This is another glaring lesson not learned, despite the numerous research findings and experiences that highlight such plight.

Lesson not learned, No. 4

Fisheries and aquatic resources management is still government-driven, though experiences worldwide show that partnership between government and industry strengthens management. Slow faltering steps are being taken in the direction of consultative and participatory resource management, but the ground reality is still one of govermnent management. In fact, doubts linger about government interest and enthusiasm for community-based management, there is mistrust and lack of confidence, because

"Fisheries poverty cannot be alleviated without fisheries sustainability," says the author.
(Picture showsfishing community in Langkat district, Indonesia)

government managers lack visibility; their contacts with fisherfolk (who are actually their clients) are infrequent, and follow-up is rare.

It is quite common that years after a policy has been announced, not a single official has visited a fishing village or talked to fisherfolk about it.

Lesson not learned, No. 5

Government managers need to be proactive if they are to encourage fisheries management. They should maintain regular contacts with fisherfolk, if they are to acquire the confidence to initiate and carry out community-based fisheries management (CBFM) – or if they are to win the trust of fisherfolk, essential for the task.

This is not happening. Fish harvesters are by and large individualistic and work independently of other fish harvesters, especially when it comes to fishing. They keep to themselves, although they fish in highly interactive fisheries. It is not easy to bring together an assortment of highly independent and individualistic fish harvesters to manage and conserve the very resources on which their livelihood security depends. It is even more difficult if government staff remain remote and distant from fisherfolk. This is a lesson government managers have yet to learn.

Management is all about visibility. It is bad enough that management is a complex process – and a generally abstract concept as far as fisherfolk are concerned. Managers must be seen in the field.

Lesson not learned, No. 6

There is insufficient effort to increase awareness among fisherfolk about the need for, the benefits and methods of management. If compliance with fisheries regulations is low, it is not only because of poor enforcement, but also because of lack of understanding by fish harvesters about the need for, the benefits and methods of management. Well-thought out plans to improve awareness are essential. Management is all about reaching out to the fisherfolk. Information truly empowers.

Lesson not learned, No. 7

The socio-economics of fishing communities suffers neglect, though experience has shown that fisheries management has as much to do with fishing communities as with fish and fisheries biology. It is accepted that research on the economics, socio-economics, sociology and anthropology of fisheries can shed more light on the circumstances of fishing communities and their behaviour. But very little research, especially long-term research, is carried out in these areas. Research money for such studies is sparse. Its supply is *ad hoc* – based on spare change. Human and financial resources continue to be allocated to collect fisheries statistics. No wonder timely socio-economic data are hard to come by, as compared to biological research data.

It must be borne in mind that socio-economic data become obsolete very fast, and their relevance over a specific time duration and population sample is limited. Therefore collection, compilation and analysis of socio-economic data has to be a continuing process so that decision-makers get the right inputs into management decision-making.

Lesson not learned, No. 8

Licensing is not just a procedure for registration of fishing boats, it can be an active tool to promote and strengthen fisheries management. While fisheries licensing has been practised in many countries for a long time now, it is still perceived as registration. Valuable lessons have yet to be learned about using licences to improve the efficiency and effectiveness of fisheries management.

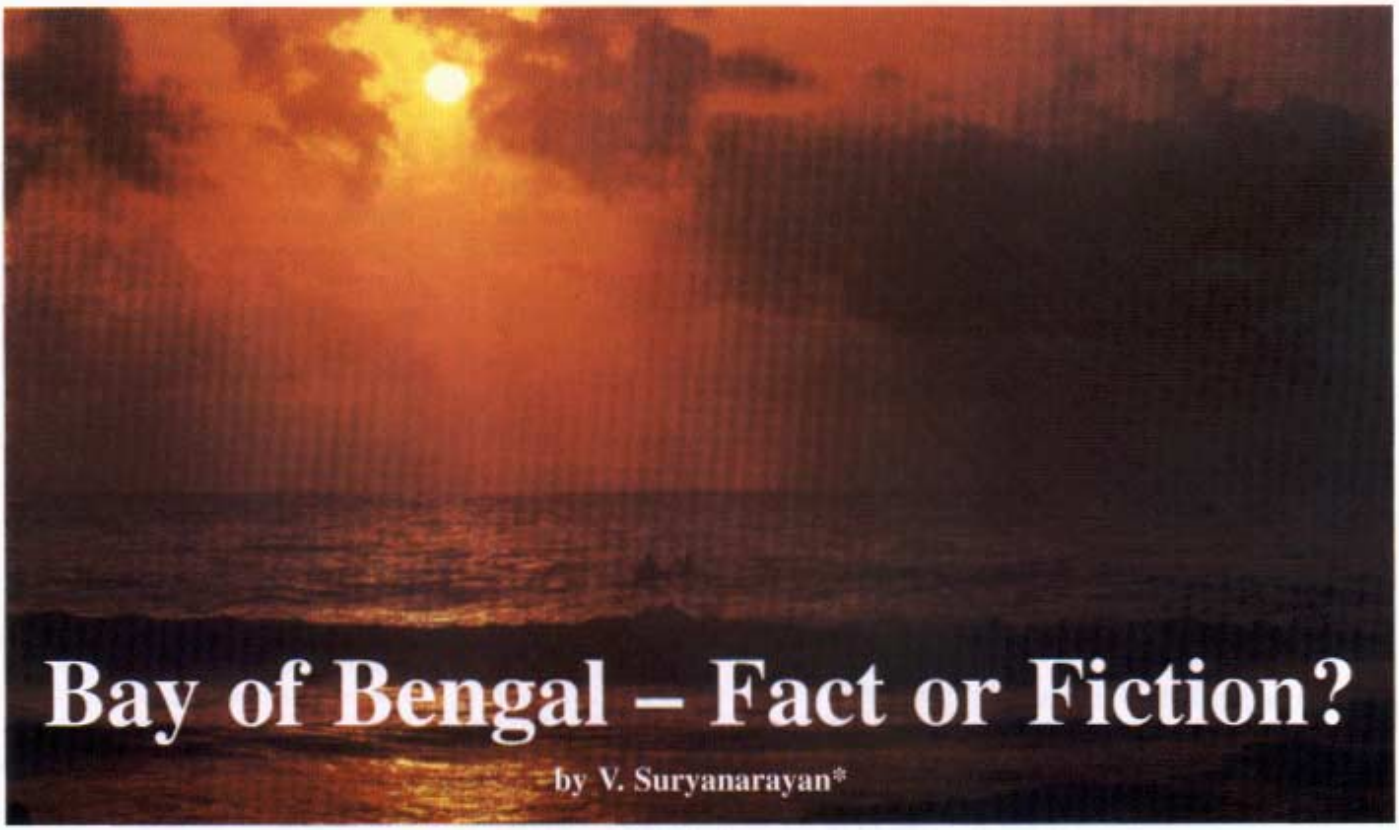
- Licensing can be used to generate revenues to pay for management – especially the costs of enforcement. As the government sector shrinks in many counthes, as does its revenues, it has to find new ways of paying for management costs. Licence fees offer an option.
- Licensing enables a clear separation between legal and illegal fish harvesters. Illegal (non-licensed) fish harvesters can be apprehended and brought to book for violating fisheries management regulations. Removing non-licensed fish harvesters can reduce the total aggregate fishing effort and thus improve resource sustainability.
- Licensed fish harvesters can be closely monitored to ensure that they comply with management rules and regulations. The licensing authority may initiate an incentive system of reward and penalty to encourage greater compliance with the provisions of the licences. It is not in human nature to follow rules and regulations. Law abiding fish harvesters are few and far between, especially in an open-access resource system such as fisheries. Unless sthct enforcement is observed and sufficiently severe sanctions or penalties are meted out, greater compliance cannot be expected.
- Licensing can be used to delineate clear physical or geographical boundaries – fishing areas or grounds that are open to exploitation or closed to fishing or even allowable catch. The use of inexpensive Geographical Positioning System (GPS) devices, which can be individually owned and operated, is getting to be popular. GPS, together with remote sensing and the use of licensing to delineate boundaries, can strengthen the management of marine resources.

Lesson not learned, No. 9

Jobs are needed, but not enough are created to supplement fishing as an occupation. Unless alternative or supplemental job are found for these fisherfolk to improve their purchasing power, no amount of management can succeed in promoting sustainable fisheries.

In conclusion, there still remains great resistance throughout the world to cutting back fishing effort and capacity. *This is mainly because any exercise to work out the cost of production of fish landed fails to consider the real costs of fishing – especially the cost of using open-access common property resources.* Fishing effort will automatically decline once all the costs of fishing, including resource costs, are taken into consideration in calculating production costs and the final market price of the fish. The fish we buy is still largely regarded as a free good from the seas and oceans.

It is time that all these lessons are learned quickly and put to use systematically in the interest of fitheries and resource management and sustainability. Before it is too late!



Bay of Bengal – Fact or Fiction?

by V. Suryanarayan*

The colonial and cold war legacies in the university system have done incalculable harm to Indian scholarship and thought processes. Despite maritime heritage, few people in India are conscious of the fact that the island of Pu Breush, located in the North West of Sumatra, is only 92 nautical miles away from Indira Point, which is less than the distance between Madras and Tirupati. Similarly, Phuket in Thailand is only 273 nautical miles away from Indira Point, which is less than the distance between Madras and Madurai.

The United States was the first to realise that knowledge is power. The American universities recognised the link between scholarship and foreign policy. Prof. Bruce Cumings of the Northwestern University has rightly pointed out that the Area Studies Programmes, which started during the height of the Cold War, were the "creation of the national security state". These programmes were structured and financed, and their research agendas and methodologies were set by "state/intelligence/foundation nexus". Those who had dissenting views had to face difficult times. "Henry Kissinger at Harvard, William Buckley at Yale, or President Raymond Allen at the University of Washington, regularly spied for the Federal Bureau of Investigation, providing information concerning 'subversive activities' at these institutions". The research agenda set by the US academicians was aped by many universities in developing countries. The position of the US in the global scene and rivalry with communist countries determined what should be studied and researched. For example, missing from the literature extolling the South Korean miracle was the fact that thousands of its workers and students were being beaten and professors tortured and jailed by their governments. Equally important was that Japan got favoured treatment as a success story of development, and China got obsessive attention as a pathological example of abortive development.

India has land and maritime boundaries with Myanmar, and maritime boundaries with Thailand and Indonesia. These countries are not only our next door neighbours, they have been in the past profoundly influenced by Indian political ideas, institutions, religion, art and language. In his book, *The discovery of India*, Jawaharlal Nehru quotes from a letter that he received from a Thai student, who studied in Shantiniketan, "I always consider myself exceptionally fortunate in being able to come to this great and ancient land of Aryavarta and pay my humble homage at the feet of grandmother India in whose affectionate arms my mother country was so lovingly brought up and taught to appreciate and love what was sublime and beautiful in culture and religion". Nehru further added, "There was a time when India was a mother country to them and nourished them with rich fare from her own treasure house, Just as Hellenism spread from Greece to the countries of the Mediterranean and in Western Asia, India's cultural influences spread to many countries and left its powerful impress upon them". What is more, historians like K.M. Panikkar, Nilakanta Shastri and R.C. Majumdar used the term Southeast Asia to cover both South Asia and Southeast Asia. By accepting the American concept that Southeast Asia — countries stretching from Myanmar to the Philippines — is a different entity, we intellectually distanced ourselves from our immediate neighbours.

The concept of ocean as a unifying force and focus of regional co-operation has not yet been fully grasped. Take Southeast Asia as an example. Except

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Laos, which is landlocked, all others are maritime counthes. Singapore is an island state, and Indonesia and the Philippines are archipelagic states. Even within ASEAN, issues relating to maritime co-operation have not received adequate attention.

We in India should redefine the concept of "area" taking into consideration historical realities and geo-political imperatives. I have been, in recent years, advocating the concept of "Bay of Bengal Community". In a wider sense, the Bay of Bengal Community would also include the Malacca Straits and the Andaman Sea. The underlying idea is not to replace SAARC or ASEAN, but to have an additional organisation which will bring together India and its eastern neighbours.

Historically, all members of the Bay of Bengal Community — India, Bangladesh, Myanmar, Thailand, Singapore, Indonesia and Sri Lanka have witnessed dynamic interaction between maritime trade and cultural evolution. What Kenneth McPherson wrote about Indian Ocean in general applies with greater validity to the Bay of Bengal. To quote McPherson: "The Indian Ocean region was the home of the world's first urban civilization, and the centre of the sophisticated commercial and maritime activities. The ocean, as a greathighway and source of food andraw materials, was a vital force moulding the many societies on its shores long before people maintained written records".

Bounded by India and Sri Lanka to the West, Bangladesh to the North, and Myanmar, Thailand and Indonesia to the East, the Bay of Bengal is a composite geographical and ecological unit. It is about the same size as the Mediterranean Sea. The littoral states contain almost one fourth of the world's population. A recent publication of the UN-executed Bay of Bengal Programme points out: "It encompasses the continental shelf offthe Maldives, Sri Lanka and Indonesia, where tuna are abundant; the nuthent rich upland riverine basins and the unique Sundarbans mangrove ecosystems 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". Bay of Bengal is a gift of Mother Nature and the littoral states should co-operate with one another for common well being. Exploitation of living and non-living maritime resources, development of maritime communications, ship building and ship repair; weather forecasting; prevention of pollution and combating of maritime terrorism — these tasks which are the exclusive responsibilities of individual countries at present can best be accomplished through regional cooperation.

Unlike the South China Sea, where conflicting territorial claims threaten peace and stability, the Bay of Bengal region is relatively an area of tranquility. India has settled its maritime boundaries with all Southeast Asian neighbours. With Indonesia, the first agreement was signed in 1974 which settled the boundary between the Great Nicobar and Sumatra. In 1977, the boundary line was extended both into the Indian Ocean and the Andaman Sea by another agreement. In the same year, the boundary between India and Thailand in the Andaman Sea was negotiated and an agreement was signed in June 1978, which entered into force in December 1978. In February 1978, the thjunction pointbetween India, Indonesia and Thailand was settled at official level in Jakarta. The agreement was signed in June 1978 and came into force in March 1979. The maritime boundary agreement with Burma was ratified in 1987. As far as South Asia is concerned, the India - Sri Lanka maritime boundaries were settled by two agreements in 1974 and 1976. The agreements mentioned above were based upon the principle of equidistance, though in the case of Sri Lanka and Burma some concessions were made by New Delhi for promoting good neighbourly relations. The only unsettled maritime border is with Bangladesh. The New Moore Island is a subject matter of territorial dispute between the two countries.

Co-operation among the Bay of Bengal Community would pave the way for confidence-building in security related issues. It may be recalledthat the modest expansion of the Indian Navy near the Andaman and Nicobar Islands, in the 1970's and 1980's, led to adverse reactions in Australia and in some Southeast Asian countries. However, welcome initiatives taken by India in the 1980's and 1990's have gone a long way in removing apprehensions from Southeast Asian countries about the intentions and capabilities of the Indian Navy. Prime Minister Goh Chok Thong once said that Singapore entertained fears about the accelerated growth of Indian Navy, but once the situation was explained, his government no longer considered the view tenable. ASEAN concerns regarding naval expansion in the region have been allayed after visits by senior officials from these countries to the naval facilities in the archipelago. What is more, joint naval exercises with United States, Australia, Malaysia, Singapore and Indonesia (and also with ASEAN collectively, appropriately named MILAN) have contributed to better appreciation of India's security needs.

The economic crisis in the region indicates that difficult times are ahead for Southeast Asia. From being examples of rapid economic development, these countries are facing economic stagnation and decline. Growth rates that averaged 8-10 per cent per annum over many years have plummeted to negative rates of growth. Economies which had full employment and labour shortage are undergoing increasing unemployment, galloping inflation and flight of foreign capital. Compounding the situation, the crisis has triggered off inter-ethnic tensions and political turbulence. China has responded to the economic crisis in an admirable manner. It has repeatedly affirmed that the Yuan, the Chinese currency, would not be devalued, for such an action by China would destabilise the economies of thesecountries still further. India should rise to the occasion and help, in whatever way it can, the counthes of Southeast Asia in their dire moment of need.

The Bay of Bengal Conmiunity — as a specific area of regional co-operation deserves greater attention from academicians and policy planners alike. The first welcome step in this direction is the establishment of Bangladesh - India - Myanmar - Sri Lanka - Thailand Economic Cooperation (BIMSTEC) in June 1997.

Benign interaction among the members of the Bay of Bengal Community would strengthen those nationalist forces which advocate the Zone of Peace, Freedom and Neutrality (ZOPFAN). And ZOPFAN is based on the same objective which Jawaharlal Nehru advocated in Indo-China in the 1950's — convert it into an "area of peace" so that Vietnam, Laos and Cambodia could develop themselves in an environment where there was no super-power rivalry.

Author Interview

Fisheries Management the Sri Lankan Century

"One hundred years **of fisheries management in** Sri Lanka: lessons **for the future"**
by K Sivasubramaniam, published by Department of Fisheries and Aquatic Resources, Sri **Lanka, 1999. Pages** *156,* **price not stated.**

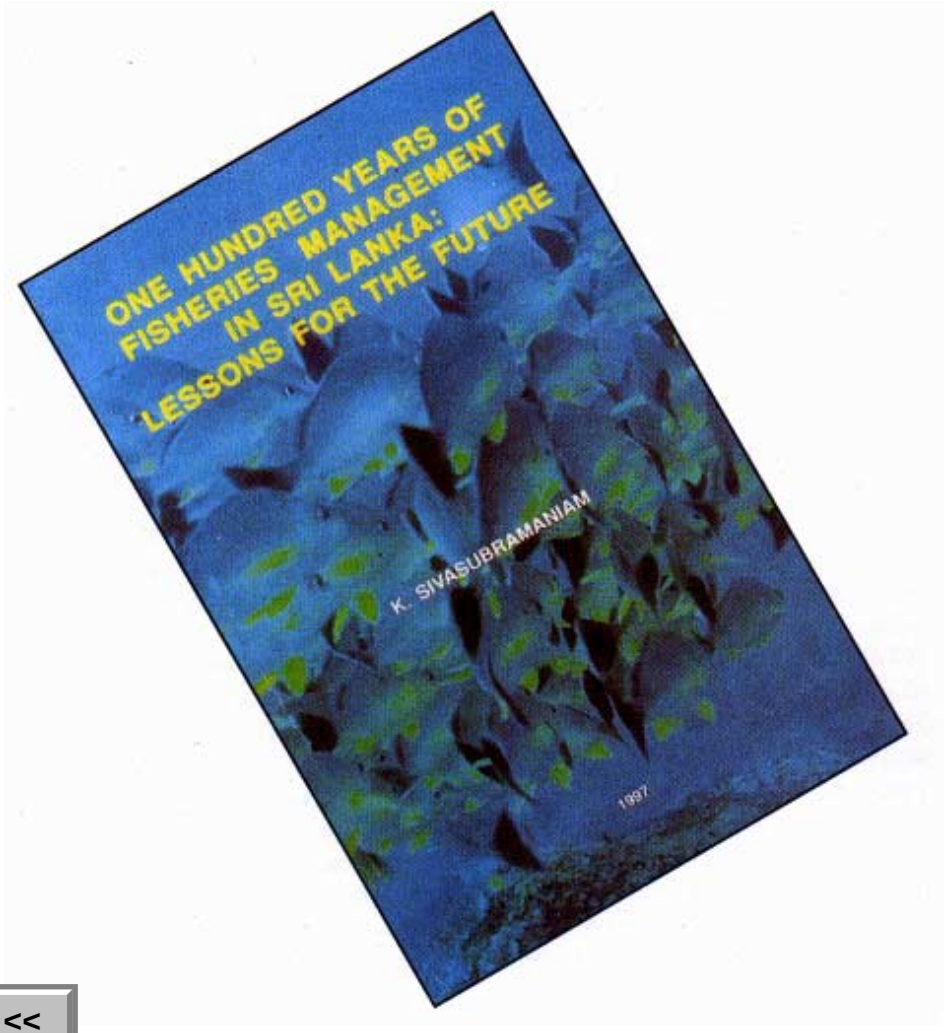
In this interview with Bay of Bengal News, the author of a significant book on fisheries management in Sri Lanka discusses his book – and the evolution of fisheries management in the island.

Q: How did the idea for this book occur to you?

K Sivasubramaniam: It occurred when the Ministry of Fisheries and Aquatic Resources Development in Sri Lanka turned 25, completed a quarter century. The MOFARD came into being only in 1970, till then fisheries was looked after by ministries for irrigation, food & co-operatives, industries, etc. Incidentally, the Minister for Fisheries in 1970 was Mr. George Rajapakse, an uncle of the present Minister, Mr. Mahinda Rajapakse.

There was a celebration on the *25th* of July, *1995* to mark the quarter century event. The President and the Prime Minister attended the celebration. I was asked to give a speech on the occasion, about the past and the present, about research and management in fisheries.

To prepare for my talk, I did some research. When I started digging, I went far back. Besides preparing for the speech, I decided on a comprehensive study to see whether we could benefit from past experiences with fisheries management. That's when I thought a book on 100 years of fisheries management in Sri Lanka might be useful for everyone concerned with fisheries.



Q. Can you give an idea of the research you carried out and the people you met in connection with the book?

A: I read a lot of materials. The government gazettes from 1889 to 1997. Administration reports of the Director of Fisheries from 1940 to 1970 (available from the National Archives, Colombo, and with the Department of Fisheries). Annual reports of the Ministry of Fisheries and Aquatic Resources from 1970 to 1993. Reports of the "Marine Biologist" from 1900 to 1940. I went through legislative enactments on fisheries, forestry, wild life, the fisheries corporation, the fishery harbours corporation, national aquatic resources research, irrigation, and transport. Documents dealing with the national environment, coast conservation, marine pollution prevention, the maritime zones, mines and minerals, etc.

I was fortunate to meet and discuss with many individuals as well. I happened to be a lecturer and Training Programme Coordinator for the UNDP/FAO-assisted Marine Fisheries Management project in Sri Lanka. Eight batches of over 160 fisheries officers, from the headquarters and the field, were trained in fisheries management during 1997-1998. They were officers with a lot of useful field experience, and I discussed and exchanged views with them. I was also able to go round and discuss with fisherfolk. I did so when I was a fisheries research consultant under the ADB / Sri Lanka Fisheries Sector Development Project. Also when I prepared a project

a few years later, again for ADB, on Coastal Resource Management.

Q: *To get back to the quarter century event. Did the Government do anything else to mark the event?*

A: Yes, the Government presented a Bill in Parliament in 1995, to change the law concerning fisheries management, the basic legal provisions. Fisheries law was till then governed by the Fisheries Ordinance of 1940, with periodic upgrading through amendments to that Ordinance.

The fisheries management approaches and the Common Law applied, were both influenced by the Roman - Dutch law introduced by the Dutch before the British ruled Sri Lanka. The Dutch introduced many common laws, including the fact that the sea is a common property. Eveiy individual has equal freedom to access the fish in it and use it as he wants.

When the British took over in Sri Lanka, they did not make many drastic changes to common law, particularly to fishing rights. "Fishing freedom" was not curtailed, as long as there were no disputes among the fisherfolk and there was no evidence of resources getting depleted.

Whenever there was a serious problem or objection to a fisheries developmental action by the Government or a dispute erupted between two or more fisher groups, the government could appoint a commission or a committee of enquiry (depending on the level of the issues), to inquire into and make recommendations. Such a commission or committee could recommend appropriate management actions, including a system of licensing for the fishery or fisheries, in the specific area in which the dispute arose.

The 1995 Bill that was brought before Parliament changed that. It enabled the Department of Fisheries in Sri Lanka to introduce a nationwide licensing system. It allowed the governmentto prepare and get Parliament approval to introduce the new Fisheries Act of 1996 to replace the Fisheries Ordinance of 1940. Under this Act, the Government for the first time acquired the right to license any of the fishing and fishery-related components of the fishing industry at the national level. A proper management system could be introduced for all the sub-sectors and components of the fishing industry - - fishing activities, fishing crafts, gears, aquaculture, fisheries environmental factors, fish processing, quality control, marketing, exports, etc.

The Fisheries Act of 1996 has provided for the formation of Fisheries Committees for Special Area Management Planning (SAM Plan), and for community participation in management.

Q: *Weren 'tsuch committees in vogue in earlier years. a form of traditional fisheries management?*

You are right, I was coming to that. Even 100 years ago, fisheries committees were active in fishing villages of Sri Lanka, managing fisheries at the village level. There was no fisheries department at that time. All developmental and management activities in each Province or Division were in the hands of the Government Agent (GA). 10 people from a fishing village could submit a memorandum to the GA, requesting him to help form a fisheries committee for the village.

The GA for each Province, or the AGA for each district within a Province, could call a meeting of the entire village. The village population would gather, and would be invited to nominate a specified number of committee members. Candidates nominated would have to satisfy certain minimum criteria: age, fishing experience, knowledge of fisheries in the area, record of honesty and integrity, possession of assets. (A hundred years ago, assets worth Rs 200 were considered an index of viability and stability.) They should be permanent residents of the area, and should have voted in village committee elections. They should have no record of criminal or civil offences.

So in a sense, the Fisheries Act of 1996 can go back to the early past, draw on the traditional wisdom of the village leadership and revert to a "bottom up approach to fisheries management.

3. *Why was fisheries management necessary in the .first place? Were particular species endangered? Are they less endangered today?*

A: It was necessary because the sea is a common property resource. A resource must be assessed, and a certain amount

Dr K Sivasubramaniam, interview subject and author of the book discussed in this article.

of fish must be taken, not indiscriminate quantities. Fisheries management has to go hand in hand with development. Traditional fisheries are generally low in efficiency. Therefore their expansion did not place much stress on the exploited resources, and the need for management was not felt. But since the late 1950s, transfer of modern and efficient fishing technological systems that were developed in the temperate regions of the world led to rapid development of fisheries in developing coastal States like Sri Lanka. The rapid rate of increase in efficient fishing systems (modern motorised and mechanised fishing crafts and fishing gears) intensified fishing effort on the numerous tropical fish species which are generally smaller in size than those in temperate waters.

4. *Would you like to discuss the evolution offisheriesmanagement in Sri Lanka?*

Traditional fisheries started in lagoons and bays. The small and simple fishing platforms usedwere safe for fishing only in locations protected or sheltered from strong monsoon winds and rough sea conditions. Fishing effort concentrated in such small areas, resulted in intensive fishing of brackishwater stocks and reduced catches and earnings. Kraals, traps, set-nets, etc. operated in these water bodies were licensed initially by the Governmeat Agent, later by the Director of Fisheries, after the Department of Fisheries was established.

The beach seinefishery in Sri Lanka has declined because of expansion in the number ofbeach seines, intrusion by other fisheries, and a decline in the number offish moving close to the shore.

The kraals in lagoons and bays, one of the first fishing methods, were also one of the first to be managed. There were regulations which the person licensed to fish had to abide by. They related to the size of the kraal, the mesh-size, where the kraal could be set up, its distance from the shoreline, passage for commercial crafts to navigate, seasons for operation and closed seasons. Thefisherman should have a light at night so that boats would not run into the kraal. If catch rates fell, the kraal fishery was stopped and the licence for the fishery suspended until further notice.

The stake net is a kind of set net that is permitted cvcn now in some lagoons, tinder the traditional management system. It has legal sanction to operate without being obstructed or affected by other modern methods. Stake nets were originally assigned to certain families by the community. The State and the court recognise these traditional rights even today. However, certain practical problems will be faced when modern management systems are implemented alongside such a traditional management system.

The second major management problem was with the beach seine fishery that covers only the sea area within one mile from the shoreline. In early years, each family group in a coastal village was assigned a certain area of the shoreline for operating the beach seine. No one else is entitled to operate a beach seine in that area. If local people didn't apply for a licence to operate in a particular area, any outsider could apply for permission to operate there. Over time, the population in the village grew. With the number of members in each family increasing, more groups emerged. Consequently, more than one group wanted to operate from some areas. A rotational system for groups, based on the day of the week and the time of the day, was introduced by the community in the village and approved by the Government.

This system functioned well as long as the resources were under-exploited. One basic limitation to this traditional system was that it could not control either the number of beach seine nets operated or the number of operations that could be carried out every day. When traditional craft and beach seine net made of natural fibres (cotton and coir) were used, each operation took a very long time to complete and the gear had to be dried after each operation to prevent rotting. This limited the numberof operations per day for a gear. With motorised craft and use of synthetic gear materials, an operation is executed in a short time and the synthetic material need not be dried after each haul. This significantly increased the number of operations and the total fishing effort, without increasing the actual number of beach seines. The traditional management system for the beach seine fishery therefore ran into trouble. Besides, other open-sea fisheries expanded beyond the area covered by the beach seine fishery, the amount of fish moving close to the shore consequently declined, and the beach seine fishery also declined with it.

Sri Lanka is a small island. Fisheries on the east and southeast coasts and that on the west and southwest coasts are controlled by the two monsoons. Fishing was active on the southeast and west during the northeast monsoon, and on the east and southeast during the southwest monsoon. So it used to be highly seasonal. Consequently, there was a heavy seasonal migration of fishermen during the two monsoons, so that they could fish all the year round. With the development of modem motorised craft, fishermen are able to overcome monsoon weather conditions and operate on any of the coasts almost round the year. This reduces the need for seasonal migration, encourages even and stea4y exploitation in all areas and contributes to a higher overall yield from the stocks.

Management problems increased with motorization. Fishing over the years became intensive. With the increase in population, the fisher population also increased, traditional fisheries evolved into modern fisheries and expanded into the open sea from lagoons and bays. Today, there are too many interactive fisheries contributing to more disputes, conflicts and fisheries management problems. It has become very necessary to regulate the number of boats operating specific fishing methods in specified areas, through the licensing system.

5. *What are the management needs today?*

They are of different kinds. To regulate fishing effort and conserve species and stocks, it is necessary to first register fishers and fishing craft (and other support services) and then license most of them. For aquaculture activities, we should protect the environment and ensure good yield and economic return. Quality control is essential for fish handling, processing and storage. For exports, it is necessary to ensure a good price, regulate the quantity and quality of products and of fishing craft and gear manufacture to ensure seaworthiness, safety at sea, technical and economic viability and efficiency.

The Monitoring and Control Surveillance (MCS) unit has been established in the MOFARD and a management unit in the DOFAR. In due course, both will be part of a department under the proposed Directorate General of Fisheries, to be headed by a Director-General. The post of Director-General has already been created. There will be six or seven Directors under the DGF and one them will be Director in charge of Fisheries Management.

6. *Has the fzct of overfishing been established? What stocks are overfished? What stocks are endangered?*

A: As already mentioned, the fishing effort has increased rapidly and without any kind of regulatory mechanism. Consequently, most of the exploited resources have been exhibiting signs of intensive exploitation while some high-value species of crustaceans, molluscs, holothurians (sea cucumber), finfish, aquatic mammals (dugongs), etc. have been overexploited. Unless strict management practices are introduced, stocks contributing to the major fisheries cannot be sustained much further. Some attempts are being made to restrict the export of certain species of ornamental fish that are listed as endangered species. BOBP has provided collectors and Customs officers with colour photographs to help them identify the fish species that cannot be exported. However, curbs on export will not inhibit collection for the local market. There will also be some illegal export. Regulations to control the collection are therefore very essential.

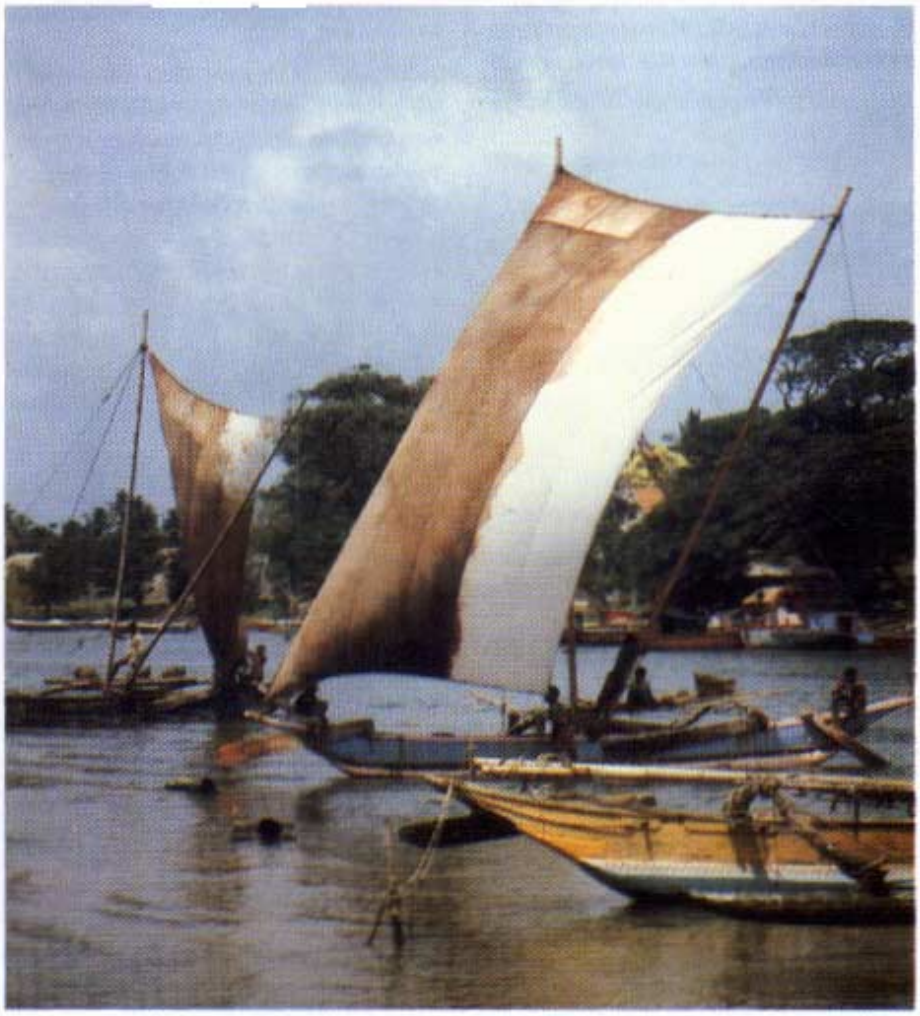
Success in fisheries management depends heavily on integrated management. More than one department is involved in the process of management. What's needed is a law to integrate institutions concerned with fisheries, wildlife, forestry, coast conservation, environment, tourism, agriculture, irrigation, and transport. These sectors have both direct and indirect impact on the aquatic enviromnent, and on the exploitation of fish. A law on the lines I've mentioned will enable effective and appropriate action for fisheries management.

Discipline is lax in most developing countries. Regulations must be stringent and penalties severe enough to deter management violations. If the fine is paltry, people just pay it, go away and continue breaking the law. Perhaps the authorities need to get tougher. They may be kind to citizens, but they ought to display firmness as well.

7. *What suggestions does your book contain ?*

A: The Fisheries Act of 1996 seems to have evolved out of the Fisheries Ordinance of 1940. Ideally, it should have been an independent piece of legislation to meet not only present-day needs but also future needs. In view of the technical elements that should be embodied in the regulations, the Act should include certain basic conditions. These will ensure that the regulations made will be bound by those essential technical elements.

"To regulate fishing effort and conserve species and stocks, it is necessary to first register fishers and fishing craft and then license most of them."



There is a section on pages *64-75* of my book – "Considerations for the future, based on past experience." It discusses the piecemeal approach to implementing fisheries management, and the setting up of integrated management systems. I have also discussed the processes of implementation and enforcement.

Regulations should be made in a certain sequence that facilitates implementation and enforcement. All the sub-sectors and their components should be covered by management systems and not just fishing licence or ISO/HACCP certifications for quality control for export purposes. In my book, I have made some suggestions to improve the Fisheries Act itself. I have suggested a sequential introduction of regulations and a meaningful approach to implementing them.

Formats for registration and licensing of all the components of the fishing industiy have also been discussed. Computer-isation of registration and licensing and the system for determining the coding for these processes were also considered.

Brackishwater aquaculture of shrimp and finfish is a very good example of management failure. Shrimp culture started in Japan about *50* years ago. Then it spread to Central America, the Far East and ASEAN. It subsequently moved into the SAARC region. All those countries learned by trial and error about the care that should be taken to prevent pollution and environmental degradation/ destruction, reduce diseases and maintain a steady yield level. By the thne India or Sri Lanka started shrimp culture, we knew about all these problems. Yet, the regulatory measures and mechanisms introduced were insufficient. Those who wanted to make a quick buck had their way. Failure to control the damage to the environment not only resulted in economic losses but also retarded the development of aquaculture outside the North- western Province.

Mariculture of fmfish is now encouraged in Sri Lanka. We should examine the pollution problems experienced by cage culture practices for groupers, basses, etc., in Malaysia and Thailand, to prevent a similar train of events in Sri Lanka.

The central environment authority in Sn Lanka has been placed under a line ministry. It therefore does not have the authority that an agency placed directly under the Prime Minister or the President would have.

Fisheries management is not something we should think of only when we run into a problem. We must think of it the day we start development. It is difficult to control or regulate once we have put it into motion. When we are moving on land, it is easy to stop, turn and reverse our step at any moment. We don't have that latitude or liberty in the water. When we are sailing a boat, we can't apply a brake, stop or even turn immediately if another boat strays into our path. Due to low friction in water, our boat goes a certain distance. Fisheries management is like that. If you don't control the speed right from the beginning, you can't stop abruptly wherever you want. You are carried forward.

Only if we are cautious with fisheries development can we stop and turn. If we go too fast and make frequent changes to our fisheries development plan, we run the risk of taking the bread out of fisherfolk's mouths. A fisherman who leads a hand-to-mouth existence can't sell his fishing unit, he can't get back the money he put into it because no other fisher would like to invest in an uneconomical fishing unit. The developmental process must be carefully controlled through proper management programmes from the very beginning.

Brackishwater aquaculture of shrimp and finfish is an example of management failure in Sri Lanka, says the author.

Book Review

Too much growth, too little planning?

"Development and Management of Fisheries in Developing Countries" by K. Sivasubramaniam, 1999 (Productivity and Quality Publishing Private Ltd., 23, Thanikachalam Road, Chennai - 600 017, India), 222 pages. PriceRs. 1,260.

By Menakhem Ben-Yami

We reproduce, through the kind courtesy of World Fishing, June 1999, a review of the book cited above – which calls for systematic long-term planning and management of fisheries in developing countries.

The term 'developing countries' has become a very inaccurate definition. It's hardly appropriate to classify powers such as China and India along with the likes of Sierra Leone and Equatorial Guinea.

However, between them they produce about two-thirds of the world's fish, and the common factors in their fisheries are addressed by Dr. K. Sivasubramaniam in his book *Development and Management of Fisheries in Developing Countries.*

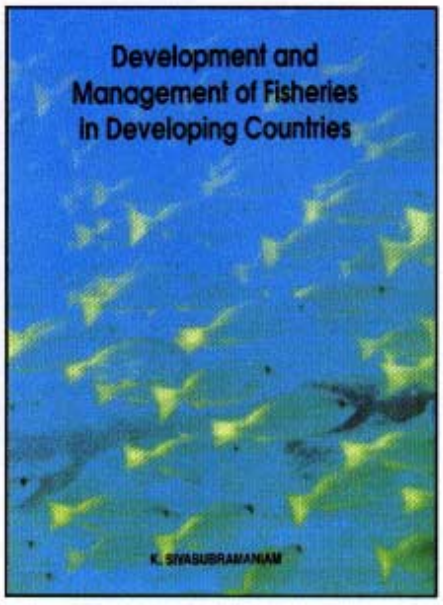
He writes that the fisheries of these countries "have been growing for too long without sufficient long-term planning and management", and warns that without a more serious effort their chance of survival is questionable.

Accelerating Change

After a long era of very slow change came a few decades of accelerated development, fuelled by technological progress and increasing demand, during which the participants enjoyed relatively high catches and incomes, But this stage is over almost everywhere, and many fisheries are now in decline, because free access, overfishing and disintegration of traditional management led to too many participants sharing the cake. Traditional fisheries have also suffered from conflicts with large scale ones. Therefore, says the author, the next phase must be properly managed fisheries.

Dr. Sivasubramaniamis a veteran fishery scientist from Sn Lanka with 40 years of experience involving FAO service and research work in 16 Asian countries. He views the history of fish stock assessment and management in terms of three eras with three different approaches.

The first was the biological era, when management was based on basic production models and usually targeted at maximum sustainable yield (MSY).



During the next period, which started about 30 years ago, simple biological models were converted into bioeconomic models in which revenues replaced fish yields. Management started targeting maximum economic yield (MEY) which normally required fishing at lower effort than MSY. Since fishing can still be profitable beyond MEY it often expands until losses are incurred and fish stocks impaired.

Eventually the importance of the economic and social aspects of fishery management was recognised, and the bio-socioeconomic era started. This was reflected in the fact that about 10 million small-scale fishermen were annually catching some 20 million tonnes of fish, "utilising only one fifth of the total capital investment and fuel consumption per tonne of fish landed" according to the author.

Fish stock, economic and bioeconomic assessment methods are reviewed, after which the rest of the book attempts to integrate the various aspects of fisheries management, including the dearth of reliable data and environmental and climatic changes, into a manageable, comprehensive system.

This is a tall order but Dr Sivasubramaniam has succeeded in producing a well formulated, informative and well documented framework for management. His book should be recommended as a basic text for fisheries scientists and managers, not only in Asian countries.

Dr Sivasubramaniam regards the bio-socioeconomic approach, which involves fisherfolk's participation in the management and development processes, as essential for understanding the problems and identifying practicable management measures. He obviously considers traditional surveys inadequate for the assessment of fisheries, and the conventional, that is western management methods, not quite appropriate.

Recommendations

Fisheries management in low-income countries should:

1. comprise regulation of fishing for sufficient catches and sustainable stocks;
2. help protect the environment;
3. provide infrastructure for efficient and profitable fishing operations, processing and marketing;
4. make sure that benefits from the resource are equitably distributed, with particular attention to small-scale fisherfolk.

There is a good description and statistical data on the fisheries of countries bordering the Indian Ocean, although the fisheries of the Arabian peninsula seem to be somewhat under-reported. There is also an important analytical description of Asian small-scale multi-species fisheries, and of the various ongoing conflicts, constraints and difficulties peculiar to these countries.

A Success Story in Sustainable Development: Community-Based Fisheries Management in Phang-Nga Bay, Thailand

The BOBP-supported project on Community-Based Fisheries Management (CBFM) in Phang Nga Bay, Thailand, is described in an important publication – the third volume of "Sustainable Development Success Stories," brought out by the United Nations Commission on Sustainable Development (CSD). This publication aims to encourage information about sustainable development, recognise the commitment of a diversity of groups, and enable sharing of positive experiences.

The CSD was a creation of the 1992 Earth Summit held at Rio de Janeiro, which adopted Agenda 21, a Programme of Action for Sustainable Development. The "Sustainable Development Success Stories" are part of the effort to record successes in the implementation of Agenda 21.

Reproduced here is the text of the story on Phang-Nga-Bay, as it appeared in the third volume of "Sustainable Development Success Stories." For other related articles on Phang-Nga fisheries, see *Bay of Bengal News*, March 1996, pages 7-Il, & 21-23; March 1997, pages 17-21; March 1998, page 12-16.

Location

Phang Nga Bay, on the Andaman Sea coast of Thailand. The project covers 114 of the *5,700* villages that lie scattered around the Bay coasifine.

Responsible Organisation

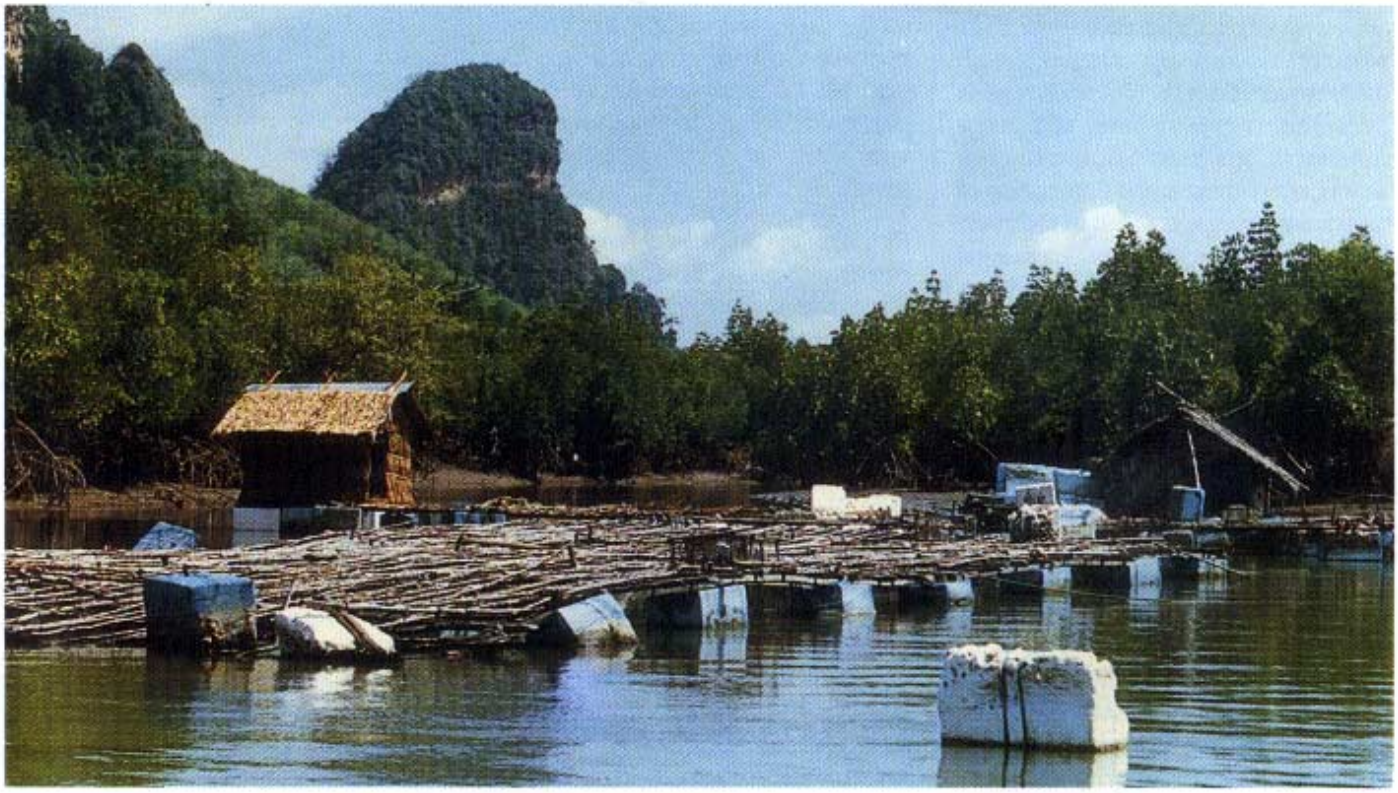
Andaman Sea Fisheries Development Centre (AFDEC), Phuket, Thailand, of the Department of Fisheries, Bangkok, Thailand and the FAO/Bay of Bengal Programme, Chennai, India.

Description

The main problem of fisheries in Phang-Nga Bay is the over-exploitation of pelagic and demersal stocks resulting in reduced fisherfolk catches and incomes, and fears of drastic dwindling of the stocks; degradation of the fisheries habitats caused by waste discharge from industry and tourism; and difficulties in enforcement measures. Before the project came into being over three years ago, better management awareness was urgently needed on the part of all stakeholders in fishing villages of the Bay. Also needed was systematic implementation of management measures with the full co-operation of the community. In other words, a people-centered ecosystem-based fisheries management programme to conserve and replenish the fisheries resource.

The Project supported a workshop on Community-Based Fisheries Management (held in February 1996) that discussed management issues and possible solutions in depth. Representatives of many of the 114 villages of Phang-Nga Bay covered by the Project now come together for regular monthly meetings to discuss, initiate and monitor management activities. These are implcmcntcd by the Andaman Sea Fisheries Development Centre of the

A fishing village along Phang-Nga bay, where BOBP's Third Phase supported fisheries management activities.



Cage culture has been promoted to widen income options for fisherfolk

Department of Fisheries with the help of the community, and are supported by BOBP. Activities include:

- *The promotion of cage culture of finfish, culture of oyster and mussel,* and open water stocking of finfish and shellfish seeds, in order to widen income options for fisherfolk and enhance fish stocks.

- *Bans on the use of trawis and motorized push nets within 3 km of the shoreline,* and within a radius of 400m from any stationary gear. Compliance with the ban is ensured by a fleet of monitoring patrol boats, and penalties for violations. The ban is supplemented by a gear exchange programme, where the fisherfolk voluntarily gave up their motorized push nets (regarded as resource-destructive fishing gear) in return for gilinets provided by the government. Displaced push net operators were offered opportunities in coastal aquaculture. The FAO's Telefood Special Fund has been approached for further support.

- *The installation of over 40 artificial reefs at the entrance to the Bay,* partly financed by the trawler association to keep trawlers and pushnetters out of the Bay and 3 km inshore zone, and enable small-scale fishermen to increase their catch around the reefs. This encouraged community bonding between commercial and small-scale fishermen.

A programme of mangrove reforestation was carried out in 35 villages of Phang-Nga Province. The message of mangrove conservation was promoted through highly visible signboards. Mangrove seedlings were prepared by the villagers – men, women and children. Seagrass was collected and replanted in special strategic sites where it has been denuded.

An aggressive education campaign has been implemented throughout the Bay to discourage harvest of gravid female blue crabs. The government has also provided spawning cages for deposit of any gravid female caught inadvertently by fisherfolk. Eggs hatched are released into the sea. The spent females are then sold, the money then used to further CBFM activities.

Issues Addressed

Conservation and management of fisheries resources, environmental awareness and conservation, people's participation and civic responsibility.

Results Achieved

- Raised awareness on the importance of fisheries management in the Bay. Very few push nets are seen in the Bay, following the ban on their use and gear replacement programmes.

- Increased resource health and productivity, and increased production of shrimp and blue swimming crabs.

- Reduced social conflicts between push nets and small-scale gill net fisherfolk.

- Successfully achieved mangrove reforestation and seagrass replanting.

- Sea ranching to promote stock enhancement. Reports from Japan indicate that the release of one million post-larvae shrimp into the sea will enable a catch of one ton of

shrimp. In the past, government officials ceremoniously released post-larvae into the sea. Now, fishermen are enjoined to carry out this task, thus giving them a feeling of ownership and pride, and promoting better and more energetic participation by them in community management.

- Since 1995 conducted training courses on CBFM for fisherfolk by DOF and BOBP.
- Erected a floating pontoon in the Bay to serve as a Department of Fisheries field station. Fishermen set their nets and come to the pontoon to relax and to exchange information and views with officials on duty at the pontoon. Valuable data is collected for monitoring the status of stocks in the Bay.
- The Governor of Phang-Nga-Bay inducts and empowers Bay fisherfolk as volunteer sea rangers to monitor fishing activities in the waters of the Bay.
- Encouraged systematic collection and disposal of waste by installing rubbish bins and incinerators in the fishing villages.
- Constructed a multi-purpose community learning centre in one village. DOF and the BOBP provided some equipment to facilitate meetings, discussion, classes, games, recreation etc. This strengthens the community spirit and joint action.
- As stated by the Department of Fisheries, "the Project has made significant progress within a relatively short period of time, and has achieved a strong momentum within the communities for implementation of community-based decisions. The Bay is a valuable resource for Thailand, and its communities are an example not only for Thailand, but for coastal communities around the world that are looking for solutions to pressing resource management issues."

Lessons Learned

- The regular monthly meetings of village committees, and bimonthly inter-village meetings, ensure exchange of views, information and analysis, and follow-up action.
- Involve the target group as stakeholders. Their participation in the activity will increase and implementation will improve, giving the target group a sense of ownership and pride.

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Mangrove reforestation was carried out in 35 villages of Phang Naga Province.

A CD-ROM on BOBP

An archival CD—ROM of all publications of the BOBP is a major Information Service project now under way. Preparation of the **CD-ROM** involves the scanning of some 15,000 pages including some 2.000 pages that contain photographs.

The CD-ROM will enable lisheries departments. projects. scientists. researchers or officials to easily retrieve literature from nearly 300 **BOBP** publications. You may retrive the info rmat ion untry, be another by subject or sub—subject or by any a few hundred key words.

"BOBP has been around for 20 vears No department ir inst itution except the BO BP itself and the FAO in Rome. has copies of all of the BOBP's output. Many publications arc out of stock and are available only as photo-copies.... The CD-ROM is therefore valuable," says S R Madhu. BOBP's Information Consultant.

News about the CD-RO M on BOB P's publications has aroused nuch it tcrest in fisheries circles within arid outside the region. A number of enquires have already been received by BOBP.

Healthy Fishing Communities: An Important Component of Healthy Fish Stocks

By Svein Jentoft*

The author discusses five truisms in fisheries – whose validity no one challenges – and discusses current fisheries management practices in the light of these truisms. He concludes: "Fisheries management has increasingly led to a community in decline in which everybody is throwing everyone else overboard.... No wonder that fish stocks, along with millions of fishers round the world, are suffering."

This paper challenges some of the most common assumptions of fisheries management and argues for a stronger focus on communities.

The discussion centers on five truisms. These are statements about fisheries management that we hold to be true – no one questions their validity – and they are considered self-evident, as platitudes. I contend that if these truisms were applied as yardsticks for current management practices, these practices would dismally fail the test. This is why fisheries management so often misfires.

Truism 1: Fisheries management is the management of people, not fish. This truism has been discussed many times before. In other words, fisheries management is about the governance of human behaviour, not fish behaviour. The health of fish stocks is influenced by harvesting and hence by fishers. In spite of this, fisheries management is predominantly perceived as a biological rather than a socioeconomic endeavour. Although biological data are necessary for successful management, they are not sufficient. To manage well, you need to know not only the fish, but also the fishers and their industry, how they are affected by fisheries management, and how their perceptions, rationalities, and behaviour change as a consequence of fisheries management schemes.

Truism 2: Scientists are not the only people who are knowledgeable about fish, fish behaviour, and fishing; fishers also have such knowledge. If they didn't, fishers would not survive in their competitive profession. Therefore, if you want to know how fishers act and how they respond to management initiatives, you need to know what they know. The experience-based ecological knowledge of fisheries must be part of the knowledge that fisheries managers rely on; the input of scientists alone is not sufficient.

Truism 3: Fishers do not fish only from individual boats; they also fish from communities. Fishers are born, raised and live in local communities. They are embedded in cultural and social systems that give meaning to their lives and directions for their behaviour. Thus, fisheries managers need to know how these systems are formed and how they function. However, the sociology of fishing (i.e. the knowledge of fishers, their behaviour, culture, social systems, and epistemologies) seldom constitutes the scientific basis of fisheries management. Fisheries management is not underpinned by the same systematic research and rigorous methodology toward fishers and their conmiunities as it is toward fish. This may seem a great paradox – if we agree that these statements are truisms. I would not dare to claim that a management system that takes the social and cultural aspects of fishing more seriously than it does at present would eliminate the problem of stock decimation completely. The problem is too complex for that. However, I believe a management system that took these truisms as a starting point would be different from practices that prevail today. I also believe the system would be more up to the task. The emphasis on these truisms would require that social issues no longer be regarded as byproducts of a management system that eyes only the biology of fishing. Rather social issues would be among the premises on which to base fisheries management.

Truism 4: Healthy fishing communities require healthy fish stocks. This is another statement no one would challenge. How can fishing communities survive without fish? But I argue that the reverse also is true: *healthy fish stocks require healthy fishing communities.* This fifth truism is a more interesting one.

Overfishing is seen by economists as a consequence of "market failure" because of the absence of clear-cut property rights to fish resources. Social scientists like me argue that overfishing may well be a sign of "community failure" (McCay and Jentoft 1998), signifying a more basic social problem than market failure. For instance, we might borrow a concept from the great French sociologist Emile Durkheim and say that the Tragedy of the Commons in Fisheries (Hardin 1968) is a consequence of "anomie", e.g., normative confusion and weak social ties. Overfishing results when the norms of self-restraint, prudence and solidarity have eroded. It occujs when users do not care about their resources, their community, or each other. Thus, over-

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"Fishers do not fish only from fishing boats, they also fish from communities."

fishing is not just a systemic problem that needs corrective mechanisms from an external authority such as the state. Overfishing is also an ethical problem played out among fishers. A community that disintegrates socially and morally loses its ability to formally or informally sanction irregular fishing behaviour. More basically, it loses its capability toward preventive moral upbringing of fisher recruits through the socialising process.

If fishing communities that exist in a state of anomie threaten fish stocks, then managers would do two things. First, they would be careful not to damage the social structure and culture of communities; second, they would look for management system designs that would potentially restore and reinforce the social and cultural qualities of fishing cormnunities as they are described here, For instance, managers would consider management systems that make fishers more motivated to co-operate. In the Tragedy of the Commons model, harvesters do not see each other as a team – as a "we" – but rather as adversaries. It follows that if fishers could be encouraged to co-operate voluntarily, out of consideration for solidarity and mutual trust (as in a true community), then the tragedy could be avoided without the force of the state. This possibility is rarely explored in fisheries management. Thus, a fisheries management system based on the truism that healthy fish stocks require healthy communities would develop institutions that foster co-operation and strengthen social bonds among fishers within the community and beyond. For instance, the system would consider making the community, not the individual, the holder of resource rights as is current practice among most quota systems in fisheries (with some interesting exceptions such as Japan's inshore fisheries).

Some professionals have argued that Individual Transferable Quotas (ITQ) and other government-initiated regulatory systems are eroding community solidarity and cohesiveness creating the very conditions on which the Tragedy of the Commons rests. They are turning community members into rivalries for government handouts in terms of quotas, licences and subsidies. These privileges tend to further stratify the social structure of fishing communities, violating norms of justice and egalitarianism – precisely those features that make communities into communities.

Since healthy communities are vital to maintaining healthy fish stocks, fisheries management must consist of more than just rules and regulations that curb fishing effort. Management must include strategies of community development, including the building of a civic society. Simply reducing the number of harvesters through privatization of property rights is no solution. You cannot save a community by destroying it. Neither does the lifeboat ethic have much merit (e.g to save the few, you must deny access to aspiring others), as is frequently contended in defense of quota systems and access limitations in fisheries. Instead, I agree with Boulding (1977:290):

> *"A lifeboat that is not in some sense a community will not bring its human freight to shore, even if there is food for all; for collective decisions will have to be made and, if there is no community, they will not be made and the lifeboat will end up ... with a community failing apart, and everybody throwing everybody else overboard*

More than 20 years have passed since Boulding wrote these lines. Though he was not thinking of fisheries in particular, it is nevertheless a fairly accurate prediction of what has become the situation in fisheries in many parts of the world. Fisheries management has increasingly led to a community in decline and in which everybody is throwing everyone else overboard. No wonder, then, that fish stocks, along with millions of fishers around the world, are suffering. Before we can even hope to rebuild stocks, we must start to rebuild communities. One cannot be accomplished without the other.

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Overfishing : Why We Should Stop Fishing for a Solution*

Callum Roberts of the University of York, on why Britain needs no-take marine reserves.

Fishing was the first means by which humanity affected the sea, and today it has become one of the most powerful agents of change. The North Sea has been intensively fished since the early part of the 19th century. While still productive today, the signs of strain are clear. There have been major shifts in the structure of North Sea ecosystems reflected in changing catch composition. Where formerly nets were filled with high-value, large predatory fishes such as cod and halibut, today there are smaller, less valuable fish whose populations have taken advantage of the disturbance that fishing has wrought, scavenging dead by-catch dumped overboard by fishing boats and snapping up animals unearthed or injured by trawls. Much of the bottom of the North Sea now more closely resembles a ploughed field, rather than the shelfish-encrusted wilderness of popular imagination.

Exploitation of the North Sea in history

Towards the middle of last century, the sail-powered fishing smacks began to be replaced by steam trawlers. For the first time sufficient power could be generated to scoop animals from the sea floor in nets groaning full. The first trawl catches must have been a source of wonder, filled as they would have been with an abundance of life which we rarely see today. In 1913 C. Reid, in a book about landscapes flooded following the last glaciation, wrote that "When trawlers first visited the Dogger Bank its surface seems to have been strewn with large bones of land mammals.. Now the whole surface has been gone over again and again .... and very few of the fossil bones are found".

Even by the turn of the century the seabed had been transformed. Today, the southern part of the North Sea is trawled an average of three to four times per year. Some areas could be trawled as much as a staggering 70 times a year. A trawl is more than just a net, though. They are held down by heavy weights, some are equipped with large steel rollers, some dredge below the surface, while others carry "tickler" chains. In contrast to the gentle caress suggested by the name, ticklers are heavy steel chains dragged in front of the net to disturb fish, scaring them off the bottom and into the net. In the process they crush and uproot other marine life. Leslie Wading of the Darling Marine Centre in Marine has described the process of trawling as akin to a house being ransacked two or three times a year.

Agricultural comparisons

Some scientists argue that the bottom of the southern North Sea is just a muddy plain, good only for flatfish. "Trawling this area does not damage or transform the habitat," they say, **it** merely takes advantage of ideal conditions for catching fish and prawns. Such an argument is tantamount to saying that the endless muddy fields of East Anglia would be just the same even if we didn't plough them up and sow crops every year. Left unploughed, undrained and ungrazed, the East Anglian plains would revert to marshes, scrub and forest. Muddy fields would disappear under a tangle of vegetation, their diversity enriched far beyond the biological poverty which our actions impose.

Exactly the same is true for the sea bed. Left alone, mud, sand and gravel will gradually be colonised by invertebrates and plants whose skeletons and fronds become habitat for others. Such habitats develop over long periods of time, like human cities, building complex and diverse communities on the foundations of their predecessors. Research on the Southern Ocean, one of the few places in the world where fragments of untrawled habitat can still be found, has shown that complex biogenic reefs like these can be swept away by only a few years of trawling, their thousand-year edifices rendered to rubble and mud. With them disappear the species that created them and depended on them for shelter and food.

The difference between East Anglia and the sea that laps its shores is that on land there are nature reserves, parks and sites of special scientific interest, all refuges in which wildlife can escape the intensive farming which engulfs surrounding areas. Offshore there are none. Advances in fishing technology have given us the capacity to pursue fish into areas that only a decade or two ago were inaccessible. These "natural" refuges have been eroded away such that today few fish are able evade capture for long enough to grow to the large sizes landed by fishing fleets of our grandparents' day. We need places to provide refuge from the scraping, raking, dredging, trapping and impaling to which we are relentlessly exposing marine life.

Ecological results of intensive fishing

Throughout the world, overfishing has stripped the seas of populations of predatory fishes which, only 20 years ago, constituted the majority of catches. Some of these fish have recently been placed on the World Conservation Union's Red List of threatened species, and there are fears that fishing could drive some to extinction if we do not improve our management of the marine environment. Fish are the visible tip of an iceberg of biodiversity loss. Fishery collapses provide a tangible signal that all is not well, but the vast majority of fishing impact goes unheralded. Who will notice the loss of small molluscs, micro-crustaceans or the odd polychaete, species which may have depended upon the reefs we have trawled away? Many such species could be far more vulnerable

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to global extinction than we have assumed. There are sound reasons for believing that some have very small geographic ranges. Some scientists think that there have already been many extjnctions that we simply haven't noticed because so little is known of the organisms that have disappeared.

No-take area will contribute to the solution

We have hardly even begun to tackle this growing crisis. Only a quarter of one percent of the oceans currently lie within marine protected areas. Remarkably, virtually none of that area has been closed to all fishing. Even in California, which with 104 marine protected areas, has one of the most highly developed systems in the world, only a paltry 0.14% has been declared as no take. Yet closure to fishing is the best way that marine reserves can be made effective. It is the most vital protection we can offer but in Britain not a single marine reserve has been closed to fishing and I am aware of none that have yet been proposed.

A **win-win situation?**

At this point you may be thinking this is all very well, but fishers are already having a tough lime making a living. Stopping fishing in some areas of the sea is not going to make their lives easier. But as well as conserving biodiversity, no-take reserves have great potential to solve the problem of overfishing. By protecting fish from capture they can help maintain populations of species which have been eliminated from fishing areas. At the same time they can act as reproductive hotspots, flooding surrounding fishing grounds with offspring and so keeping fishery production high. By protecting significant fractions of fish stocks they minimise the chance of future fishery collapses, putting much-needed precaution into fishery management.

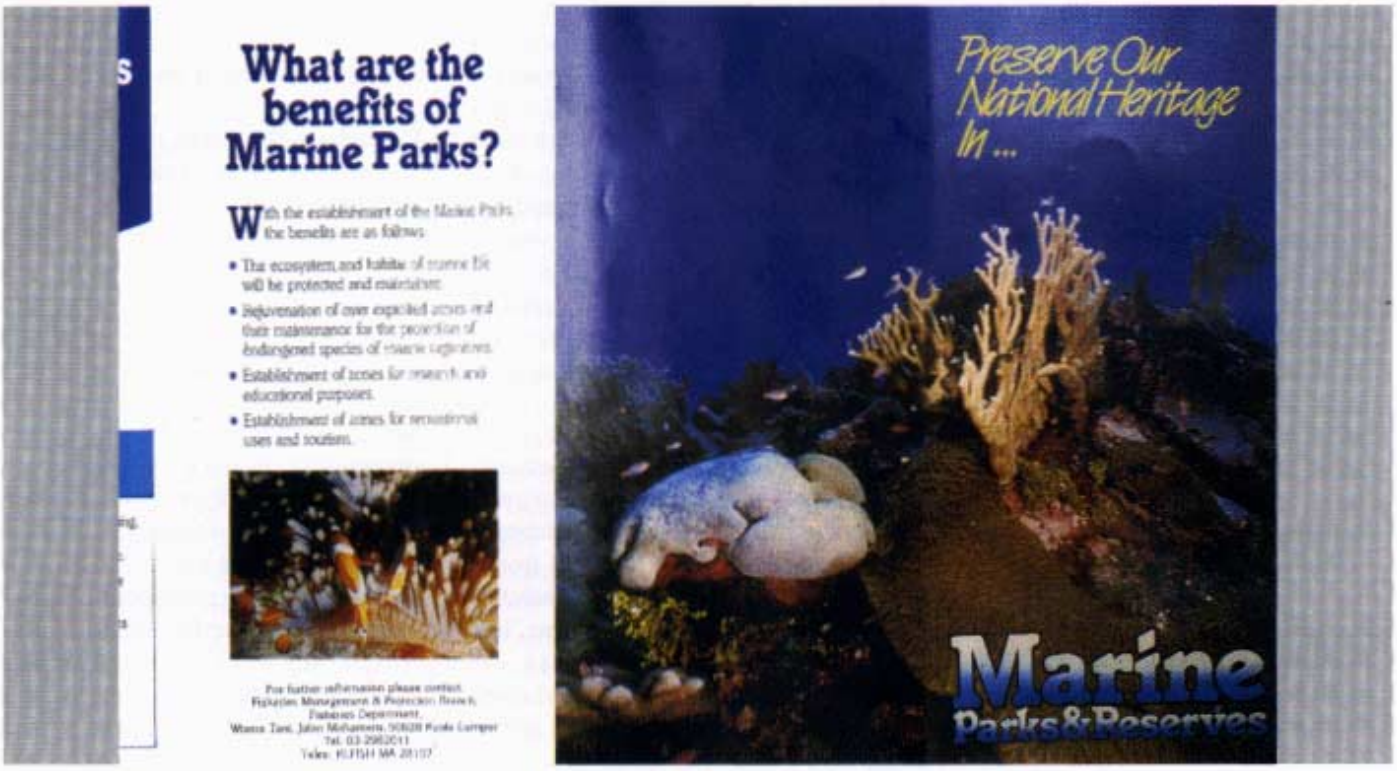
Undersea Reserves

The need for no-take marine reserves is so great that there has recently been a call by Professor Jane Lubchenko, past president of the American Association for the Advancement of Science, for 20% of the seas to be declared no-take by the year 2020. This call has been taken up by conservation orgamsations and fishermen alike. In Britain, the National Federation of Fishermen's Organisations have recently included provision for permanent no-take marine reserves in a strategy document aimed at improving management of our fish stocks.

But reserves in the sea do not protect animals within them in the way telTestrial parks and protected areas do. Most of our important fishery species have very open populations. This means that their young never see their parents but are instead carried as eggs and larvae to other areas by ocean currents. It is this transport of offspring which enables fish in no-take marine reserves to restock fishing grounds but it also complicates management. We cannot just throw a barrier around a reserve and expect it to protect species in perpetuity. Populations in reserves are unlikely to be self-supporting and so we need to try and link up populations in different reserves so that they can help to support each other. To safeguard biodiversity and support fisheries we will need networks of reserves dotted throughout Britain's waters, onshore and offshore, shallow and deep alike.

We may seem to have our hands full managing terrestrial parks and reserves without creating new protected area systems in the sea. But we need to act fast to turn the tide of human impact in the oceans; no-take marine reserves offer a simple and sound solution. We are a long way off declaring 20% of the sea as no-take but it is a target well worth reaching. Without them, the seas will become a sorry shadow of their former abundance and the giants that we once hauled from them creatures of imagination alone. (See also BOBN Vol II No 7, 1997 for another article by Prof. Roberts on marine resources).

The Department of Fisheries in Malaysia has brought out some excellent promotional materials on marine parks and reserves.



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Comic book on shrimp culture

There is good news for readers who liked the two comic books produced by BOBP some years ago ("Our fish, our wealth" and "Our shrimp, their lives"). Good news also for those who promote or carry out small-scale shrimp culture. BOBP is helping produce a manual in comic-book form that provides guidelines on small-scale shrimp culture.

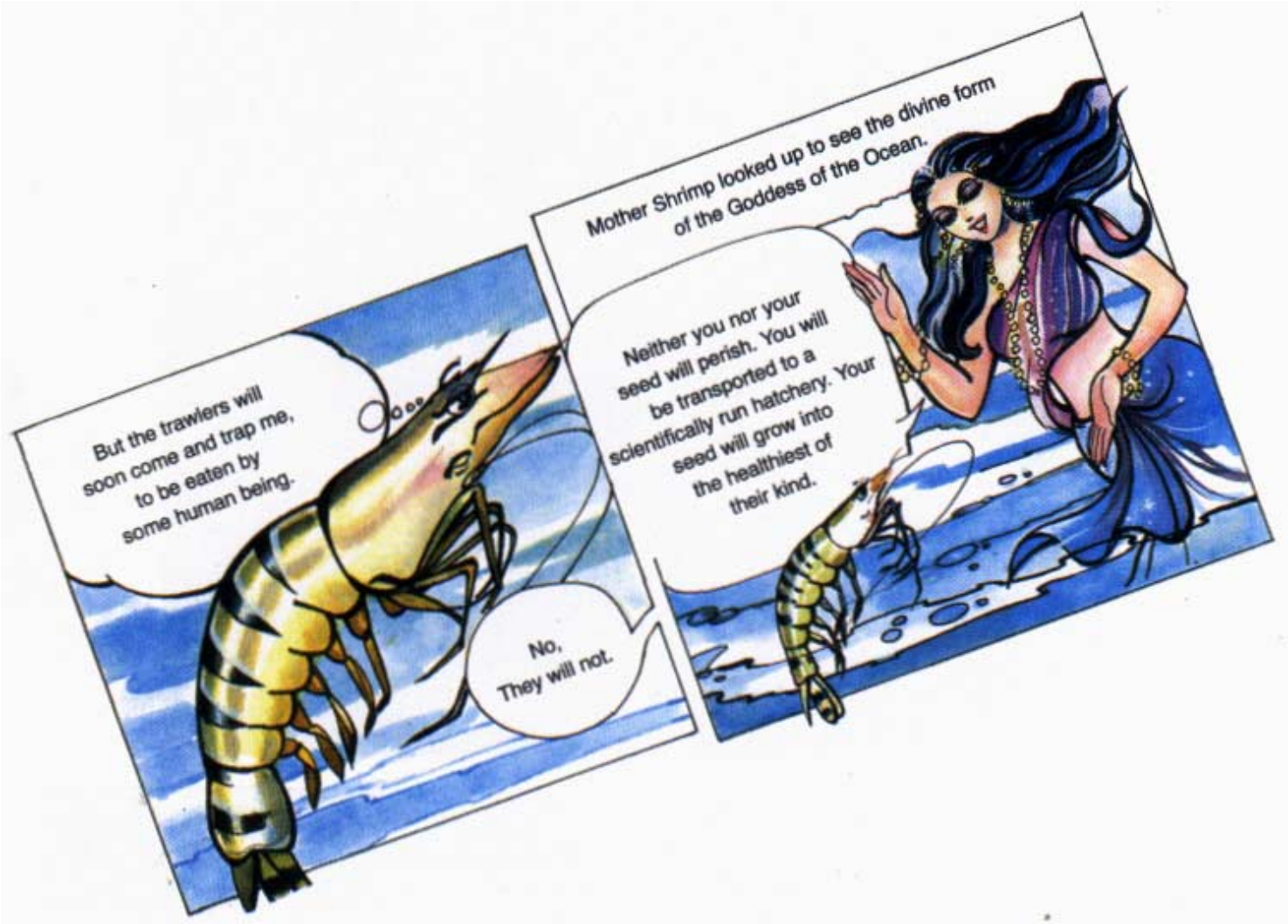
The guidelines have been developed by the Aquaculture Foundation of India (see ***Bay of Bengal*** *News,* September 1998, *page 6) on the basis of survey work carried out by AFI and* Departments of Fisheries in Andhra Pradesh and West Bengal. This work was made possible by a $10,000 grant from the Dutch Embassy in India technically backstopped and facilitated by the BOBP.

Script writer Kamala Chandrakant and artist Lalitha Thyagarajan (who worked on the two earlier comics) are now converting the shrimp culture guidelines to comics with their customary imaginative flair.

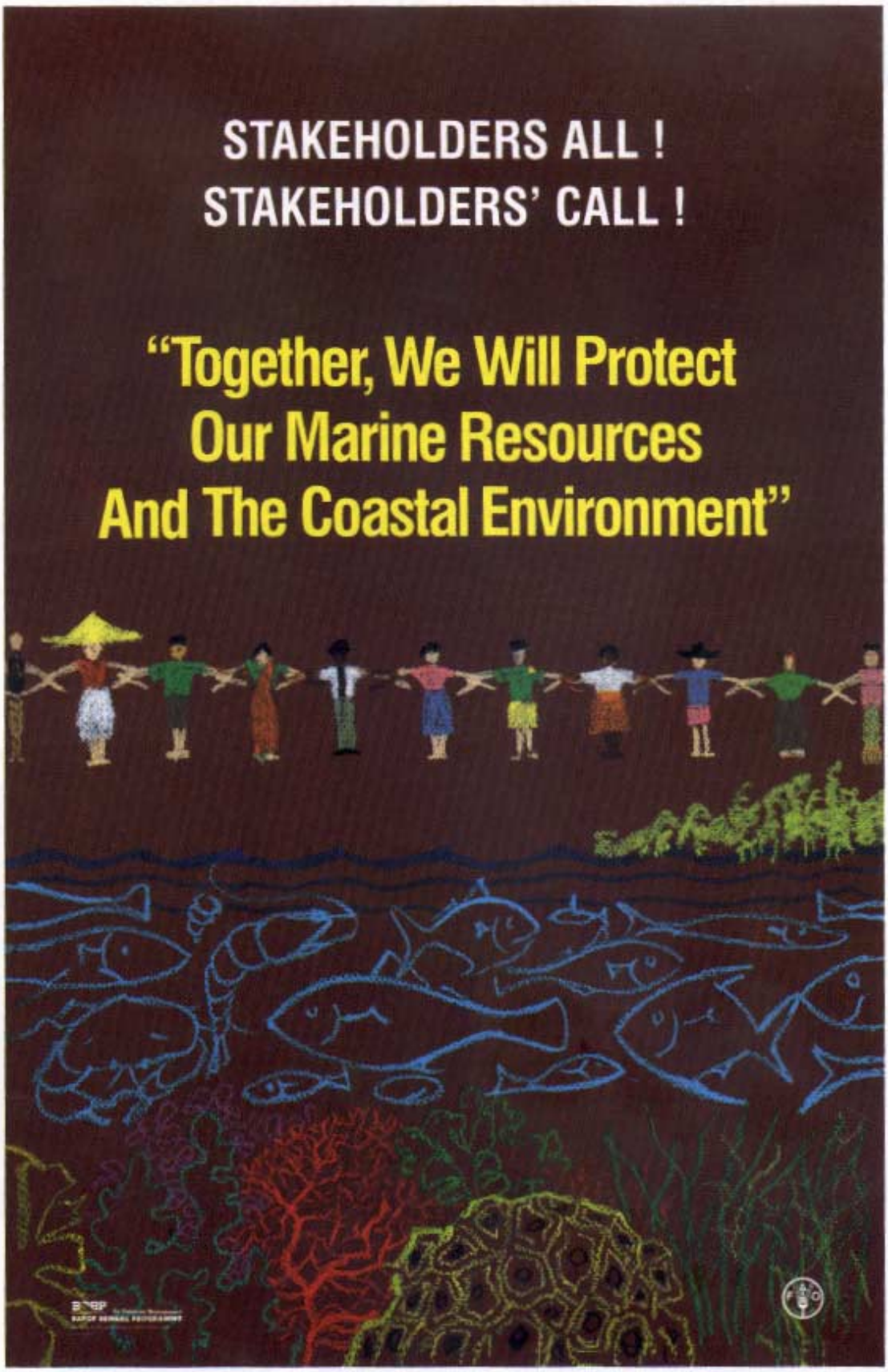
The comic begins with a mother shrimp full of seed bemoaning the fate that will soon befall her in the sea – she will be captured by a trawler. A divine form suddenly emerges, the Goddess of the Ocean. She tells the mother shrimp "You will be transported to a scientifically run hatchery ... Your seeds will grow into the healthiest of their kind .... One of them, a wonder shrimp, will be endowed with rare wisdom and special powers." During the rest of the book, this "wonder shrimp" talks about healthy practices in shrimp culture.

"The idea is to mix education with entertainment so that it can be easily absorbed," says Kamala, who is a veteran in the comics business – she has scripted dozens of comics. To ensure that the comic's guidelines are rooted in scientific fact, brainstorming sessions on a draft script were held at BOBP, and AFI staff held further meetings with scientists from the Central Institute of Brackishwater Aquaculture (CIBA), Chennai.

Artist Lalitha is busy with the sketches (a sample panel of text and sketches is shown below), and the final printed product will be out in a few weeks.



The BOBP's latest poster, on the stakeholder approach to fisheries management.



BAY OF BENGAL NEWS

Bay of Bengal News is a quarterly publication of the Bay of Bengal Programme (BOBP), a regional multi-agency 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, technologies or ideas to help improve the conditions of small-scale fisherfolk communities in the member countries. 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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