

FISH for the PEOPLE

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Eco-labelling:

Can consumer power make the management of Southeast Asian fisheries more sustainable?



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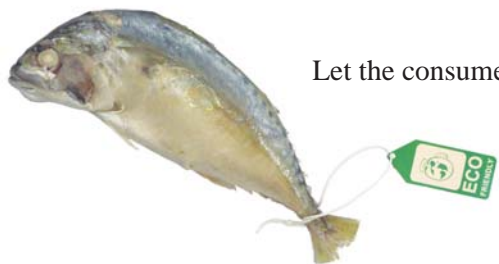
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EDITORIAL

Since the early 1990s, the globalisation of fisheries has accelerated, with environmental issues and the sustainable exploitation of aquatic resources both emerging as global concerns. While many of these global developments might have originated with people's desire to see the environment and fisheries sustained, some initiatives have had and continue to have negative impacts on existing sustainable fisheries in the Southeast Asian region. These negative impacts are mostly due to a lack of awareness on the part of the global proponents, who are not always sufficiently aware of the specificities of tropical fisheries. More dangerously, some groups have vigorously promoted certain issues with a rather militant vision of environmental sustainability, heavily antagonizing fisheries without an appropriate rationale and scientific basis. In doing so, they fail to recognize both the importance of fisheries as a safety net for Southeast Asian populations, and the many efforts currently being undertaken to improve the sustainability of regional fisheries.

In a world where style often matters more than substance, many global initiatives opt to utilize the power of different media and eye-catching visual imagery, rather than relying on old-fashioned tools like accurate scientific information. As a result, the general public has been widely involved but without being properly briefed, and their sympathy and support has been sought on many environmental issues on an emotional basis. The internet and other new media allow quick, relatively inexpensive access to a wealth of new and emerging knowledge, ideal for learning about a fast evolving phenomenon like globalisation, with new environmental issues emerging increasingly rapidly. But collecting sounds scientific data and information remains a slow, time and resource intensive process. With the burden of proof for demonstrating the sustainability of fishing practices currently falling only on the resource users, the consequence is an impossible situation for many developing countries, including ASEAN member countries. One has to consider the limited human and financial capacities in the region, and that many countries cannot be asked to sacrifice a large part of their limited budget to scientific studies while the needs of their mostly impoverished populations are so great, and so much more immediate. Through the ASEAN-SEAFDEC Collaborative Programs, SEAFDEC has long been trying to support comprehensive studies and better practices in the region. Even so, the region struggle to keep pace with the rapidity with which new environmental issues are raised in the international arena.

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Yet, if the globalisation of fisheries is to be further promoted using an indiscriminate approach that does not consider the particular contexts and needs of developing countries, there will be far-ranging social, economic and cultural repercussions on fisheries in ASEAN countries, and most of these will not be positive.

In Southeast Asia, where fish is more popular than meat, people have always been culturally, economically and socially dependent on fisheries resources, to an extent that is not common in many other places of the world. But despite this, the fisheries industry in the region – as elsewhere on earth – has only been significantly developed as a business and as a mean to obtain foreign exchange earnings since the 1960s. Most of these fisheries, regional and global, are a threat to the long-term sustainability of the sector both in-shore and off-shore.

ASEAN-SEAFDEC member countries need therefore to avoid falling into a game of radical opinions. The prevalent systematic attitude adopted in the region to avoiding encounters with global environmental pressure, considering all of them as threats, may not be the most constructive or effective stance to take. Some global initiatives could actually fit well to the regional situation and offer an opportunity for promoting existing sustainable fisheries and encouraging those that are likely to become so. The Resolution on Sustainable Fisheries for Food Security for the ASEAN Region adopted during the Millennium Conference was in fact a policy and approach to fisheries globalisation to “increase the participation and involvement of ASEAN Member Countries in international fora to safeguard and promote ASEAN interests”. Recently, as shown in the Special Feature of this issue of *Fish for the People*, SEAFDEC has started to investigate the impacts and likely merits of eco-labelling fisheries products. Without doubt the debate on this concept will soon spread throughout the region, and subsequent activities will take place in the coming couple of years, notably under the ASEAN-SEAFDEC Collaborative Programs.

Yasuhisa Kato

FISH for the **PEOPLE** is a special publication produced by the Southeast Asian Fisheries Development Center (SEAFDEC) every six months as part of the ASEAN-SEAFDEC Special 5-year Program to promote sustainable fisheries for food security in the ASEAN region.

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Eco-labelling aquatic products:

Niklas Wennberg and Martin Bjerner

*Can consumer power
Asian fisheries more s*

In 2001, at the ASEAN-SEAFDEC Conference on Sustainable Fisheries for Food Security in the New Millennium: 'Fish for the People', senior officials of ASEAN-SEAFDEC member countries agreed upon a Resolution and Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region which included the statement that the ASEAN countries should "anticipate and address the potential impacts of eco-labelling of ASEAN fish and fishery products".



make the management of Southeast sustainable?



At the 26th session of the FAO Committee on Fisheries (COFI) in 2005, eco-labelling was one of the main items on the agenda. It was subsequently discussed regionally in April 2005, at the Seventh Meeting of the ASEAN-SEAFDEC Fisheries Consultative Group and the Thirty-Seventh Meeting of the SEAFDEC Council in Hanoi. The Council recommended that a regional study on eco-labelling should be conducted from the regional perspective as a basis for future considerations.

The regional study on eco-labelling for aquatic products was conducted from November 2005 to February 2006 by SEAFDEC with technical support from the Swedish Board of Fisheries and financial support from the Swedish International Development Cooperation Agency (Sida). The aim of the study was to conduct a preliminary survey of the current status of sustainable development of fisheries and aquaculture production in the ASEAN countries, and to identify opportunities to participate in eco-labelling initiatives.

Eco-labelling for aquatic products

More than likely, eco-labelling for aquatic products is here to stay, not only in Europe or the west in general, but worldwide. According to experiences from other economic sectors, eco-labelled products will be established and recognized as a principle signalling better management of valuable resources.

The ASEAN eco-labelling study is based on this belief, and here we focus more on the importance and possibilities of supplying products to this likely growing market than debating whether eco-labelling of aquatic products is a passing fluke or something to take in account seriously.

In its report on eco-labelling in 2003, FAO noted that “Engagement in eco-labelling offers developing countries, in particular, the opportunity to promote eco-labelling initiatives accompanied by adequate financial and technical resources in order to offset or compensate some of the costs from improving fisheries management and related implementation of international agreements”.

Eco-labelling: definition?

The definition of eco-labelling referred to in this study is the general description reflecting ISO 14000-standard.:

- Eco-labelling is a tool to promote products with less negative environmental impact than comparable products.
- Eco-labelling is voluntary. The systems are transparent and should be open for every country and aiming at promoting free trade. Environmental criteria must be relevant and possible to monitor and audit. LCA perspective (life cycle assessment) is a guiding principle.



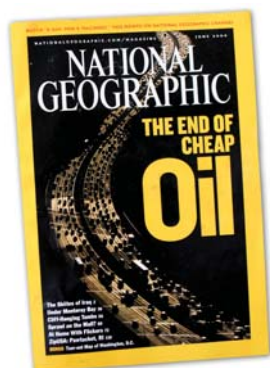
In this article, the authors discuss eco-labelling in the ASEAN region context, highlighting some relevant experience with eco-labelling of aquatic products in Europe, and summarizing outcomes and recommendations from the study.

A generic perspective

It is very difficult, in Southeast Asia as elsewhere, to recognize every attempt to eco-label or label practices of sustainable fishing or aquaculture management in any region. Our study cannot claim to be complete. The final report presents examples of aquatic production that indicate extraordinary good practice, covering marine as well as brackish and fresh water. We consider sustainable production of fish, crustaceans, seaweed and other organisms that have commercial potential.

Fisheries in our study include fish for human consumption, fish-feed and ornamental fish.

We chose to report on general observations that could have a substantial impact on the future in terms of sustainability



The days of cheap oil seem to be over. This means that future methods in aquaculture and fisheries will undergo sometimes dramatic changes. Extensive methods with low input of fossil fuels will probably gain advantages on a global market. Pure economy is one factor; impact on the environment another.



FAO open to range of management schemes

The following excerpt is taken from the FAO report and show the openness of the organization to a wide range of management schemes in order to include countries at different levels of economic development in the eco-labelling movement.

The meeting recognized that developing countries and countries in transition have special requirements for adopting eco-labelling of fish and fishery products, stressing the importance of facilitating the adoption of eco-labelling by these countries through appropriate measures and international support.

In particular, the meeting noted that when considering means to assess the current state and trends in target stocks:

"There are many ways in which state and trends in stocks may be evaluated, that fall short of the highly quantitative and data-demanding approaches to stock assessment that are often used for large scale fisheries in developed countries. Use of less elaborate methods for stock assessment should not preclude fisheries from possible certification for eco-labelling. However, it should be noted that, to the extent that the application of such methods results in greater uncertainty about the state of the resource, more precautionary approaches to managing such resources will be required. There is a variety of management measures commonly used in small scale or low value fisheries that nonetheless can achieve quite adequate levels for protection for stocks in the face of uncertainty about the state of the resource. However, in general, use of less elaborate methods will necessitate lower levels of utilization of the resource."

for the region as a whole or for part of it. We have decided not to limit our recommendations to those applicable to all countries of the region. Even so, it is obvious that discussing eco-labelling at the regional level is important to aquatic production based on long-term economic thinking.

A broad dialogue

We estimate that overall more than 450 persons have taken part in this exchange of opinions and experiences on eco-labelling in Southeast Asia. Our main objective has been to carry out an inventory of good practices and experiences from the field of eco-labelling fish or other products or practices. But it is also important to recognize that a large number of our meetings focused on the presentation of our study and its background.



Life Cycle Assessment: what are we talking about?

The complex interaction between a product and the environment can be measured using the Life Cycle Assessment (LCA) method. LCA systematically describes and assesses all flows to and from nature, from a cradle to grave perspective. The environmental impact of a product consists of all impacts caused from boat or pond to the consumer.

Eco-labelling programmes

Eco-labelling programmes usually fall into one of the following categories:

1st First party labelling schemes

These are established by individual companies based on their own product standards. This form of eco-labelling is also known as self-declaration.

The simplest form is when a fishing boat or company puts its own label on the product, claiming that the product comes from good practice in terms of environmental sustainability. Some of these claims are valid and based on reality, others not. Ultimately, how does the consumer know?

2nd Second party labelling schemes

These are established by industry associations for their members' products. The members elaborate certification criteria, sometimes by drawing upon external expertise from academia and environmental organisations. Verification of compliance is achieved through internal certification procedures within the industry or employment of external certifying companies.

3rd Third party labelling schemes

These are usually established by a private initiator independently of the producers, distributors and sellers of the labelled product. The initiator could also be a governmental or an international organisation. The criteria selected are usually the result of a multi-stakeholder-process that includes all important stakeholders: fishermen, industry, government, green movement and others. Environmental organisations and consumers generally prefer third-party eco-labelling as it gives the system higher credibility.

In this way, we believe that we have upgraded the knowledge of stakeholders in the region and that we have highlighted the topic in the various organizations that we have visited – an investment for the future. We believe there are reasons to embark on further pilot studies and projects aligned with our recommendations. We have upgraded this interface for considerations of eco-labelling down the road.

Eco-labelling – a tool for sustainability

Eco-labels are seals of approval rewarded to products that have less negative impact on the environment than other functionally equivalent products. The goal of eco-labelling is to promote sustainable managed aquatic resources and to highlight these products to the consumer. This is important, as it is widely recognized in the international community that the world's commercial fisheries are in distress, and that management schemes in the hands of governments are not good enough to secure this resource for generations to come.

FAO guidelines

FAO's guidelines for eco-labelling of marine capture fisheries have to some extent hindered the region from getting involved in eco-labelling. FAO's guidelines have been perceived as biased, supporting western style management more than other practices in fishing and management.

Here are a few of the basic FAO principles for eco-labelling:

- *Third party fishery assessment using scientific evidence*
- *Transparent processes with built in stakeholder consultation*
- *A three pronged standard based on sustainability of target species, ecosystems and management systems*

One standpoint in this study is to recognize the importance of compliance with FAO guidelines in devising eco-labelling schemes. Equally important is to advocate international measures to for creative methods to describe and monitor stocks and fishing. It is essential to address the fact that some of the regions most yielding fisheries could be deterred from implementing eco-labelling due to the current lack of capacity and resources of the government agencies in the region in implementing conventional management measures. In that regard, efforts must be made to upgrade trust in tropical fisheries management tools such as co-management schemes, and to highlight existing sustainable management in the region.

Benefits from credible eco-labelling schemes

For the environment

- Environmental impacts identified and reduced
- Stocks managed sustainably.

For the fisheries and aquaculture sectors

- Access to new markets, and protection of existing markets
- Product differentiation in competitive markets
- Confirmation of good management
- Potential for charging a premium on eco-labelled goods.

For the commercial sector

- Enhanced reputation
- Risk management
- Respond to customers demand for greater responsibility
- Brand recognition and enhanced brand value
- Environmental management is highly appreciated by employees
- Contribution to market transformation

For society

- Global food security
- Protection and development of livelihoods
- Stakeholder involvement
- Empowerment of individuals and communities
- Transition towards sustainable production and consumption
- Lasting fish stocks, giving food and income today and in the future.

Potential areas for eco-labelling

Our study does not describe specific operations with names and addresses, but does point out general areas that add up to the future potential for eco-labelling in Southeast Asia. We are certain that in many cases there are extraordinary advantages for countries in the ASEAN region for aquatic production to be eco-labelled. This is partly because:

- The region holds numerous stocks of aquatic organisms that are very strong in a world stigmatised by depleting stocks, and
- The region holds a wide range of extensive methods in aquaculture and capture fisheries that represent advantages compared to other regions, in terms of small inputs of fossil energy, chemicals and antibiotics.

ISO

ISO's guiding principles

ISO relies on the following guiding principles for eco-labelling:

1. Quality of standard
2. Transparency of process and governance
3. Adequate, multi-stakeholder participation
4. Voluntary system
5. Impartiality of certification
6. Compliance with its own claims
7. Access for all – regions and size of operation
8. Verifiability – possible to audit
9. Continued improvement of standard.

Extensive methods

Extensive methods in aquaculture could mean either little inputs of chemicals and antibiotics; substantially less fossil energy used in the production; and/or major advantages in terms of food quality/safety.

Herbivorous fish

Southeast Asia is well known for the production of herbivorous species deriving from both culture and capture fisheries, while global awareness is growing of the need to move down the trophic levels in order to create sustainability and food security. The export of herbivorous fish from Southeast Asia to western countries is increasing, but consumers are normally expatriates and small groups of westerners used to eating fish such as carp. A small portion of the export actually ends up on plates of enlightened westerners choosing herbivorous fish for either environmental reasons or the desire to explore exotic new tastes.



The Swedish experience

In July 2004, the first eco-labelled Swedish shrimps were sold at fish auction in Göteborg. In 2006, eco-labelled herring will hopefully be delivered to market, and it is expected that more products from eco-labelled fisheries will develop, as has been the case for other foodstuff sectors. In some European countries, registered growth of eco-labelled food has been over 15% annually.

In Sweden – one of the more progressive European countries in terms of eco-labelling – milk products, fruit and vegetables were eco-labelled in the mid 1980s. Fisheries followed 20 years later! The initiative to create an eco-labelling scheme for capture fisheries came rather from the authorities than from the green movement. The Swedish Board of Fisheries was a major driving force, backed up by the European commission, the Nordic Council of Ministers and the Swedish industry.

Politics are not enough

European countries have to a large extent failed in their ambitions to create sustainable management for their commercial stocks of fish. In Sweden, this is certainly the case. Cod is historically the most important species and the situation is critical for the stocks on the west coast, causing the International Council for the Exploration of the Sea (ICES) to recommend zero catch.

The three main reasons for developing eco-labelling are:

- Politics and policies are necessary but not sufficient to protect the resources. Consumer preferences are considered important to support the sustainable management of fisheries
- There are no incentives for fishers to choose best practices in terms of sustainability, and
- Swedish consumers want eco-labelled food. Eighty percent of Swedish fish-buyers say they are willing to pay more for eco-labelled products from capture fisheries.

Multi-stakeholder participation

Eight organisations financed the Swedish/Nordic scheme. Most of these are governmental but there are also stakeholders from the economic sector. The question was what organisation should set the criteria and run the scheme. KRAV (the largest third party eco-labelling-organisation for foodstuffs in Sweden) accepted to carry out the job, being the most experienced third party certifying body for foodstuffs in Sweden. It took about three years to create the criteria and launch the system, bringing the first shrimp to the auction. That might seem like a lot of time. Involving all the stakeholders (fishermen and their organisations, green movement, different levels of government, science and businesses) takes time, but this is a good investment. Everybody round the table has to be fairly happy about the labelling, otherwise the scheme will fail. Excluding the green movement from the dialogue would save time in the short term, but in the long run would most certainly be a mistake.

Products for export

The first eco-labelled product was shrimp, which is only sold fresh on the Swedish market. The next product eco-labelled will be pickled and canned herring. This product is very interesting for a European market. When sold to Germany, the herring will be re-certified by Naturland in order to be recognized by the consumer. How large the price premium is for eco-labelled fish from the Nordic waters must be a guess. After about a year on the market, the price of shrimp on the auction is about 10% higher. There is nothing indicating that consumers will treat the herring differently.

Shrimp-criteria in short

- Well managed stock
- Selective devices to exclude by-catch of fish
- Extended report on by-catch
- Eco-labelled hydraulic fluids and grease, and best quality diesel
- Self-monitoring system
- No colouring of catch, and
- Compulsory training in sustainable management of marine resources.

This 17-year old crab-fisher in Koh Kong, Cambodia, is part of a very promising development of sustainable small-scale coastal fishery. The number of boats is growing and still the yields of fish and crustaceans seem to be stable.

The export from the villages is limited and not directed to a market that recognizes eco-labelling. Even so, these villages could export eco-labelled products in the form of eco-tourism where visitors pay to be part of coastal life based on sustainable aquatic production.



The omnivorous tilapia, for example, is popular in western markets. It is currently widely grown in intensive conditions that could not be defined as sustainable, as it is fed with pellets rich in fish protein from capture fisheries. But tilapia has the potential to have only a small environmental impact if they are raised like herbivorous plankton filtering fish. An eco-labelling initiative could support a shift in today's tilapia culture practise, as it would provide a price incentive to skip marine fish meal.

The potential of exported herbivorous fish is based on:

- The evident environmental advantages of herbivores, as no marine protein has to be used.
- There are several herbivorous species that are well suited for western standards of taste and aesthetics

- Production costs for herbivorous fish is lower than for carnivorous species. The difference in cost between the two will probably increase as a consequence of higher energy costs and increasing cost of fish meal
- The ambition to substitute unspecified marine protein in aquaculture with alternative protein sources will take a long time to be implemented, and
- The road to eco-labelled herbivorous fish is shorter than that for carnivorous species.

Eco-labelled fishfeed

During the study, several dialogue-partners mentioned that sooner or later the region will have to start developing a sustainable feed for cultivated fish and shrimp. One partner emphasizing the importance of doing so is the FAO



The regions purse-seine fishing for tuna might be a concept to eco-label. To establish whether the method gives environmental advantages or not, many aspects have to be surveyed, such as the potential for excluding endangered species – fish and mammals; the use of fossil fuels and the negative impact on marine biotopes.

Great Britain's 'Farmers own'

As eco-labelling develops as a means of assuring consumers that their demand for sustainability is being met by producers, we see that consumers are pushing development of trade towards markets resembling those that used to exist decades ago. The 'Farmers own' phenomenon in the UK is an interesting example of this.

'Farmers own' is a concept in which small-scale farmers and fishers sell their own products at a local market in urban areas, with most customers being highly educated, high income urban dwellers. First-hand selling to customers is the keyword. Products do not necessarily have to be organic, although many are, as customers in this category understand the importance of less environmental impact.

Since the first 'Farmers own' market started in Bath ten years ago, their number has grown to 520 nationwide. London alone holds ten 'Farmers own' open all year round. The Department of Agriculture claims that 'Farmers own' is the most important factor for small scale businesses to develop. A similar situation is found in the US.

Regional Office for Asia and the Pacific, which argues that western consumers will not accept the use of unspecified marine protein much longer. But is it possible to find marine stocks of fish that can be the basis for eco-labelled feed?

The importance of the issue of feed indicates that extensive solar-powered aquaculture systems relying on herbivorous fish, in some cases independent of external feed, could deliver market advantages in the future. High prices would compensate for low stocking density, on a market where environmental concern is highlighted.

Other ways to solve the dilemma with marine protein from controversial stocks is to find protein from terrestrial systems. As an example of other countries in the region doing similar research, Indonesia has a promising project to produce maggots raised on oil-palm press-cakes. Four kilos of oil-palm waste is converted into one kilogram of maggots from the black soldier fly. The process can be made



Several dialogue-partners during the study have mentioned that sooner or later the region will have to start develop a sustainable feed for cultivated fish and shrimp. FAO for instance has the clear opinion that western consumers will not accept the use of unspecified marine protein much longer. Is it possible to find marine stocks of fish that can be the base of eco-labelled feed?

Eco procurement – public sector on the move

Copenhagen, the capital of Denmark, has made a political standpoint that 85% of the food cooked in public kitchens (schools, hospitals and others) should be eco-labelled by 2008. Meanwhile, the third biggest city in Sweden, Malmö, has gone further, stating that 100% of the food served in schools in 2010 should be eco-labelled. Many other European cities, regions and national offices have already made similar statements. Concerning eco-labelled fish, this causes problems, as there are not enough eco-labelled fish-products on the market to meet the demand. This market-failure forms a motive for the ASEAN region to be much more proactive, and to form partnerships with the public sectors looking for green fish compatible to their policies and statements.



If the feed-issue is so important, this indicates that semi-intensive solar-powered aquaculture-systems, in some cases independent of external feed, could gain a market advantages now and in the future. High price compensate for lower stocking density on a market where environmental concern is highlighted.

locally and the price for the protein rich feed is less than that of marine origin. Of course, effects on taste, structure and quality parameters of the fish should be studied first.

be a local market, a regional market, or even a global market, or perhaps all of them. In our study, we have not narrowed the scope to a specific market.

Barefoot monitoring

One alternative for enhancing the limited resources of government agencies and academic research and science institutions is 'barefoot monitoring'. This approach uses the green movement, schools and other parts of civil society to monitor aquatic systems, to gather statistics and to safeguard the principles set down for management while – at the same time – raising awareness in the community. Children are always good ambassadors for good practice. There are many examples of such approaches being used around the world. The green movement would no doubt agree that under certain circumstances approaches such as these boost the credibility of eco-labelling.

The dialogues in the countries visited showed that in order to get a price benefit from eco-labelled products you probably have to address a market in a developed country. Such markets could be the starting point for giving more incentives to producers and trade to develop their market awareness and eventually to go local, introducing eco-labelled aquatic products to the domestic and regional market.



Leaving aside whether the starting point is local or international, we expect that in a few years time, eco-labelling will also be an important factor in Southeast Asia. Consumers will demand guidance as to what products have less damaging environmental impacts, and at the same time, stand for social awareness.

New markets for greater environmental awareness

If you develop a system for eco-labelled fisheries, you probably have a specific target market in mind. This might

When presenting our case and the possible future for eco-labelling in the region, we must emphasize that eco-labelling of one kind or another is already present in all the countries of the region. Producers of vegetables, fruit, dairy products and



The recognition of ISO 9 000 and 14 000 is wide spread in the region and most countries have experience and competence from setting up criteria and organisational capacity for systems similar to eco-labelling schemes. What organisation/organisations that has the best advantages for leading a future project of developing eco-labelling further in the region is an open question. More self evident is that the process of developing criteria should be based on multi-stakeholder-participation. Clean and Green working in the Philippines is one of the well experienced organisations in the region.



Myanmar stakeholders in the fisheries sector clearly claim that their aquaculture and capture fisheries are well up to the challenge of meeting strict criteria for eco-labelling. Maybe that's a fact. Would it be possible for the western international body to open the borders for eco-labelled products from Myanmar as part of a constructive dialog focused on sustainability?

others make claims that their products have a less negative impact on the environment than others. Claims are made by putting some kind of label or tag on the package referring to some sort of good practice.

The growing jungle of labels and tags carrying all sorts of claims of better practice is a natural function of an economy in transition. When shopping is done at the local market, where consumers actually meet the producers, no label is needed. I buy my carrots or my tools from Mr. Good Guy because I know him, his skills and methods. The growing distance between producer and consumer means that the old kinds of trust built on personal relations will be exchanged for new trust-building forms of communication. Now producers must build brands that stand for quality, safety, environmental concern and social concern. Obviously, the distance to the consumer is fuelling an ever-growing market for advertising and packaging, taking the place of Mr Good Guy who used to produce, market and sell his products all by himself.

In Europe and other western economies, we see an interesting development of market communication at the

time. The interest in the environment is stable and the will to make a difference when shopping is constant. Eco-labelling is growing rapidly in most western countries in terms of economic turnover and the number of products labelled.

Support from government and non-government organizations

Few if any of the visited countries in the region have had substantial support from government Trade Councils or similar in promoting eco-labelled aquatic products abroad. Participating in foreign trade shows is a common procedure, and the day the market wants eco-labelled, communication about this special product-quality will commence.

It could be interesting if the region supported the dialogue on what eco-labelled products could be delivered from this region. Why not in tradeshows in 2007 or 2008? This would include the presentation of products on display, described in terms of sustainability. This will help in creating an interface with the market, while ensuring that western standards take into account specific Southeast Asian perspectives. This roadshow could create a major discussion on the future of aquatic production, this time with the ASEAN region more responsible for establishing the frames of discussion. The advantage of describing the problem and addressing solutions is of great value. Government, business, certifiers, the green movement, media and all other stakeholders would benefit from an initiative like this.

Timing is everything

What would be the best timing for launching eco-labelled products from fisheries in the ASEAN region? Some countries are already exporting substantial volumes, mostly of shrimp but also fish.

Of course there cannot be one correct answer, but a qualified guess is that it is necessary to start now and to take the needed time setting up organisations and standards in order to do the job correctly. This way it is possible to avoid repeated turning backs to repair what has been done too hastily. Earlier, we talked about the importance of multi-stakeholder-involvement. It always takes time to involve and to form meetings with many partners. But this is essential in order to create a model with which everyone is fairly satisfied.

Food concepts are exported all over the globe. Thai cuisine is the fastest growing international cuisine in the world. From an environment and health oriented standpoint: let's hope that the Southeast Asian way of life will stand strong in competition. The picture is from Bangkok.



Would it not be best to enter the already substantial western market as quickly as possible? Not necessarily. In Germany, eco-labelled food had already appeared in the 1970s, and in the rest of Europe mid 1980s. But this was just vegetables, fruit and dairy products. Eco-labelled fishery products have only been introduced in western markets in the past five years. Eco-labelled aquatic products are therefore new and exotic to most consumers, and a great effort will be needed before they reach the level of other food stuffs.

Good timing is never a coincidence; good timing, when delivering a product or a concept on the market, is created. It should not be a wild guess.

Multi-stakeholder involvement

In order to establish criteria and to get products accepted, it is necessary to form standards and structural capacity for eco-labelling with multi-stakeholder involvement. If managed well, multi-stakeholder participation also means that the principles and products are marketed long before they are presented to the consumer. A positive aspect of involving green movements in forming criteria is that they will write about the process in their newsletters and magazines positively and constructively.

The greater the distance of produce from the market, the greater the need for the credibility provided by third party labelling. Distance between producer and consumers comprises several factors. Including not only physical distance, but also economic, political (such as, in the worse case, embargoes) and cultural dimensions. There can also be a distance in terms of taste and cuisine style.

It is therefore important to activate all stakeholders that can help to minimize distance. Tourism has turned many Southeast Asian countries into "neighbours" for many Europeans. Does this give an advantage when selling eco-labelled fish to Europeans? Yes, definitely! In short, it means that it is important to use many carriers of the message bringing the supplier and the buyer closer. Is it possible to launch the idea that eco-labelling should be considered a category products to be handled less restrictively in case of a trade barrier or embargo? If so, where should this issue be raised?

Finding and "courting" the big ones

In many western countries, 50-80% of consumers say that they are willing to pay more for eco-labelled fish. Of course, this gives the retailers a good reason to supply eco-labelled aquatic products. Still, there are well-defined markets that could be even more interesting in eco-labelling. Eco procurement (also known as 'green procurement') is a rising star in Europe. Most countries have national, regional and local strategies to promote eco-labelled products bought by the public sector at the national, regional and local levels.

Potential for fast food and global retailers

If a major fast food retailer such as McDonalds were to commit to producing fish burgers from tilapia, as it is presently considering, perhaps 15% of the world's fish burgers would be produced from herbivorous fish – a significant potential for eco-labelling aquatic products. Similarly, big retailers like Marks & Spencer's, Coop, Carrefour and others are gaining market shares and could benefit from introducing new species with better environmental connotations. Many initiatives have of course been taken to investigate possibilities that advantageous for both exporters and importers. The ongoing debate in western countries about over-fishing of the world's waters will keep the focus on the need to provide aquatic protein in more sustainable ways. More studies and initiatives are needed to provide evidence that stocks and production in the ASEAN region could export large quantities of aquatic products in terms of security of delivery, price and environmental sustainability.

Future directions for the region

The outcomes of the study and the recommendations by the team were presented at the Regional Technical Consultation on International Fish Trade and Related Issues, held in February 2006 in Bangkok. The following recommendations for the ASEAN region were made:

- Eco-labelling schemes in the region should be used as a tool to promote sustainable fisheries practices;
- A clear understanding and definition of eco-labelling in the regional context, with development of appropriate criteria and standards, should be developed, and local capacity for eco-labelling and public awareness on sustainability issues should be built up;
- Accrediting and certifying bodies for the region should be either set up or identified, while a clear recognition of the roles of the different stakeholders, especially the government and industry, should be given with an emphasis on the importance of a inter-stakeholder dialogue;
- The ASEAN countries and SEAFDEC should conduct a study on the potential, difficulties and impacts of the FAO international guidelines for eco-labelling for fish and fishery products from marine capture fisheries in the region, and should prepare necessary inputs for future development at FAO;
- Market studies to further analyse potential

markets for eco-labelled products and to investigate how to marketing the products should be conducted;

- Pilot projects to demonstrate how to implement eco-labelling scheme with existing sustainable practices should be initiated; and
- Relevant international/regional institutions like SEAFDEC, FAO RAP, NACA, MRC and the ASEAN Secretariat should take an active coordinated role in the further development of eco-labelling for aquatic products in the ASEAN region.

The ASEAN-SEAFDEC Fisheries Consultative Group meeting took place in April in Brunei Darussalam. Based on the outcomes of this regional study and the suggestions made during the RTC on International Fish Trade and Related Issues, the meeting noted that there is no clear policy direction on the issue, and supported initiatives to explore further the concept and approach in the regional context, including the implementation of pilot studies to provide a basis for future in-depth discussion among the member countries.

The meeting also suggested that a regional strategy on the issue need to be developed. The strategy would also take into consideration the following:

- The role of government in addressing issues of eco-labelling both in terms of being a market driven incentive and a tool to promote sustainable practices;
- Active participation in future amendments/development of initiatives related to eco-labelling at relevant international fora;
- Specificity and uniqueness of fisheries in the ASEAN and SEAFDEC member countries; and
- Practicability of any labelling scheme and readiness of fisheries sub-sectors or fishery products.

Readings

- Report of the Expert Consultation on the Development of International Guidelines for Ecolabelling of fish and fishery products (FAO Fisheries Report No. 726, FIPP/R726 technical consultation Rome 14-17 2003) Available online: www.fao.org/documents/show_cdr.asp?url_file=/DOCREP/006/Y4941E/Y4941E00.HTM
- Regional Study on Eco-labelling of Aquatic Products: General Views and Future Considerations for the ASEAN Region



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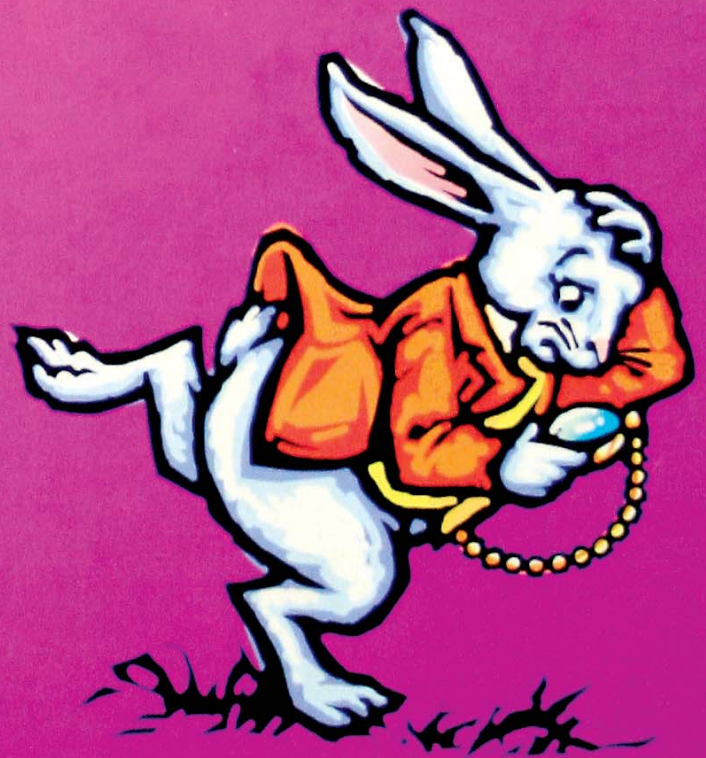
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Adventures in
the Co-Management

Wonderland:

Measuring the Human Dimension



Victor Cowling

When people ask me what I do, I reply that I am working to find ways to get government and communities to work together better in order to improve natural resources management.

The fashion of the last few years has been to call this *co-management*, something that tries to reach an appropriate balance between the roles and responsibilities of the government at its various levels and the communities – the key resource users, to whom livelihoods and quality of life are at stake. Co-management applies at the interface of the ecosystem and the human system. Changes in state of the first are brought about by changes in behaviour of the second.

Anyone who has been working in the co-management field will probably know the feeling – you arrive in a community, start looking around, start talking to the people and quite soon you can tell, the place seems to be doing well. There is a feeling you get, that the community is acting together, the local government supportive, activities are underway and somehow, there is an air of co-management happening. But how can we quantify this, how can we persuade other people who have not visited this place that it is indeed an example of co-management in action?

You have got to have indicators

In Lewis Carroll's *'Alice's adventures in Wonderland'*, Alice asks the Cheshire Cat:

'Would you tell me, please, which way I ought to go from here?'

'That depends a good deal on where you want to get to,' said the Cat.

'I don't much care where—' said Alice.

'Then it doesn't matter which way you go,' said the Cat.

'—so long as I get SOMEWHERE,' Alice added as an explanation.

'Oh, you're sure to do that,' said the Cat, 'if you only walk long enough.'

Co-management is not top-down and government-directed, nor is it bottom-up and community-led; there has to be a shared responsibility. Both parties bring certain things to the table. Governments can bring authority, technical skills and knowledge, can take a broader geographical and socio-economic view, and, if necessary, can mediate, adjudicate and legislate to react to conflicts over natural resources and their excessive exploitation.

Local communities bring their intimate knowledge of the condition of the resources, their detailed awareness of history and change and their fundamental reliance on the continued ability to harvest the resources.

For the best possible management, one has to know where the co-management balance currently sits, and to have a clear idea of where it should move.

For environmental components, this may be possible. While there are still debates about the best way to measure sustainable fish catch, you can at the least get figures for the numbers, the weight, the species, the time spent, the gear used – usually sufficient to make comparisons with the past (and, maybe, predictions for the future), sufficient enough detail to make an assessment of the effect of any change in management systems.

You can measure the extent of mangrove reforestation, you can do the same for sea-grass beds; divers can inspect coral reefs for their health and extent. High profile species such as turtles or dugongs can be subject to a census. So, even accepting that all environmental management is to a degree experimental, there are tangible things that you can measure.

But how do you measure the human parts of co-management? How can you put numbers to community solidarity, participation in decision-making, social inclusion? What scale can you use to judge the receptiveness of government to more decentralised control over natural resource use, or the willingness to implement policies that challenge vested interests? These things are intangible, perhaps less easy to assign cause and effect linkages to. But you need to try to make measurements, for without evidence of the beneficial impacts of a co-management approach, how can we ever convince the sceptics, the risk averse, the donors even, that the time and money invested in co-management does have paybacks?

Entering the co-management wonderland

Here, maybe, we enter co-management wonderland – but can we be more aware than Alice about where we are trying to go? There are a few characteristics that may help us design some ways of measurement, some indicators of progress.

What is needed is consistency – if three different people use the same instrument to measure some aspect of the human system, how can they be sure to get the same result – as they would if they all used a set of scales to weigh the day's catch of one small-scale fisher?

What is needed is simplicity – ways to assess that aren't intrusive, extractive and so complex that special training courses are required to learn how to do it. There is a whole industry in such work, and we do not need to create still more such industries.

What is needed is durability – we shall want to take more measurements in the future, so the method must still apply further down the road to co-management.

What is needed is accessibility – the methods must be meaningful to the populations that live in the target areas as well as robust enough for use in field conditions.

Having asked these questions, and set standards that we might expect from indicators, what about some answers? There are methods aplenty in the research literature, but it gets harder to find ones that have been used successfully in the real world, in all its natural fuzziness.

Just like Alice, we see that we need a direction to take and we also need to be able to check if we are actually going that way, however slowly. In the language of internationally funded projects' LogFrames, we come to Objectively Verifiable Indicators (OVIs). Indicators are instruments to define and monitor those aspects of a system that provide the most reliable evidence as to its overall well-being. They are used to provide cost-effective and time-effective feedback on the health of a system without necessarily examining all components of that system.

For quantitative matters this is not so difficult. You can set measurable indicators (numbers) for many components of the environment, as noted above. Catch per Unit Effort (CPUE), species diversity in a mangrove forest, numbers of dugongs in a sea-grass bed; these may not give complete pictures, but they are indicators. Similar measures can be drawn up for financial support to and income generation from alternative sources of livelihoods.

For qualitative matters, it gets more difficult.

While numbers have a role to play in assessing performance, project managers should remain cautious when embracing numerical assessments i.e. quantitative indicators for monitoring and evaluation. It is critical to remember that numbers have an unfortunate tendency to supersede other kinds of knowing. The human mind is a miracle of subtlety: it can assimilate thousands of pieces of soft information – impressions, experiences, intuition – and produce wonderfully nuanced, carefully judged decisions. Numbers are problematic to the extent that they give the illusion of providing more truth than they actually do. They favour what is easiest to measure, not what is most important. This was a constant problem in this author's local government career in the UK.

A number of models are out there; I will mention just two quite interesting ones for this short article.

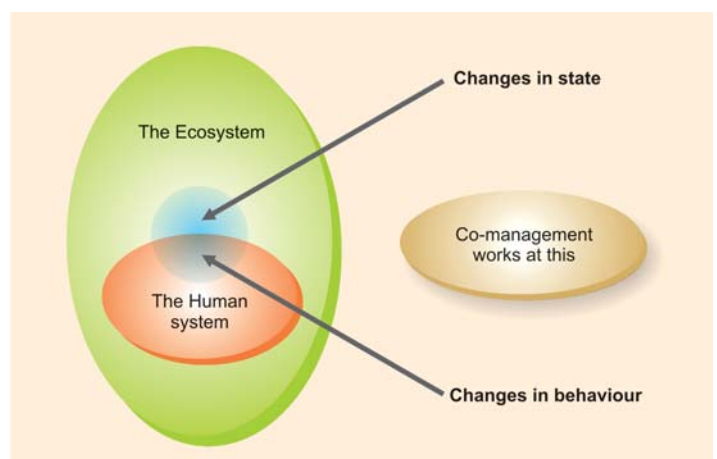
Outcome mapping

Canada's International Development Research Centre (IDRC) is the driving force behind this, and very full coverage of its work is available online at www.idrc.ca.

Progress Markers or indicators could be expressed in this way:

The (insert your Coastal Resources project name here) project intends to see local communities that recognize the importance of, and engage in, the planning of resource management activities in partnership with other resource users in their region. These communities have gained the trust of the other members of the partnership and the recognition of government officials so that they can contribute constructively to debates and decision-making processes. They are able to clearly plan and articulate a vision of their coastal resources management activities and goals that is relative to their context and needs. They call upon external technical support and expertise as appropriate. They act as champions for model coastal resources management concepts in their communities and motivate others in the partnership to continue their collaborative work.

For this article I draw your attention to IDRC's ideas concerning indicators for mapping behavioural change in Natural Resource Management programmes. They suggest that it is a concept that projects could employ in the difficult challenge of giving weight to the values and judgements made by different stakeholders involved in assessing progress in (coastal resources) co-management. It is not the role of this outside author to suggest what weight should be given to which component, since every situation will be somewhere in the co-management spectrum. In this regard, one has to have an



Example

adapted from one given by IDRC in its Outcome Mapping handbook.

EXPECT TO SEE LOCAL COMMUNITIES:

- Participating in regular coastal resources co-management partnership meetings
- Establishing a structure for cooperation in the partnership that ensures that all local interests are represented (mechanics of setting up the structure)
- Acquiring new skills for involvement in the coastal resources co-management.

LIKE TO SEE LOCAL COMMUNITIES:

- Articulating a vision for coastal resources co-management that is locally relevant
- Promoting the coastal resources co-management concept and their experiences with it
- Expanding the partnership to include all the main resource users
- Calling upon external experts when necessary to provide information or meet technical needs
- Requesting new opportunities for training and extension
- Producing and disseminating concrete examples of benefits arising from coastal resources co-management activities
- Identifying opportunities for collaboration with other institutions and actors
- Identifying opportunities for, and successfully obtaining, funding from a range of sources.

LOVE TO SEE LOCAL COMMUNITIES:

- Playing a lead role in resource management with view to long- and medium-term benefits
- Sharing lessons and experiences with other communities nationally and internationally to encourage other coastal resources co-management initiatives
- Influencing national policy debates and policy formulation on resource use and management



Major fishing activity on the Cambodian Mekong,
but mostly Vietnamese fishers



Commercial cage culture in Thailand

agreed means to debate if the current situation is the right one. If it is not, a way is needed to find agreements about what should change in order to bring about better management (whilst respecting the uncertainties of management outcomes in these complex situations).

IDRC uses the concept of Progress Markers. These are:

- A graduated set of statements describing a progression of changed behaviours in a stakeholder.
- Changes in actions, activities and relationships leading up to the ideal outcome, or outcomes.

The 'project' sets out what it would:

- Expect to see its stakeholders doing
- Like to see its stakeholders doing
- Love to see its stakeholders doing.

As a set, Progress Markers:

- Are graduated from easier to more difficult to achieve changes in behaviour.
- Describe the change process of a single stakeholder.
- If a programme has multiple stakeholders but the primary result to be achieved is changing their relationship with one another, then it is possible to create a single outcome challenge and set of progress markers for the whole group.

These markers, indicators, mileposts, can be categorised to those the project expects to see, would like to see and would love to see the local communities doing.

Projects could easily adapt and adopt these for their activities in working with government at different levels, NGOs and other identified stakeholders. The concept is fairly straightforward. Progress markers that indicate reactive participation by the stakeholder are relatively easy to achieve and are listed first, under "*expect to see*"; whereas those that indicate more active learning or engagement are listed second, under "*like to see*"; and those that are truly transformative are listed third, under "*love to see*". In this way, the project will be able to trace what has been accomplished, while being reminded of what still needs to be achieved. The "*love to see*" progress markers should be set sufficiently high to represent profound change.

Individually, progress markers can be considered as sample indicators of behavioural change, but their real strength rests in their utility as a set. Cumulatively, they illustrate the complexity and logic of the change process. This is something that no single indicator can accomplish.

The 'Most Significant Change' Technique

The '*most significant change*' (MSC) technique was invented by Rick Davies and Jess Dart in an attempt to meet some of the challenges associated with monitoring and evaluating a complex participatory rural development programme, which had diversity in both implementation and outcomes, in Bangladesh.



Provincial level government officers in Lao PDR discuss community fisheries management



Tambon level government officers and community members mapping resources in Phang Nga Bay, Thailand

The MSC technique is a form of participatory monitoring and evaluation. It is participatory because many project stakeholders are involved both in deciding the sorts of change to be recorded and in analysing the data. It is a form of monitoring because it occurs throughout the program cycle and provides information to help people manage the programme. It contributes to evaluation because it provides data on impact and outcomes that can be used to help assess the performance of the program as a whole.

Essentially, the process involves the collection of significant change (SC) stories emanating from the field level, and the systematic selection of the most significant of these stories by panels of designated stakeholders or staff. The designated staff and stakeholders are initially involved by 'searching' for project impact. Once changes have been captured, various people sit down together, read the stories aloud and have regular and often in-depth discussions about the value of these reported changes. When the technique is implemented successfully, whole teams of people begin to focus their attention on program impact.

But, telling a story... is that not too close to that realm of emotion I mentioned before? Is it robust enough for funders? Yes, it seems to be so for those who have been actively using it. There is confidence enough for the authors to write "We are interested in making the Guide as widely available as possible. This document is freely available in .pdf format from our websites at www.mande.co.uk/docs/MSCGuide.htm and www.clearhorizon.com.au "

No universally accepted approach

Neither Outcome Mapping nor the MSC technique are simple add-ons. They are design features, and therefore need to be built in from the start. So far, there does not seem to be any universally accepted approach, and so we find managers of co-management seeking every time to invent something of their own, and always facing the challenge of the complexity of collection and analysis of data vs. clarity of understanding and communication.

The good intent behind co-management is to improve resources management through the improved behaviour of the human actors. Much of this hoped for change in human behaviour comes down to improved democratic processes. Simpler in theory than in practice - governments may voice democratic ideals, but then find it hard to devolve (i.e. relinquish) power, and local communities are often not ready to take up a fuller share of decision making and the responsibilities that go with it. Even in mature democracies, the right balance can be hard to achieve. And even when the majority rules and in general the system is quite stable, individuals inevitably find themselves in the minority on some things, get outvoted, and don't get what they want. These issues then assume great importance, and hence the rise of single issue pressure groups in the more developed world.

This essay has focussed squarely on the people part of 'Fish for the People'. Anywhere there is a natural resource management issue; it is people and their actions that will determine the future. People in communities, people in government, people in business. All may need to change their habits and behaviour, and such change is never such a simple thing to do. But just because something is difficult, it should not mean that we do not try.



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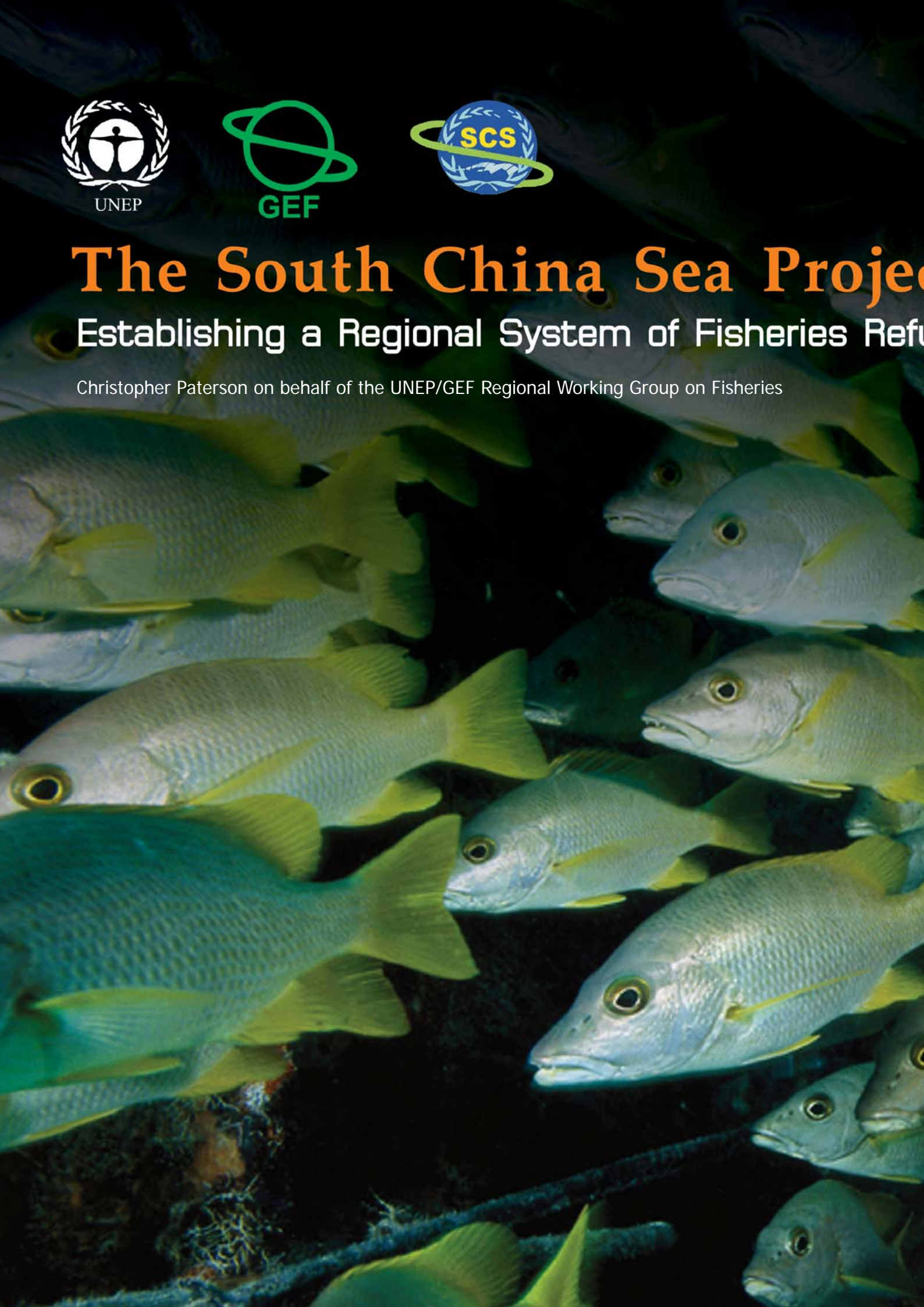
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The South China Sea Project

Establishing a Regional System of Fisheries Refuges

Christopher Paterson on behalf of the UNEP/GEF Regional Working Group on Fisheries





ct:
ugia

The UNEP/GEF project '*Reversing Environmental Degradation Trends in the South China Sea and Gulf of Thailand*', known as the South China Sea Project, has recently entered its operational phase, and the project's fisheries component has begun developing momentum towards achieving one of its key objectives, the development of mechanisms to improve the integration of fisheries and habitat management in the South China Sea and the Gulf of Thailand. This article is the first in a series from the South China Sea Project to appear in *Fish for the People*, and aims to introduce the regional fisheries community to the project and its key fisheries activity of establishing a regional system of fisheries '*refugia*'.

The South China Sea Project: a vast network

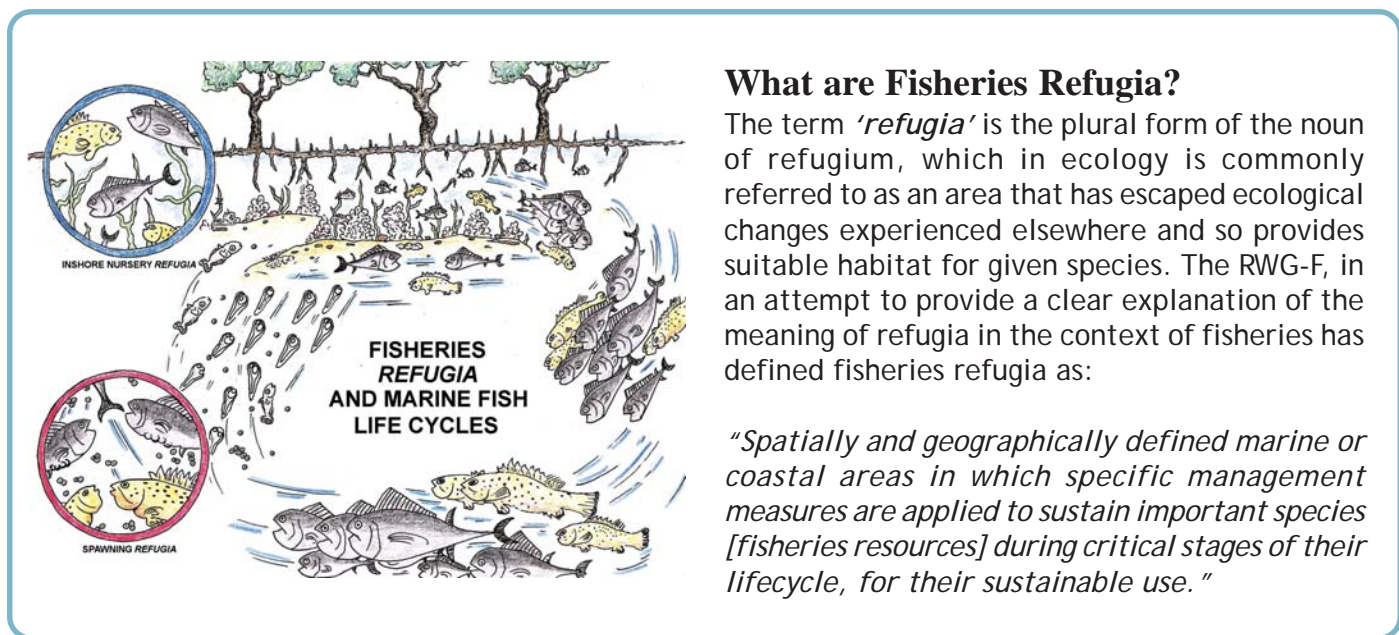
The South China Sea Project is unique in that it represents the first attempt to develop regionally coordinated programmes of action designed to reverse environmental degradation, particularly in the area of coastal habitat degradation and loss, halt land-based pollution and address the issue of fisheries over-exploitation. It is funded by the Global Environment Facility (GEF), and is being implemented by the United Nations Environment Programme (UNEP) in partnership with seven riparian states¹ bordering the South China Sea.²

The complexity of the project has enabled the establishment of a large and expanding partner network. A total of thirty-one government-designated institutions or organizations have signed Memoranda of Understanding (MOUs) with UNEP to act as Specialised Executing Agencies (SEAs) for the project, and most SEAs have sub-contracted national institutions to assist in the completion of project tasks. This has resulted in more than 100 institutions in the region being directly involved in the execution of project activities, and more than 400 institutions involved through individual participation in meetings and national level activities.

The Benefits of Networking

The project structure emphasises and fosters networking in several different ways. The opportunities for groups of specialists from each country to meet together is perhaps the simplest. Through the project structure, they meet not as individuals but as representatives of the community of specialists in their country. Hence they serve as a conduit for ideas and information in two directions: upward from the national to the regional, and downward from the regional to the national. Too frequently, large-scale projects, if they create any kind of forum for scientific and technical specialists to meet, do so in the form of a single body advising the single political

- 1 These states are Cambodia, China, Indonesia, Malaysia, Philippines, Thailand and Vietnam.
- 2 The term 'South China Sea' is used in its geographic sense and does not imply recognition of any territorial claims within the area.



What are Fisheries Refugia?

The term '*refugia*' is the plural form of the noun of refugium, which in ecology is commonly referred to as an area that has escaped ecological changes experienced elsewhere and so provides suitable habitat for given species. The RWG-F, in an attempt to provide a clear explanation of the meaning of refugia in the context of fisheries has defined fisheries refugia as:

“Spatially and geographically defined marine or coastal areas in which specific management measures are applied to sustain important species [fisheries resources] during critical stages of their lifecycle, for their sustainable use.”

decision-making body. The flaws in such structures are not immediately obvious since those deciding on project design features rarely consider the range of scientific information that is necessary to provide a sound basis for environmental decision making.

A committee of scientists of twenty people, for example, is unlikely to contain adequate specialist knowledge with respect to each project component and the differing socio-economic, legal and environmental situations in all seven countries. Putting coral reef biologists, mangrove foresters and seagrass scientists together will not result in sound advice on coastal habitat management, since the nature of the environmental and ecological processes in these three systems, their use by human populations, and the management measures required for their sustainability are fundamentally different, and frequently not part of the shared body of ecological knowledge.

By creating a more specialised lower level forum, the opportunity exists to consolidate a wider body of highly specialised knowledge and experience before sharing it with specialists having other, often very divergent interests and concerns. Thus not only are the mangrove scientists networked together but also, they are linked to and networked both nationally and regionally with other habitat specialists, pollution experts, fisheries specialists, lawyers and economists. By having each regional entity working together, the opportunities for learning are expanded with, for examples, the economic forum providing advice on matters such as economic evaluation to the biologists, and the legal specialists providing advice to the national committees regarding the needs for strengthening of the national legal regime.

The Fisheries Component

The key themes emerging from the fisheries component of the project relate to the important role that coastal and marine habitats of the Gulf of Thailand and South China Sea play in sustaining regional fisheries, and the general low level coordination between fisheries and environmental management in the region. The partner network created

through this project provides an ideal basis for efforts to improve the integration of environmental and habitat considerations into regional fisheries management, and the project activity of establishing a regional system of fisheries *refugia* aims to provide a conduit for this. The fisheries refugia activity is being implemented in close collaboration with the Southeast Asian Fisheries Development Center (SEAFDEC). The Center brings expertise and support to the project in all aspects of fisheries science, policy and management.

Preparatory Phase Outputs

A key substantive output associated with the completion of the tasks in the preparatory phase of the fisheries component consists of the National Reports on 'Fish Stocks and Habitats of Regional, Global and Transboundary Significance in the South China Sea'. These reports have consolidated national level information on:

- The fisheries sector, including community dependence
- Species of regional, global or transboundary significance
- The importance of species in terms of landings, value, status and food security
- The biology and ecology of the priority species
- Fishery status and threats
- Habitats and areas of importance in the maintenance of exploited fish stocks, and
- Current management regimes.

The countries participating in the project now have a useful foundation for the identification and evaluation of approaches to fisheries management at both the national and regional level. The activity has also built the institutional capacity of individual SEAs to contribute to the development of the system of *refugia*, including the identification of areas of critical importance to the life-history of commercially important species.

Regional Fisheries Management and Fisheries Refugia

The Regional Working Group for the Fisheries Component (RWG-F) has identified that regional initiatives in the development of sustainable fisheries, including the decentralisation of fisheries

management, the use of rights-based approaches to small-scale fisheries management, and the improved use of statistics and indicators, could benefit from enhanced use of fisheries management approaches aimed at:

- maintaining the habitats upon which fish stocks depend, and
- minimising the effects of fishing on stocks of important species in areas and at times critical to their life-cycle.

The fisheries *refugia* activity of the project aims to fill this gap by building regional capacity in the use of area-based or zoning approaches to fisheries management that focus on fish life-cycle and habitat linkages. It also intends to build on the SEAFDEC Regional Guidelines for Responsible Fisheries in Southeast Asia with emphasis on item 7.6.4 ADD. 1 on Responsible Fishing, which states that,

“(8) States should consider area or seasonal closure to protect critical stages of life cycle of fisheries resources”

The activity also builds upon item 7.6.9 of the Regional Guidelines on Wastes, Discards, and Ghost Fishing, which states that in terms of taking appropriate action to minimise waste, discards, catch by lost or abandoned gear, catch of non-target species, both fish and non-fish species, and negative impacts on associated or dependent species, in particular endangered species:

“(2) States should strongly implement management measures such as closed areas and seasons in critical habitats (e.g. coral reefs, seagrass beds, mangrove areas, etc.) which are important for sustaining fish stocks.”

The promotion and use of fisheries *refugia* in the Gulf of Thailand and South China Sea is largely aimed at improving the use of area-based approaches to fisheries management that better reflect the dependence of fisheries on critical habitats. In terms of the development of responsible fisheries, *refugia* may assist in:

- minimising the capture of juveniles and spawning stock
- reducing the use of inappropriate fishing gears and practices in critical habitat areas
- improving the integration of fisheries and habitat management, and
- resolving conflicts between small-scale and large-scale fisheries.

Implementing Fisheries *Refugia*

The RWG-F identified that in order for the *refugia* concept to be successfully implemented in regional fisheries management, they should:

- Not be no-take zones
- Have the objective of sustainable use for the benefit of present and future generations
- Provide for some areas within *refugia* to be permanently closed due to their critical importance to the life cycle of a species or group of species
- Focus on areas of critical importance in the life cycle of fished species, including spawning, and nursery grounds, or areas of habitat required for the maintenance of broodstock
- Have different characteristics according to their purposes and the species or species groups for which they are established and within which different management measures will apply, and
- Have management plans.

The RWG-F has also highlighted that the development and implementation of fisheries management systems for fisheries *refugia* should be based on, and be consistent with, the FAO Code of Conduct for Responsible Fisheries and the SEAFDEC Regional Guidelines for Responsible Fisheries in Southeast Asia. The group identified that the specific management measures for fisheries *refugia* could be drawn from the following [non-exhaustive] list:

- Exclusion of a fishing method (e.g., light luring, purse seine fishing)
- Restricted gears (e.g., mesh size)
- Prohibited gears (e.g., push nets, demersal trawls)
- Vessel size/engine capacity
- Seasonal closures during critical periods
- Seasonal restrictions (e.g., use of specific gear that may trap larvae), and
- Limited access and use of rights-based approaches in small-scale fisheries.

The Difference between Fisheries *Refugia* and Marine Protected Areas

The reports of the meetings of the RWG-F highlight that there was initially some misunderstanding of the difference between fisheries *refugia* and Marine Protected Areas (MPAs). During 2005, the project's Regional Scientific and Technical Committee requested the RWG-F to define the relationships between *refugia* and MPAs and to consider how the latter could be used as *refugia*.

In this connection, the South China Sea Project have the potential to assist in limiting the impacts of over-exploitation, and may enhance yields in adjacent fisheries. However, it was recognised during the planning phase of the project that the ecological criteria commonly used for MPA site selection, such as biodiversity, uniqueness, and vulnerability, may result in the establishment of MPAs that have little influence on the state of regional fisheries. On the other hand, the core objectives of fisheries *refugia* are to minimise the impacts of high fishing effort levels at times and in places when fish populations are particularly vulnerable to the effects of fishing, such as when they are spawning or utilising inshore areas for feeding and/or protection from predators.

The fisheries *refugia* concept is based on the use of criteria for site selection that relate directly to life-cycle and habitat linkages and the concept of sustainable use. It has been recognised that the use of fisheries *refugia* may result in some of the conservation benefits that the use of MPAs typically aims to achieve, although there is a common understanding in the project that *refugia* should not be promoted as substitutes for MPAs. From the fisheries perspective, the difference between no-take MPAs and sustainable use fisheries *refugia* should be clearly communicated to local government officials and coastal communities, as the fishery and critical habitat linkages intrinsic to the fisheries *refugia* concept may be more easily accepted by stakeholders than MPAs.

Identifying Candidate *Refugia* Sites

In order to provide a clear and simple framework for the initial development of the *refugia* system, the identification of candidate sites will be based on determining where and



when important species are particularly vulnerable to the effects of fishing. Given that the impacts of fishing are often greatest in areas where there are high abundances of (a) stock in spawning condition, or (b) juveniles and pre-recruits, identification of spawning and nursery areas will be the initial priority.

At the most general level, identification of fisheries *refugia* in the Gulf of Thailand and South China Sea must consider the life-cycle of species for which these areas are being developed, the types of *refugia* scenarios that relate to the species for which they are being developed, and the location of natural *refugia* and appropriate sites for the establishment of *refugia*. Despite this, it has been noted in meetings of the RWG-F that detailed data are not available concerning the life-cycles and movements of many fish stocks. Nevertheless the RWG-F has agreed that the development of the *refugia* system should proceed, during the course of which the lack of data will become apparent, enabling identification of future areas for fisheries research.

The National Reports on 'Fish Stocks and Habitats of Regional, Global and Transboundary Significance in the South China Sea' provide some insight into existing information relating to the life-cycle of several pelagic species in areas of the Gulf of Thailand. However, there is a scarcity of biological information relating to most demersal species. SEAFDEC is currently attempting to address this problem via the inclusion of fish larval sampling programmes in their cruises to support studies of the early life history of commercially important species. It is anticipated that the capability of SEAFDEC to do such work, especially its ability to mobilise the new fisheries research vessel M.V. SEAFDEC 2, will be centrally important to the future development of the regional *refugia* system.

The project has approved the establishment of 24 habitat demonstration sites bordering the Gulf of Thailand and South China Sea. It is apparent at this stage that there may be benefit in establishing *refugia* in the context of these sites. All of the demonstration sites have identified fisheries-related threats, including over-capacity and over-exploitation, as well as the use of destructive and non-selective fishing gears and practices. The design of appropriate areas in association with these sites may be an effective mechanism for establishing some initial *refugia*.

Translating Talk into Action

Translating talk into action is an ongoing focus of the South China Sea Project, and essential for meeting the project objective of establishing a regionally co-ordinated approach to action aimed at reversing environmental degradation trends in the South China Sea and Gulf of Thailand. As such, the fisheries component, led by the RWG-F, has embarked on a two-track approach to the identification of candidate sites of fisheries *refugia*.

The first track involves a review of known spawning areas for pelagic and invertebrate species, with the aim of evaluating these sites as candidate spawning *refugia*. Information regarding the spatial dynamics of pelagic fish and invertebrate populations, oceanographic features, fish behaviour, and fishing effort dynamics will be used to determine the optimum locations and sizes of spawning *refugia*. The second track is the evaluation of each of the project's habitat demonstration sites as potential juvenile *refugia* for important demersal species. The RWG-F will convene from 16 to 18 May 2006 with an aim of identifying

a suite of candidate sites that project focal points can present to government and community consultations on the establishment of *refugia* in national waters. The RWG-F will re-convene in late 2006 to discuss the outcomes of national consultations and to plan for formal government approval of *refugia* during 2007.

Readings

ASEAN-SEAFDEC Regional Guidelines for Responsible Fisheries in Southeast Asia: Supplementary Guidelines on Co-Management using Group User-rights, Fisheries Statistics, Indicators and Fisheries *Refugia*, published by SEAFDEC Secretariat, March 2006.



ABOUT THE AUTHOR

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Please forward your comments to Christopher Paterson at patersonc@un.org



Building an Online Collaborative Database in Southeast Asia – The South China Sea

Christopher Paterson and Richard Cooper

The integration of fish habitat considerations and fisheries management is a central theme and challenge of the fisheries component of the UNEP/GEF South China Sea Project (SCS Project). It is also a challenge that fisheries managers in Southeast Asia will continue to face well beyond the completion of the SCS Project and its many habitat demonstration interventions and pilot activities.

This brief article highlights the South China Sea Meta-Database that has recently been developed by the SCS Project, in collaboration with the Southeast Asian Regional Learning Centre (SEA-RLC) and the Southeast Asia START Regional Centre (SEA START RC). This tool provides a central online location for the collation and searching of metadata regarding coastal habitats and fisheries in Southeast Asia. It is a “living” database that can be revised and updated online, providing fisheries and habitat managers with a tool they can collaboratively build and share within the region to bring fisheries and habitat management closer together.

Data about data?

A problem identified during the development phase of the SCS Project was that, while many valuable data sets on coastal habitats and fisheries in a particular country were available, the sharing of this information was restricted by weak data management systems in most countries. It is also often constrained by limited interaction and communication between fisheries and environment ministries.

So the purpose of the South China Sea Meta-Database was to develop data about existing data sets – in other words, metadata. Metadata would then be made available online for use, allowing the sharing of what data sets exist within the region. The meta-database enables one to easily identify and review information about data sets on coral reefs, seagrass, mangroves, wetlands, fisheries, and land-based pollution.

The contributors

The metadata have been developed since 2002, with contributions from governments, academic institutions and

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WELCOME to the **South China Sea Meta-database** - an initiative of the UNEP/GEF Project on Reversing Environmental Degradation Trends in the South China Sea and Gulf of Thailand ([UNEP/GEF SCS](#)).

Since 2002, partners of the UNEP/GEF SCS Project have collected metadata on existing environmental datasets in the Southeast Asia region and this information can now be searched online in the South China Sea Meta-database.

The South China Sea Meta-database is a 'living' database that is constantly being updated with new content from SCS project partners in Cambodia, China, Indonesia, Malaysia, Philippines, Thailand and Viet Nam.

non-government organisations in Cambodia, China, Indonesia, Malaysia, Philippines, Thailand and Viet Nam. The organisations initially involved have been the SCS Project's Specialised Executing Agencies, which all recently used the data sets referred to in the meta-database in: (a) national level reviews of coral reefs, seagrass, mangroves, wetlands, fisheries and land-based pollution, and (b) the characterisation of 26 mangrove sites, 43 coral reef sites, 26 seagrass sites, and 41 wetlands sites, during the preparatory phase of the project.

Homepage of the SCS Meta-Database
 (<http://metadata.unepscs.org/metadata>)

ase for Fisheries Habitat Management ea Meta-Database

Development of the Online SCS Meta-Database

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Simple Search

(select country and component, and then click 'Go' to search meta-database)

Country:	<input type="checkbox"/> Cambodia	<input type="checkbox"/> China	<input type="checkbox"/> Indonesia	<input type="checkbox"/> Malaysia
	<input type="checkbox"/> Philippines	<input type="checkbox"/> Thailand	<input type="checkbox"/> Vietnam	
Component:	<input type="checkbox"/> Coral Reefs	<input type="checkbox"/> Mangroves	<input type="checkbox"/> Seagrasses	<input type="checkbox"/> Wetlands
	<input type="checkbox"/> Fisheries	<input type="checkbox"/> Land-based Pollution		

Go Reset

Many databases developed as part of past environment and fisheries projects in the region have lasted only as long as the projects themselves. Drawing on the expertise of

Simple search form showing country and component options



SEA-RLC and SEA START RC, the SCS Project has aimed to develop a tool that is intuitive, user friendly, and updatable online by the scientists and managers in the countries bordering the South China Sea and Gulf of Thailand. It is expected that the Meta-Database will continue to be used beyond the life of the Project.

A search tool for identifying environmental datasets

The SCS Meta-database functions as a search tool for identifying environmental and fisheries data sets of the South China Sea and Gulf of Thailand region. It offers simple and advanced search features. A simple search uses a combination of selecting a country and a component. Output results include the data set name, producer, key parameters and keywords, contact details and a downloadable summary of the metadata for the data set. The advanced search allows users to refine their search by specifying one or more terms for particular components of the database.

Updating online

A total of 39 habitat, fisheries and land-based pollution specialists within the region have been assigned rights to log in to the meta-database and edit existing metadata entries, and add new entries as new data sets become available. It is hoped that assigning responsibility for the meta-database to those working in the countries will help in building the longer-term sustainability of the tool, and will provide an effective forum for peer-review of metadata entries.

A meta-database template for other projects and organisations

In addition to supporting the objectives of the SCS Project, the SCS Meta-Database can, through minor customisation, be applied to other projects and organisations. Such technology transfer avoids duplication of effort and wasted resources, and allows users to modify the system to meet their own specific requirements. The template can be installed and customised to run on both Windows and Linux operating systems, and once installed, users can insert the logo of their respective organisation, and change the countries and ecosystem components. To aid installation and customisation, an installation manual is available for download from the South China Sea (www.unepscs.org) and SEA-RLC (www.iwsea.org) websites. The SCS meta-database is thus a tool that functions not only as a key information resource to help fisheries habitat management in Southeast Asia, but one that can also be customised and applied for any location worldwide.

Benefits of collaboration

Collaborative activities such as the development of this meta-database are important in ensuring that ecosystem data and information, regularly updated, are made more accessible to the wider community. The SCS Meta-database can benefit fisheries management by highlighting what fisheries and habitat data exist and where they can be accessed, a task that previously required considerable time and effort.

Comments from users are encouraged in order to help us refine the meta-database and improve its ease of use. While the SCS Meta-Database has been developed in close collaboration with the SCS Project partner network, we welcome any feedback on how it might be improved to meet the requirements for a wider community of users.

Another collaborative initiative between the SCS Project, SEA-RLC and SEA START RC is the development of the South China Sea GIS Database. Similar to the SCS Meta-Database, this is a web-based collaborative system that will allow fisheries managers and researchers the opportunity to share GIS-based data and information. More information on this can be found on the SCS project website or by contacting the authors.

Homepage of the SCS Meta-Database

<http://metadata.unepscs.org/metadata>



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Richard Cooper is currently Project Coordinator and Environmental Information Manager for the Southeast Asia Regional Learning Centre of the global GEF IW:LEARN Project, and is based at the Southeast Asia START Regional Centre of Chulalongkorn University, Bangkok. Richard has worked on environmental projects in Europe, Middle East, Americas and Asia Pacific region. He holds a PhD in environmental studies from Macquarie University, Australia, and a master's degree in marine science from the University of Aberdeen, Scotland.

Please forward your comments to Christopher Paterson at patersonc@un.org or Richard Cooper at rcooper@iwsea.org.

Reader's Review

The **end of fishing** as we know it? How the **limits of fishing** in Southeast Asia were reached?



Title:	The Closing of the Frontier. A History of the Marine Fisheries of Southeast Asia c.1850-2000
ISBN:	981-230-259-X (soft cover) and 981-230-223-9 (hard cover)
Authors:	John G. Butcher
Publication:	2004
Pages:	443
Price:	US\$28.50 (soft cover) and US\$50.50 (hard cover)
Publisher:	Institute of Southeast Asian Studies, Singapore
Where to get it:	http://bookshop.iseas.edu.sg/

Current trends in marine fisheries in Southeast Asia indicate that the sector is undergoing dramatic changes. Fisheries experts and managers within and outside the region agree that nearly all commercially valuable marine fish species and other marine organisms of economic importance are being exploited to the brink of collapse. Fishers throughout the region complain about declining catches, incomes and profits. While the total production from marine capture fisheries may still be increasing, there has been considerable change in the composition of catch and a decline in the average catch per unit effort. With practically no new populations to exploit and every nook and cranny of regional marine waters fished, the frontiers of marine capture fisheries in Southeast Asia are virtually closed, with little or no scope for a further expansion of the sector.

Tracing and explaining the processes that led to this, '*Closing of the Frontier*' is the theme of a new book by John G. Butcher, in which the author promises to tell the history of marine fisheries of Southeast Asia over the last 150 years or so. And so he does. After a brief introduction highlighting the biological and ecological complexity of the region's marine environment, the reader is taken on a memorable journey through the advances of marine capture fisheries in the Southeast Asian region. In tracing these, the author focuses his description of marine fishing activities in the region on three main historical phases: (1) circa 1850 - 1870; (2) from the 1870s to 1930, and (3) the post war period from the 1950s until 2000. Although he tries to follow a chronological account of fisheries development, the spatially diverse and uneven progress and modernization of fishing activities in the region, as well as his desire not to miss the slightest detail, compel him to occasionally jump backward and forward along the timeline. This might make it difficult for the reader to stay on track, for the author describes, with a remarkable quantity of details, the factors and processes that were critical for the expansion of fishing activities.

Throughout these three main historical phases of fisheries development, and from place to place in the region, the constellation of factors with an importance in shaping marine fisheries have kept changing. Yet it is interesting to learn that it has always been a combination of government policies, technological advances, new economic opportunities and changes in the abundance of fish that drive marine fisheries to expand their frontiers.

Butcher's narration of more than 150 years of fisheries development also refutes any claims of '*tradition*' within the

marine capture fisheries sector. Seen in the historical context of permanent expansion and change, assertions of '*traditional*' fishing grounds and '*traditional*' fishing methods become questionable: where does tradition start and modernity sets in? Any opportunity to make a living and profits from fishing activities is eagerly taken up not only by '*traditional*' fishers and fishing communities, but also by entrepreneurs seeking to expand their businesses, which are often not related to fishing. A critical reader may maintain that one does not have to read an almost 300-page account of the twists and turns of fisheries development in the region to be aware and understand the economic, commercial, political and technological forces that drive marine capture fisheries in the region. Yet the detailed account of more than 150 years of transformation in the marine fisheries sector makes it utterly clear that these times of expansion are over. There are no new fishing grounds to be '*discovered*'; no commercial valuable marine organism remains untouched. Fisheries policy makers and managers, fishers and other stakeholders in the industry, which grew up and which learned its trade in times of seemingly limitless growth, with technological advances allowing them to push fishing into hitherto unexploited areas and populations, will have to realize that any efforts aimed at further expansion are futile. The hope that there still are unexploited or underexploited areas and fish populations to further develop and expand marine fishing is a vain one.

Thus - and this is probably the most important lesson the story Butcher has to offer - is the need for a fundamental shift in the perception of marine capture fisheries and their future: after more than 150 years of growth, development and intensification, of continuously pushing the frontier further, the new focus and frontier lies in "*finding a way to exploit the seas in a manner that preserves habitats and species while providing the people of the region with an essential source of protein decade after decade*".

Butcher does not offer much advice on how this could be achieved - that is not the task of his book. But a careful reading can provide the interested reader with some valuable insights into the complex workings of marine capture fisheries, which may help in designing new approaches to which government policies, technological advances and even private investment strategies may be tuned, in such a way that they will be able to conquer this last remaining frontier: sustainable fishing.

INVITATION TO CORRESPONDING WRITERS

With many issues of *Fish for the People* already published, we hope that we have given you a good idea of the aims and general tone of the publication. Recently, we have been publishing more articles from external contributors. We are further inviting contributions from writers interested in promoting relevant issues on fisheries in developing countries. While the publication will continue to focus on the Southeast Asian region, future issues can address relevant issues from other tropical regions.

Fish for the People is a policy-orientated publication. It is not a forum for publication of research findings, nor is it intended to provide detailed technical information. The publication targets not only experts or scientists, but also other traditionally less technically-oriented fisheries stakeholders, such as policy-makers, donors, government staff, managers, and more generally, an informed lay public with an interest in how our fisheries are managed.

Readable, accessible articles that address the various issues discussed at the ASEAN-SEAFDEC Millennium Conference are most desired. Articles should focus on newly emerging issues relevant to sustainable regional or tropical fisheries management. They should present important issues with clear regional messages, emphases, thrusts, problem areas, and propositions for improving current situations.

Through *Fish for the People*, we hope that authors will gain the attention and consideration of targeted fisheries stakeholders, and contribute to the future achievement of more sustainable fisheries.

Correspondence related to editorial matters should be sent to fish@seafdec.org

now available!



Supplementary Guidelines on Co-Management Using group User Rights, Fishery Statistics, Indicators and Fisheries Refugia

An 84-page Supplementary Guidelines elaborate issues contained in the Regional Guidelines for Responsible Fisheries Management, i.e. Co-Management Using group Rights, Fishery Statistics, Indicators and Fisheries Refugia. The supplementary guidelines are envisaged to further assist Member Countries in developing the most practical national system in various aspects to improve their fisheries management towards responsible fisheries.

FISH for the **PEOPLE** *online!*



Find us at www.seafdec.org and click on the link *Fish for the People* in the right of the screen.

There, you will be able to download previous issues of *Fish for the People* in PDF format and consult up-to-date information on the publication.

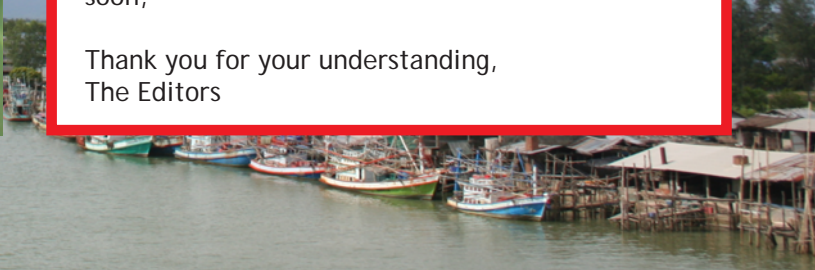
Announcement

Dear Readers,

After three years of publishing, *Fish for the People* has accumulated a certain setback in releasing issue on time for various reasons. Considering this, and for the time being, we are moving from three issues a year to only two, starting with Volume 3 (2005). This is therefore the first out the two issues to be produced in 2006.

We hope to get back to a faster pace of publishing soon,

Thank you for your understanding,
The Editors



Marine turtles have existed on earth for over 150 million years. Of the seven species of marine turtles, six - the leatherback (*Dermochelys coriacea*), green (*Chelonia mydas*), hawksbill (*Eretmochelys imbricata*), olive ridley (*Lepidochelys olivacea*), loggerhead (*Caretta caretta*) and flatback (*Natator depressus*) turtles - are still commonly found in Southeast Asian waters. All are highly migratory, often passing through territorial and international waters from feeding to nesting grounds and back again.

More than ten years ago, marine turtle populations were widely reported to be in decline. The many reasons for this decline included by-catch or accidental capture, habitat loss and degradation in areas that served as nesting, foraging and resting habitats, including beaches, seagrass beds, and coral reefs, and the unsustainable utilization of natural resources by coastal communities in many parts of the world for traditional use or trade reasons.

Currently, marine turtle conservation is an issue of much interest to the world of natural conservation. Many countries are facing problems in conserving marine turtles, and marine turtle populations have continued to decline even though various conservation efforts and approaches have been attempted.

Many approaches to protecting marine turtles have been tried worldwide. Research supported by tagging, hatchery management for stock enhancement, awareness building campaigns are some of them. In the fisheries sector, one way for fishermen to take part is to use modified fishing gear that avoids harming marine turtles during their fishing operations.

2006 - the Year of the Turtle

Presently, the global trend is towards promoting the use of fishery resources and responsible fishing that does not have an impact on marine turtles. SEAFDEC is one organization that promotes responsible fishing and marine turtle conservation. The Indian Ocean and South-East Asia (IOSEA) Marine Turtle Memorandum of Understanding is an intergovernmental agreement that aims to protect, conserve, replenish and recover marine turtles and their habitats of the Indian

Ocean and South-East Asian regions, working in partnership with other relevant actors and organisations. The IOSEA Marine Turtle MoU Secretariat is co-located at SEAFDEC and at the UNEP Regional Office for Asia and the Pacific (UNEP/ROAP) in Bangkok, Thailand. The two organizations have declared that 2006 is the Year of the Turtle. The theme of the campaign is "Cooperating to Conserve Marine Turtle - our Ocean's Ambassadors".



IOSEA Year of the Turtle-2006 poster



SEAFDEC and the Year of the (Marine) Turtle

2006

Bundit Chokesanguan and Panitnard Weerawat





The Year of the Turtle has five separate objectives that shape the activities that countries across the region are conducting throughout the year:

- Celebrate marine turtles in our countries - organise and host events that celebrate marine turtles, and help raise awareness and funds for their conservation
- Ensure a future - put in place and apply best practices that ensure the long-term survival of turtles, while benefiting local communities
- Save marine turtle habitats - identify sites that are important for turtles in our countries and lobby for their inclusion in the IOSEA site network
- Reduce turtle mortality - actively promote policies and technologies that reduce the accidental death of marine turtles
- Study our turtles - support or take part in ongoing research, such as surveys, tagging or satellite tracking.



SEAFDEC Marine Turtles Projects

Celebrating the Year of the Turtle 2006, three SEAFDEC projects relate to marine turtles. The projects are on stock enhancement of marine turtles, on responsible fishing technologies and practices ('Fisheries in Harmony with Nature'), and on capacity building in the region to address international trade related issues. The projects are being carried out in collaboration with SEAFDEC member countries.



Research for stock enhancement of marine turtle

This project aims to:

- Identify green turtles population in the Southeast Asia as well as their stock sizes;
- Determine green turtles' migration patterns, and the location of foraging habitats;
- Report on the feasibility of a 'head-starting' technique to increase the survival of sea turtle. 'Head-starting' is a technical term which means to take care of young and small turtles for some time after the hatchery stage, until they become strong enough to be released in the wild.

Responsible fishing technologies and practices (Fisheries in Harmony with Nature)

Part of the activities in this project relates to marine turtles:

- An assessment exercise to evaluate the lessons learned from the introduction and promotion of Turtle Excluding Devices (TEDs) in SEAFDEC member countries
- Human capacity building on responsible fishing technologies and practices via demonstrations and training on fishing gear selectivity and devices, including environmentally friendly and user friendly fishing gear that avoids marine turtle by-catch
- Production and dissemination of information packages on TEDs and marine turtle conservation, including video CDs, t-shirts and souvenirs.

Capacity building in the region to address international trade related issues

This project's objectives include reviewing international issues related to fish trade and the environment that may have a potentially negative impact on the sustainability of fisheries in the region. It also aims to provide a forum for member countries to discuss and clarify approaches towards ensuring a sustainable fish trade in the region in response to emerging international issues (including fisheries subsidies, CITES, eco-labelling and marine turtles) and preparing appropriate common policy options among ASEAN-SEAFDEC member countries.

Conclusion

SEAFDEC is an regional organization that has a mandate to promote sustainable fisheries in the region, including the management and conservation of fisheries resources such as fish and marine turtles. In the past, SEAFDEC projects gave importance to the conservation of marine turtles and to the promotion of means for fishermen to avoid marine turtle by-catch, such as by using TEDs with trawl nets. SEAFDEC has also a long history of involvement in marine turtle breeding and release to the sea. All of these are our duty as a regional organization. SEAFDEC's commitment to and direct involvement in increasing marine turtle populations will continue long beyond the Year of the Turtle, as projects and research will be ongoing for at least the next five years.



ABOUT THE AUTHOR

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Panitnard Weerawat works at SEAFDEC/TD, Samut Prakan, Thailand. Her educational background is Ecological Marine Management. Please send your comments to panitnard@seafdec.org

Aquaculture of Marine Shrimp in Southeast Asia and China: Major Constrains for Export

Siri Ekmaharaj

Together with China, the countries of Southeast Asia are the world's main countries producers of farmed aquatic organisms. Considering cultured marine shrimps alone, their production share amounts to some 70 % of global production, equalling around 1.4 million ton a year. This article reviews the culture status of shrimps, product quality and its traceability, together with the major constraints and the future direction considered for development. The author hopes that this overview of the major issues will provide a sound basis for regional planning and development.

Review of shrimp farming in the region

Brunei Darussalam

There are two species of marine shrimps cultured in the country. The blue shrimp (*Litopenaeus stylirostris*) has been just cultured since 2001, when the Super Shrimp Company from United States first entered Brunei Darussalam. Black tiger shrimp (*Penaeus monodon*), which is second species for aquaculture in Brunei, has been cultured for a few years longer. At present, 13 farms account for 160.9 ha under shrimp culture, while production amounted to a total of 394 ton in 2005. The government plans to expand the culture area to around 500 ha.

The government also provides the land and seawater pumping facilities. Black tiger shrimp is transported for sale to the nearby Malaysian province of Sabah. Blue shrimp is sold in Brunei Darussalam and processed for exporting.

Cambodia

Although the black tiger shrimp (*Penaeus monodon*) has been cultured for 15 years, its production remains small with a mere 75 tons in 2004, which is a significant reduction from 500 tons in 1993. After repeated failure in culturing black tiger shrimps, the exotic white shrimp (*Litopenaeus vannamei*) was introduced a few years ago. However, the newly introduced species has also suffered repeated disease outbreaks, which remain a major constraint and as a result, the production has dwindled over the years. It appears that the major problem in advancing shrimp culture in Cambodia has been its reliance on foreign investment and culture technology, mainly from private interests in Thailand and Taiwan which have had little obligations in sustainable development.

Indonesia

Shrimp farming in Indonesia has steadily increased over the last decade. Indonesia has plans to massively increase culture shrimp production. In 2000, the area of land under



marine shrimp culture was about 419,252 ha, but the government hopes to soon more than double this to 913,000 ha. Culture shrimp production increased exponentially from 2002 (159,597 ton), 2003 (168,662 ton) to 2004 (242,560 ton).

The production of white shrimp from aquaculture is progressively taking a larger share from other shrimp species, especially from the black tiger shrimp, which has suffered from severe disease outbreaks. In 2002, it accounted for 46,757 ton (29.3 %) and in 2003, 115,441 ton (47.61%) of production. White shrimp production is expected to continue to increase.

Malaysia

Malaysia is another Southeast Asian country that would like to increase production of marine shrimp aquaculture. White shrimp production was only permitted in mid 2005. Total shrimp production from aquaculture has slightly increased from 15,500 ton in 2000 to 29,800 ton in 2003.

Malaysia has some advantages for the export of cultured products to the USA and Europe. It is not subjected to antidumping law restrictions by the USA, and gets very low rates under the Generalised System of Preferences (GSP) from EU.

Myanmar

Shrimp culture has been practiced with technology imported from Thailand. The feed is also imported from there. However, a new fish feed factory (which also produces

shrimp feed) started operations last year. Harvested shrimp is mostly exported to Thailand for processing.

In 2003, the yield was around 19,221 ton increasing to 23,408 ton in 2004. White shrimp culture was permitted in 2001. Viral disease outbreaks are still the main constraint on shrimp farming in the country.

Philippines

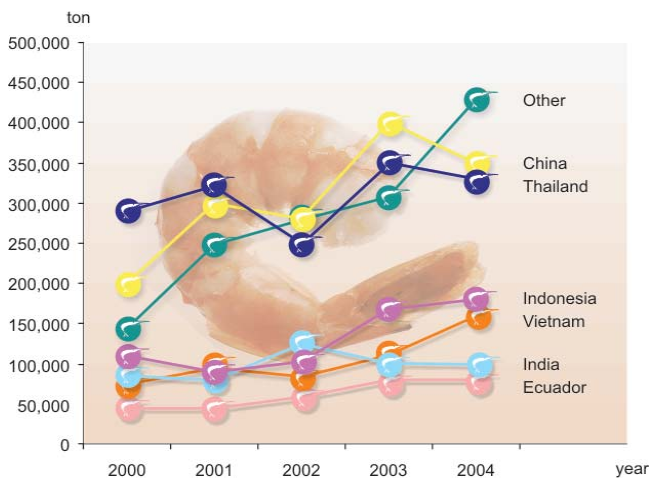
Philippines used to be a strong producer of cultured shrimp. During the period 1990-1993, production was around 100,000 ton/yr, but then viral diseases started to occur frequently, and production decreased greatly, with only around 42,000 ton being produced in 2003. The culture area also decreased, with farmers moving away from shrimp production, from 47,700 ha in 1993 to 36,600 ha in 2003. The number of processing factory has similarly decreased from 58 in 1993 to 13 factories ten years later.

In December, 2004, Specific Pathogen Free (SPF) white shrimp spawners were permitted to operate in an attempt to restore national shrimp production. To ensure the disease free status of the SPF fry, certification was issued by the SEAFDEC Aquaculture Department (AQD) in Iloilo and at the Research station of the government's Bureau of Fisheries and Aquatic Resources (BFAR).

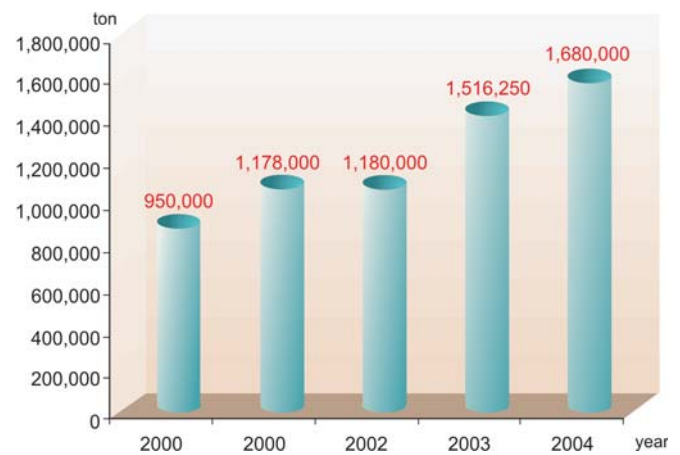
Singapore

Singapore imports raw shrimp and exports processed cultured shrimp products. Singapore is not a cultured

World cultured shrimp production 2000-2004 (metric tons)



Total cultured shrimp production 2000-2004 (metric tons)



Source: World Shrimp Farming (2004)

shrimp producing country. In 2003, around 21,157 ton was imported and 4,913 ton was exported. Live shrimp is directly transported from farms to restaurants. Local consumption for cultured shrimp is around 16,359 ton/yr.

In 2001, white shrimp and blue shrimp were introduced for culture in the country and a production of 4 ton was achieved. In 2004, the production of farmed marine shrimp was around 19.1 ton from just two farms totalling 3 ha of cultured area. However, at present, no marine shrimp farms are operating due to disease outbreaks.

Thailand

In 1991, Thailand became the first country to export cultured shrimp to the world market. If in the last 2-3 years China has been able to produce more cultured shrimp than Thailand, around 60 % of this huge production is for local consumption. Thai shrimp production has steadily increased over the last decade. Until the introduction of white shrimp in year 2001, the main cultivated species was black tiger shrimp. Nowadays, the main cultured shrimp is white shrimp, which accounts for more than 90% of total shrimp production.

Although several risk assessment studies have been made, viral disease such as White Spot Syndrome Virus (WSSV), Taura Syndrome Virus (TSV) and Haematopoietic Necrosis Virus (IHHNV) are still the main constraints for shrimp farming.

Vietnam

With a seashore length of 3,600 km, Vietnam has excellent potential for marine shrimp culture. In 2000, the area under marine shrimp culture was 224,407 ha with a yield of

104,519 ton, mostly produced by traditional and semi-intensive methods. In 2004, yield increased to 290,501 ton and the culture area expanded to 592,585 ha.

Culture of the SPF white shrimp has just been permitted in the central and northern parts of the country where it already dominates production, while black tiger shrimp remains the main culture species in the south.

China

China is now the leading producer of cultured marine shrimp in the world with a yield of 760,459 ton in 2003, equalling around 45 % of total global production. White shrimp was first introduced for culture in 1988 but culture initially failed due to unsound farming practices. Successful culture of white shrimp was achieved in 2001 with the production of 304,182 ton. The main areas where marine shrimps are cultured are in Guangdong, Hainan and Fujian provinces, which together share around 70 % of total production in the country.



The production in 2003 was 760,459 ton, with around 308,947 ton being freshwater shrimp species. The production from brackish water areas was around 296,312 ton. The white shrimp production was about 80 % of the total marine shrimp production with the remaining 20% consisting of Chinese white shrimp (*Penaeus chinensis*) at 8.11% (61,685 ton), tiger shrimp at 6.72 % (51,026 ton) and Kuruma shrimp (*Penaeus japonicus*) at 5.58 % (42,429.8 ton).

In 2003, around 200,000 ton of cultured marine shrimp were exported, which accounts for around 37% of total production. The export quantity is second only to that of river eel.

Meeting international standards

Cultured shrimp and related products have often been rejected from importing countries as they were judged to be below the minimum quality level. Around 1990, the first rejection was made by Japan, on the basis that the shrimps were contaminated with oxytetracycline above the maximum residue level (MRL) allowed. Thailand and other countries in Southeast Asia have subsequently been forced to control the antibiotic use in order to continue to export.

Since then, a series of product quality standards have been proclaimed by other importing countries such as USA, and by the European Union (EU). The green labelling of products from farm to table and other regulations were announced by the EU. Soon afterwards some additional measures were announced which were not all quality related but which could be considered as non-tariff barriers (NTB).

The most significant crisis for shrimp product exporting countries was in 2003. The EU rejected imports on the ground that high levels of chloramphenicol, and of nitrofurans and its metabolites were detected. Almost all shrimp exporting countries in Southeast Asia and China were accused of using illegal antibiotics in shrimp farming.

The latest crisis was in 2004 when an antidumping measure was adopted by the USA for shrimp products from all exporting countries in Asia and South America. Exporting companies were informed that in future, they would have to pay an additional tax and deposit an additional year's tax in advance by way of a 'continuous bond'. These companies were quick to claim that this new measure was a new non-tariff barrier that contravened the Free Trade Agreement (FTA) promoted by the USA, and which is under negotiation between the USA and several ASEAN member



countries. On the basis of these new requirements, mitigating measures such as farm standards and product certification were initiated by Southeast Asian countries producing cultured shrimp. Measures to ensure the traceability of shrimp products have also been drawn up for implementation.

Improving the quality and traceability of shrimp products in Thailand

Product quality

Product quality and related shrimp farm standards and certification have been highlighted in the preparation of guidelines such as Good Aquaculture Practice (GAP) and Code of Conduct for responsible shrimp aquaculture and their implementation in many ASEAN countries. The Code of Conduct (CoC) for responsible shrimp aquaculture was an initiative launched in Thailand in 1997 based on FAO's Code of Conduct for responsible fisheries, ISO 14001 and HACCP. A grant was provided by the World Bank to facilitate its development and implementation.

The CoC contains three main principles to which shrimp farmers must comply:

- Premium product standards
- Environment-friendly operations
- Residue free products.

The CoC checklist for farms (hatcheries and shrimp ponds) was developed with support from the French Ministry of Agriculture and Fisheries in late 2000. The Thai Department of Fisheries has since presented the CoC for responsible shrimp aquaculture at various conventions such as the World

Aquaculture Society annual conferences and meetings or NACA conferences and FAO workshops. The standard CoC guidelines have also been presented to importing countries.

The CoC for responsible shrimp aquaculture has also now been adapted and implemented in Malaysia.

Importing countries, companies and supermarkets in the west have recently been trying to set up a standard for importing shrimp products. For example, the Aquaculture Certification Council (ACC), in cooperation with the Global Aquaculture Alliance (GAA), has defined the ACC standard for shrimp product imports. This standard was developed at the same time as the CoC was being drafted in Thailand. Professor Claude Boyd of Auburn University in the USA was the technical consultant for both standards, which in practice are very similar.

For the ACC standard, farmers, feed factory owners and post-harvest processors are requested to apply as members. An annual membership fee must be paid thereafter. The ACC auditors of farmers, feed factories and processors also need to be trained by ACC trainers. Trainee ACC auditors need to pay for the training. Undoubtedly, the costs for certification development at various levels of shrimp industry will increase the overall cost of production. Even though Thai shrimp farmers have already complied with regulations such as the CoC, they are facing further difficulties, and will get less for selling their products. If we add this to the prediction that the supply of cultured shrimp will exceed the demand on the world market soon, producers are facing a gloomy future.

Shrimp product traceability

Along with the requirement for shrimp quality and residue management, importing countries now require shrimp products to be traceable. Work on product traceability was initiated five years ago in Thailand by the Department of Fisheries. It has been ensured by issuing a movement document (MD) that follows the shrimp from the hatchery throughout production. For shrimp fry, the movement document is known as the fry movement document (FMD). The shrimp farmer will get this document from the hatchery when purchasing seed, and will have to submit it to the district fisheries office or local farm association in order to obtain a MD once the shrimp is harvested. Processors and exporters get the MD from the shrimp farmer, and have to submit it to the Department of Fisheries in Bangkok in order to obtain exporting product certification. This process is summarized in the figure.

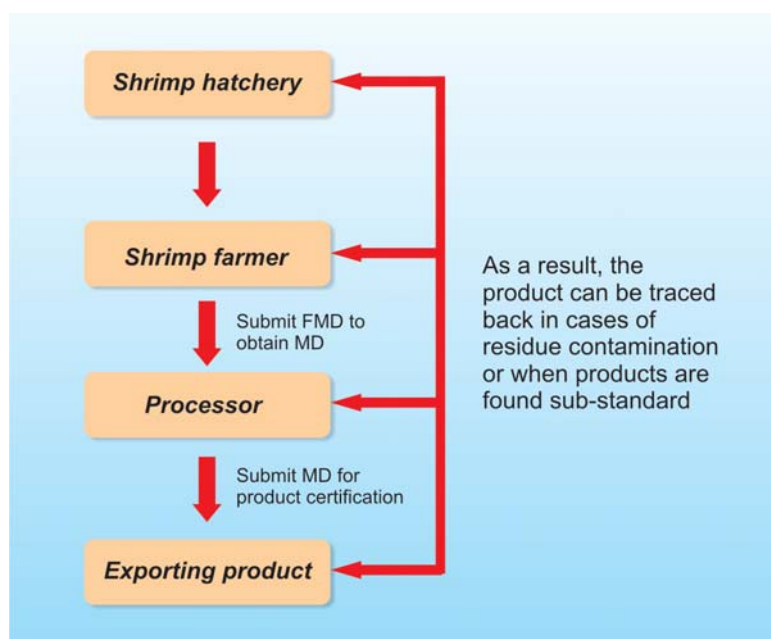
The Radio Frequency Identification Device (RFID) is another initiative aimed at improving shrimp product traceability. The RFID bar code can be tagged to the package showing the details of the product, including farming practice, feed used, product transportation and processing. It is being implemented by exporting companies, in cooperation with the Thai Department of Fisheries and the Ministry of Science and Technology. At present, there are three companies implementing the RFID, and more than ten companies are implementing product traceability.

Future directions

Shrimp farming is likely to be dramatically expanded in many countries in Asia and South America. This will likely lead to a surplus in the supply of shrimp products as demand is increasing much slower.

The production of farmed shrimp will reach around 1.8 million ton in the next two years, with nearly 70% of it supplied by the ASEAN countries and China. As a consequence of the oversupply, it is to expect that the selling price at the farm gate (farm gate price) will be lower than it is today. Meanwhile, shrimp importing countries will increasingly concentrate on product quality and traceability, with a vast range of producing countries to choose from.

As a result, shrimp farmers need to learn how to produce shrimp at the lowest cost while complying with standards acceptable to the Western consumers. The concerned government agency in producing countries, such as the



Process for certifying the traceability of shrimp in Thailand

Department of Fisheries, must look closely at farming practices, and provide all necessary support to ensure that product standards and traceability are respected. These measures should help farmers, and will make shrimp culture more sustainable. Each producing country can have its own standards and certification process, but these must be compatible with international standards. A lasting dialogue, not only negotiation, between producing countries and importing countries is needed to make sure importers and producers understand both sides of the picture. Ideally, the importers would require a continuous supply of quality cultured shrimp with guarantees, while producers would receive a reasonable price covering the production cost and profit incentive. It is important to be aware that a large proportion of the shrimp farmers in the region are still small-scale operators and relatively poor. A certification body set up by importing countries would not be in the interests of producer countries, unless they consider the financial viability of smaller farm operators in view of the burden of surcharge in certification expense. Charging shrimp farmers directly for certification would simply make the farming of shrimp financially unviable, at least for small-scale operators.

One has to really hope that the pending issue of farmed shrimp product quality will be solved in the near future, so that both consumers and farmers can get what they need: safe products grown in sustainable farming conditions, which comply with international standards while enabling producers to sustain their livelihoods.

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ABOUT THE AUTHOR

Siri Ekmaraj was nominated by the Ministry of Agriculture and Cooperatives of Thailand as SEAFDEC Secretary-General, starting in October 2005. He graduated from the Faculty of Fisheries, Kasetsart University, Thailand (B.Sc. in Marine Science) in 1972; Faculty of Engineer, University of Alberta, Canada (M.Sc. in Environmental Engineer) in 1979; and Faculty of Applied Biological Science, Hiroshima University, Japan (Ph.D. in Aquatic Ecosystem Management Science) in 2001. He has vast experience working with coastal, particularly shrimp, aquaculture as well as coastal zone management and development, and represents Thailand in several committees regarding fisheries.

Please forward your comments to Dr. Siri Ekmaraj at sg@seafdec.org

Event Calendar

Date Venue	Events	Organizer
2006		
16-19 Jan Malaysia	Technical Group Meeting: Information Collection for Sustainable Pelagic Fisheries In the South China Sea	SEAFDEC/MFRDMD
20-22 Feb Thailand	Regional Technical Consultation on International Fish Trade Related Issues	SEAFDEC/Secretariat
27 Feb-3 Mar Cambodia	Fisheries Management Training for the Project on Capacity Building for Community Fisheries Management	SEAFDEC/Sec-FAO
13-15 Mar Thailand	On-site Training/Workshop on Capacity Building for Coastal Resource Management	SEAFDEC/Sec-Sida
13-15 Mar Philippines	Workshop on Interaction Between Sea Turtle and Fishing Operation	SEAFDEC/TD
27-31 Mar Cambodia	On-site Training/Workshop on Capacity Building for Establishment of Refugia and Coastal Resource Management	SEAFDEC/Sec-Sida
17-22 Apr Philippines	Training in Freshwater Prawn Hatchery and Grow-out	SEAFDEC/AQD
17-21 Apr Malaysia	BIMP-EAGA Training Course on Fish Quality Preservation and Safety (HACCP)	SEAFDEC/MFRD
3 May -18 June Philippines	Training in Marine Fish Hatchery	SEAFDEC/AQD
16-30 May Thailand	International Training Course on Coastal Fisheries Management for Fisheries Managers	SEAFDEC/TD
14-16 June Vietnam	Onsite Training and National Workshop on Capacity Building for the Establishment of "fisheries Refugia" and Coastal Resource Management	SEAFDEC/Sec-Sida
24-25 June Thailand	High Level Conference on the Impacts of the International Fisheries Related Issues	SEAFDEC/Sec-Sida
27-30 June Thailand	On-site Training and National Workshop on HRD for Responsible Coastal Resource Management	SEAFDEC/Secretariat
4-7 July Thailand	Preparatory Expert Meeting on Development of the National and Regional Training Materials for HRD in Fisheries Management	SEAFDEC/Secretariat
10-28 July Singapore	MFA-JICA Seafood Safety Management Course	SEAFDEC/MFRD
24-26 July Cambodia	SEAFDEC and UNEP/GEF/South China Sea Joint Workshop on Capacity Building for the Establishment of Fisheries Refugia and Coastal Resources Management	SEAFDEC/Sec-UNEP/GEF
27-28 July Cambodia	Expert Meeting on Management of Fishing Capacity	SEAFDEC/Secretariat
1-3 August Vietnam	On-Site Training and National Workshop on Capacity Building for the Establishment of Fisheries Refugia and Coastal Resources Management	SEAFDEC/Secretariat
2-3 August Singapore	End-of-Activity Seminar for the project on Information Collection for Sustainable Pelagic Fisheries in the South China Sea (Component III: Examination of Maximizing Utilization of Pelagic Fish Resources)	SEAFDEC/MFRD
2-4 August Vietnam	On-Site Training and National Workshop on Capacity Building for the Establishment of Fisheries Refugia and Coastal Resources Management	SEAFDEC/Secretariat
7-11 August Indonesia	BIMP-EAGA Training Course for Indonesia and Brunei Darussalam	SEAFDEC/MFRD
15-19 August Philippines	Special Training Course on Abalone Hatchery/Seed Production and Culture	SEAFDEC/AQD
22 Aug -21 Sep Thailand	The International Training Course on Coastal Fisheries Management and Extension Methodology	SEAFDEC/TD
28 Aug -1 Sep Philippines	BIMP-EAGA Training Course for Philippines	SEAFDEC/MFRD
4 Sep - 12Feb 07 (e-learning)	AquaHealth Online: Principles of Health Management in Aquaculture	SEAFDEC/AQD

Southeast Asian Fisheries Development Center (SEAFDEC)

What is SEAFDEC?

SEAFDEC is an autonomous intergovernmental body established as a regional treaty organization in 1967 to promote sustainable fisheries development in Southeast Asia.

Objectives

SEAFDEC aims specifically to develop fishery potentials in the region through training, research and information services in order to improve food supply through rational utilization of fisheries resources in the region.

Functions

To achieve its objectives the Center has the following functions:

1. To offer training courses, and to organize workshops and seminars, in fishing technology, marine engineering, extension methodology, post-harvest technology, and aquaculture;
2. To conduct research and development in fishing gear technology, fishing ground surveys, post-harvest technology and aquaculture, to examine problems related to the handling of fish at sea and quality control, and to undertake studies on the fisheries resources in the region; and
3. To arrange for the transfer of technology to the countries in the region and to make available the printed and non-printed media, which include the publication of statistical bulletins for the exchange and dissemination related to fisheries and aquaculture development.

Membership

SEAFDEC members are the ASEAN Member Countries (Brunei Darussalam, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, the Philippines, Singapore, Thailand and Vietnam) and Japan.



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In the occasion of the Millennium Conference, a drawing contest was organized for the children among ASEAN-SEAFDEC Member Countries, on the theme of 'Fish and the Culture'. This is the best drawing from Lao PDR.