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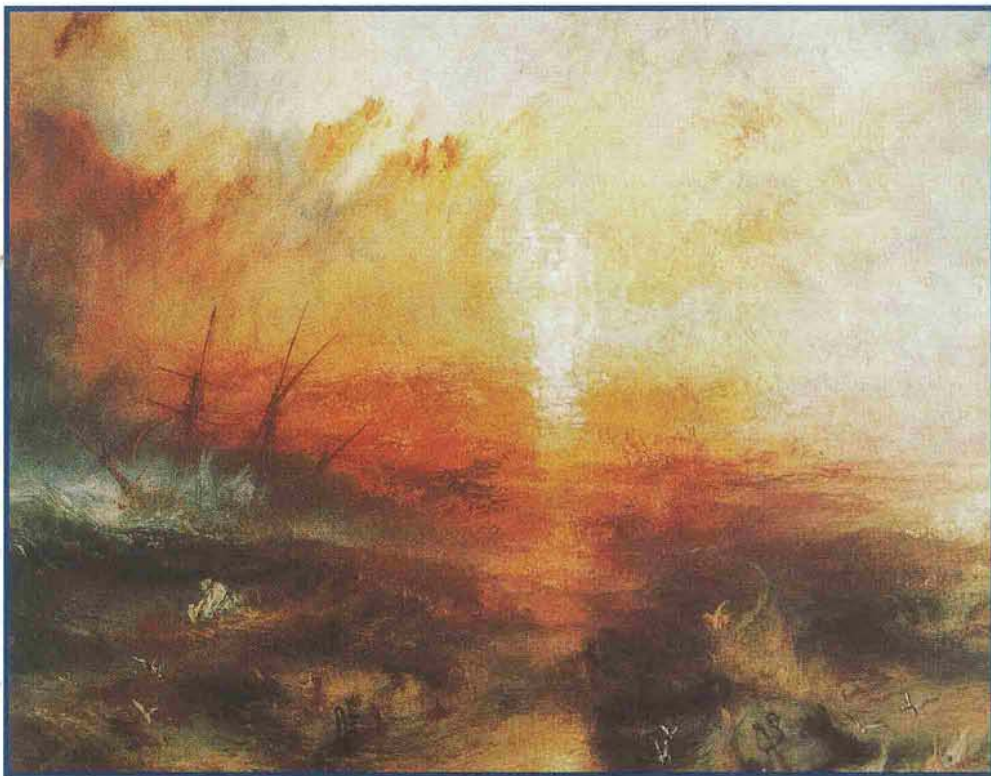
# SAMUDRA

REPORT

INTERNATIONAL COLLECTIVE IN SUPPORT OF FISHWORKERS

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Maizan Hassan Maniku 1953-2002

Fish in Classical Athens

Tuna Farming in the Mediterranean

Sustainable Fisheries Fund

Safety at Sea

EU-Chile Fisheries Access Agreement

Cowrie Trade in the Maldives

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## Comment

# Small fish in Joburg

In 1992, the United Nations Conference on Environment and Development (UNCED) provided fundamental principles and a programme of action for achieving sustainable development. Now, 10 years on, the World Summit on Sustainable Development (WSSD), to be held in Johannesburg from 26 August to 4 September, is expected to be the Plan of Implementation for the speedy realization of the remaining UNCED goals. Of these, the most important is the eradication of poverty as an indispensable prerequisite for sustainable development.

Following the 2001 Reykjavik Conference on the Ecosystem-based Approach to Fisheries Management, the importance of an ecosystem approach is now recognized. The Draft Plan of Implementation for the WSSD that came out of the Fourth Session at Bali proposes developing an ecosystem approach to the conservation and management of the oceans by 2012—one of the few time-bound commitments that countries have agreed to so far.

Of the top seven fish-producing countries in the world, five are developing countries. Three of them—China, India and Indonesia—have a huge population of nearly one billion people living below the income poverty line of US\$1 per day. The majority of these people live in coastal areas, either participating in fisheries or contributing to activities that often have a negative impact on marine and coastal ecosystems.

Sustainable development of natural resources and poverty eradication are, therefore, matters of paramount concern to the poor in coastal fishing communities. In this context, we support the proposal in the WSSD Draft Plan of Implementation to establish a World Solidarity Fund to eradicate poverty and to promote human and social development. Without international co-operation, it is difficult for many developing countries, ravaged by, among other things, poor commodity prices in world markets, to move towards sustainable development.

In many poor countries of Asia and Africa, displacement of people as a result of development initiatives and other causes has led to migrations of peasants, agricultural labourers and forest dwellers into coastal fisheries. Such migrations often make it doubly difficult for the poor in fishing communities to eke out a decent living from fishing activities. In this context, we support tenure arrangements that recognize and protect indigenous and common-property resource management systems in the Draft Plan of Implementation. This should also include appropriate arrangements for both fishing and farming communities.

Providing access to fisheries resources for people living in poverty should be in consultation with those fishing communities that already enjoy access to the same resources, to make sure that there is enough fish for all. Fisheries management instruments, including institutional reforms to introduce limited-access regimes and input control measures, should precede such initiatives. Here again, international co-operation is essential to achieve such goals.

Most importantly, the WSSD should recognize and acknowledge the fact that in poor, labour-surplus fishing economies, selective artisanal and small-scale fisheries are the vehicles for poverty eradication and sustainable development. It should recognize that the small-scale model in fisheries has the best ability to accommodate the largest number of people per unit of capital, and that it has, simultaneously, the capacity to be responsible for both fisheries resources and aquatic ecosystems. From a socioecological point of view, artisanal and small-scale fisheries make better sense. That fact should be better recognized in the WSSD's Plan of Implementation.

## The deathless ones

**Aristotle's *History of Animals* is a fascinating backdrop to the love of fish that swept through Classical Athens**

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**O**n 22 February 1882, Charles Darwin wrote a letter to a man named William Ogle, who had sent him a translation of a book by Aristotle. Darwin's reply began:

"My dear Dr. Ogle,

You must let me thank you for the pleasure which the introduction to the Aristotle book has given me. I have rarely read anything which has interested me more, though I have not read as yet more than a quarter of the book proper. From quotations which I had seen, I had a high notion of Aristotle's merits, but I had not the most remote notion what a wonderful man he was. Linnaeus and Cuvier have been my two gods, though in very different ways, but they were mere schoolboys to old Aristotle."

The book was called the *History of Animals*, and is one of several texts which Aristotle is known to have written on the natural sciences. The *History of Animals* is an attempt to find patterns in the anatomy, behaviour, and habitats of the animals Aristotle found around him. Man included. It mentions around 500 different species, split approximately evenly between birds, terrestrial animals, and marine creatures. Of particular interest are the quite astonishingly accurate observations on marine life.

To give a brief idea, the book was the first to accurately describe the placenta of the smooth-hound, which was rediscovered in 1673. It was also the first to accurately describe cephalopod reproduction, a subject rediscovered in 1852. As late as 1857, naturalists described a new and obscure species of catfish, only to find that Aristotle had beaten them to it. So complete is the description of its habits set out in the *History of Animals* that today it

bears the name *Silurus aristotelis*—Aristotle's catfish.

Written sometime around 350 BC, at the tail-end of the Classical period in Athens, the impact of the *History of Animals* was immediate and immense. It was rapidly adapted to form the backbone of lesser works such as Pliny's *Natural History*; it quite possibly influenced the early Christian Church's attitude to women; and it was copied and recopied, with varying degrees of accuracy, by successive generations of scribes, culminating in the great illuminated bestiaries of Mediaeval Europe. These contained no more information than Aristotle had gleaned well over one-and-a-half thousand years earlier, although the pictures were undoubtedly nicer.

Such remarkable longevity owed much to the accuracy of the observations made throughout the work. Forty years before Darwin wrote his letter to Dr. Ogle, this depth and breadth of the *History of Animals* had caused the great French scientist Georges Cuvier, one of Darwin's gods, to write:

"I cannot read this work without being ravished with astonishment. Indeed, it is impossible to conceive how a single man was able to collect and compare the multitude of particular facts implied in the numerous general rules and aphorisms contained in this work and of which his predecessors never had any idea."

### Observations

But, brilliant though the *History of Animals* is, Cuvier goes too far. Aristotle did not collect his facts on his own, nor had they gone unnoticed by his predecessors. In fact, Aristotle frequently explains how many of his observations came from people who would have had rather more

contact with animals than Aristotle himself. Returning to two of the examples above, Aristotle mentions that the ones who have actually determined how cephalopods reproduce are the fishermen who catch them.

**L**ikewise, the description of ‘his’ catfish comes, again, from the fishermen whose living it provides. Viewed in this light, the *History of Animals* may be seen not as an isolated work of genius, but as a culmination of the knowledge of nature that the Classical Athenians had acquired, and as a reflection of their attitudes towards living creatures.

This begs the question of why the observations on marine life are so much more detailed than those on, for example, birds. Why should the knowledge of fishermen be any more accurate or widely disseminated than the knowledge of, say, bird hunters? To answer this question, we need to take a slightly broader view of fish and fishermen in the Classical Mediterranean.

Fishing in the Mediterranean has a history as old as the sea itself, and evidence to show the importance of marine life in the popular diets and economies of the early Mediterranean peoples runs through the art and literature of the second and first millennia BC. Fish bones found at archaeological

sites in southern Greece suggest that the inhabitants there had made the jump from coastal fishing to deep-sea fishing in neolithic times. Some of the world’s earliest frescoes, painted on the island of Santorini around 1500 BC, depict fishermen’s catches, and tablets, dating from a few hundred years later, found in the Palace of Knossos on Crete, list stocks of fish kept in the Palace larders.

Literary, archaeological and artistic evidence all suggest that, by the dawn of the Classical Athenian age, the techniques of fishing were set, remaining essentially unchanged to this day in certain parts of the Aegean. Netting, diving, baskets, rod-and-line fishing, long-line fishing, poisoning—all formed part of the fisherman’s repertoire, and all are mentioned in the *History of Animals*. The local fishermen even enlisted the aid of fellow mammals.

In his poem, *The Shield of Heracles*, Hesiod, writing around 700 BC, mentions “dolphins rushing this way and that, fishing...and devouring the mute fishes. And on the shore sat a fisherman watching: in his hands he held a casting net for fish, and seemed as if about to cast it forth.”

#### Classical writing

This use of dolphins to round up fish is mentioned by several Classical authors, Hesiod being the first, and the trick is still

widespread today, from the autumn garfish hunts of the Cyclades to the great tuna round-ups of the Pacific.

**B**ut not only did ancient fishermen know how to fish, they also knew when and where to fish. Fish stocks fluctuate in the Mediterranean today, and we have no reason to suspect it would have been otherwise 2,500 years ago. The *History of Animals* covers this, of course, reporting the seasonal migrations of fish through the Bosphorus and discussing the best times of year for certain fish to be eaten.

However, for once, the *History of Animals* doesn't get there first, being beaten into second place by some fragments of the work of the comic poet Archestratus, which have survived in a collection by a late Roman writer named Athenaeus. Archestratus wrote a book called *The Life of Luxury* at about the same time as Aristotle was writing the *History of Animals* and, although rather less highbrow, it is just as accurate in its descriptions of fish migrations and localities:

"If you go to the prosperous land of Ambrakia and happen to see the boarfish, buy it! Even if it costs its weight in gold, don't leave without it, lest the dread vengeance of the deathless ones breathes down on you; for this fish is the flower of nectar."

In similar over-the-top vein, Archestratus praises squid from Dium, maigre from Pella, bluefish from Olynthus, shark from Torone, and many more local specialties. More evidence for this identification of fish with sites comes from the coinage, which begins to be seen towards the middle of the first millennium BC. The Mediterranean at the time was composed of a number of city States, which took it in turns to go to war with the Persians and then each other, until this happy state of affairs came to an end with the rise of Macedonia under Philip and his son Alexander the Great. Each of these city States minted their own coinage and, naturally enough, each chose a symbol to place on the coins, which they felt reflected well on themselves. An enormous number of these symbols are marine creatures. Cuttlefish stand for

Keos, turtles for the island of Aegina, and tunas and bonitos proudly adorn many coins minted in and around the Bosphorus, reminding the users where these delicacies came from.

Fish were being caught, but who was eating? Initially, as far as we can tell, nobody important. The two towering works of Ancient Greek literature are those traditionally ascribed to Homer—the *Iliad*, which tells the story of the Trojan War, and the *Odyssey*, which tells of the return home of Odysseus, one of the heroes of the *Iliad*. Both were written at about the same time as Hesiod's *Shield of Heracles*, which is to say around 700 BC. Perhaps unsurprisingly for an epic poem, banquets abound in Homer's works. Rather more surprisingly, fish wasn't eaten at any of them. The heroes of the *Iliad*—Achilles, Agamemnon, Hector—ate cows, sheep, deer, and boars, but no fish, a fact which bemused later generations of Greeks no end. In his *Republic*, written around 400 BC, about 300 years after the *Iliad*, Plato draws attention to this:

"For you know that when his heroes are on campaign, he does not feast them on fish, although they are on the shores of the Hellespont, nor on boiled meat, but only roast. That is what suits soldiers best."

Fish was no food fit for heroes, but a low-class meal, eaten by peasants and women. In the *Odyssey*, Odysseus and his men will only stoop so low as to eat fish when they are driven almost to starvation. As Homer puts it, "They were forced to eat fish because hunger gnawed their bellies." In keeping with this low-status meal, the fishermen who caught it were of comparably low status. They, like most workers, were passed over by epic poetry, but appear from time to time in vignettes such as the one by Hesiod, mutely collecting their catch and troubling nobody.

#### Changing times

Times, however, were changing. The expansion of the Greeks throughout the Mediterranean in the seventh and sixth centuries BC led to the creation of colonies that stretched from the south of France to the sea of Azov. And, as is so often the case with colonies, the tastes and fashions of

the new world came back to corrupt the old.

**A**s James Davidson relates in his excellent book, *Courtesans and Fishcakes*, by the end of the sixth century, a new fashion was beginning in the Greek colonies of southern Italy—fish eating. Cookbooks begin to appear in which fish are lauded. A new type of crockery appears that allows fish eaters to enjoy their fish to the full. Called the fishplate, it is a wide, flat dish, on which painted fish appear as the real ones on top are eaten. The fish-eating habits of the Italian city of Sybaris become so decadent that their memory is preserved in the English word ‘sybarite’.

One particularly extravagant citizen of Sybaris, a gentleman named Smindyrides, found himself unable to travel to Athens without taking a retinue of over 1,000 with him, in which number are included many fishermen and fish cooks. Little wonder then, that after the Homeric heroes have been lauded for their roast meat, one of Plato’s characters in the *Republic* speculates, “If that’s your view, I assume that you don’t approve of the luxury of Syracusan and Sicilian cooking?”

The heyday of the Ancient Greeks is often said to be the Classical period in Athens, which lasted from about 500 BC to 323 BC. Aristotle’s own death coincides with the

latter date, and to that century and a half belong the great dramas of Aeschylus and Sophocles, the bawdy comedies of Aristophanes, the first concepts of Western democracy, the construction of the Parthenon under Pericles, the birth of written history under Herodotus and Thucydides, and the foundations of philosophy under Socrates, Plato, and Aristotle himself. But the age starts with the defeat of the mighty Persian empire at the battles of Marathon and Salamis. As victors are wont to do, the Athenians decided that they deserved to let their hair down after their triumph, and began to enjoy themselves on a scale unprecedented in their history. As they did so, a subtle change took place in their meals.

Greek meals were traditionally divided into three parts—the carbohydrate, which was usually bread and went by the name of ΣΙΤΟΣ (*sitos*); the thing which made the carbohydrate taste nice, called ΟΨΟΝ (*opson*); and the drink.

#### **Real luxury**

As we have seen, Homer took *opson* to mean meat, preferably roast, and this usage held throughout most of the Greek-speaking world. However, in Athens a gradual but complete identification of *opson* with fish was to occur. To the Classical Athenians, the real luxury of a meal was in the seafood. Fish came to be so identified with *opson* that it

even appropriated the word, and the modern Greek for fish, ΨΑΡΙ (*psari*), reminds us of this.

**T**his association of seafood with pleasure reaches its height in the comic plays of the period, in which fish are treated as the currency of luxury. Fishermen and fish sellers transform from the simple hunters of Hesiod to grasping pimps, selling their wares to the highest bidder. One comic poet, Lynceus of Samos, even went so far as to suggest that the Athenian national hero Theseus would surrender himself to the embraces of Tlepolemus, Rhodes' mythical founder, for a taste of the latter's (famously delicious) dogfish.

In fact, anybody who did anything with a fish other than eat it was looked at archly—reports of fish worship amongst the Egyptians and Syrians just went to show how strange they were. “We will never get on”, says Anaxandrides to the Egyptians, “as the eel you consider the greatest divinity and we the very greatest dish.”

Slowly, seafood became redolent of sex and seduction. The renowned orator Demosthenes said of a traitor that he “went around buying whores and fish”, two things Athenians associated with decadent luxury. This association between seafood and sex grew so strong that vocabularies began to blur—courtesans were given fishy nicknames; one was called “red mullet”, another “cuttlefish”, and a pair of sisters were named the “anchovies” because of their “pale complexions, slender figures, and large eyes.”

Why did seafood take such a hold? Nobody is entirely sure why the love of fish swept through Classical Athens so completely, nor why the fad started in Sicily in the first place. However, one important distinction should be made between the “Homeric” foods, and seafood, and that distinction is a religious one. Fish wasn't offered to the gods as a sacrifice, unlike the meat from terrestrial animals. Most people would only eat cows, sheep, or pigs as part of a sacrifice, in which the animals were dedicated to one or other of the Greeks' numerous gods, before being ritually dismembered

by the priests who were officiating. Entrails were usually burnt, and the remaining flesh distributed by lot among the participants in a manner mirrored today by the production of *halal* and *kosher* meat. Since priests tended to keep the secrets of their religious ritual to themselves, the average Athenian rarely got a chance to examine terrestrial animals at length. In contrast, fish were not sacrificed, and so could be bought, dissected, and examined to the heart's content.

We see glimpses of this in the *History of Animals*. When Aristotle considers sheep, he does so through the eyes of priests, describing variations in the gall bladders of different breeds, which were one of the few organs used in divination. However, when it comes to tuna fish, his concerns are those of a gourmet:

“And if you should come to the holy city of famous Byzantium, eat another slice of preserved tuna for me there: it is good and tender,” says Arcestratus. “But when old”, cautions Aristotle, “the tuna are poor even for preserving: for much of the flesh wastes away.”

“...and these, owing to their rarity, it is impossible to classify,” observes Aristotle sagely, before relating a collection of fishermen's tales of the “one that got away” variety.

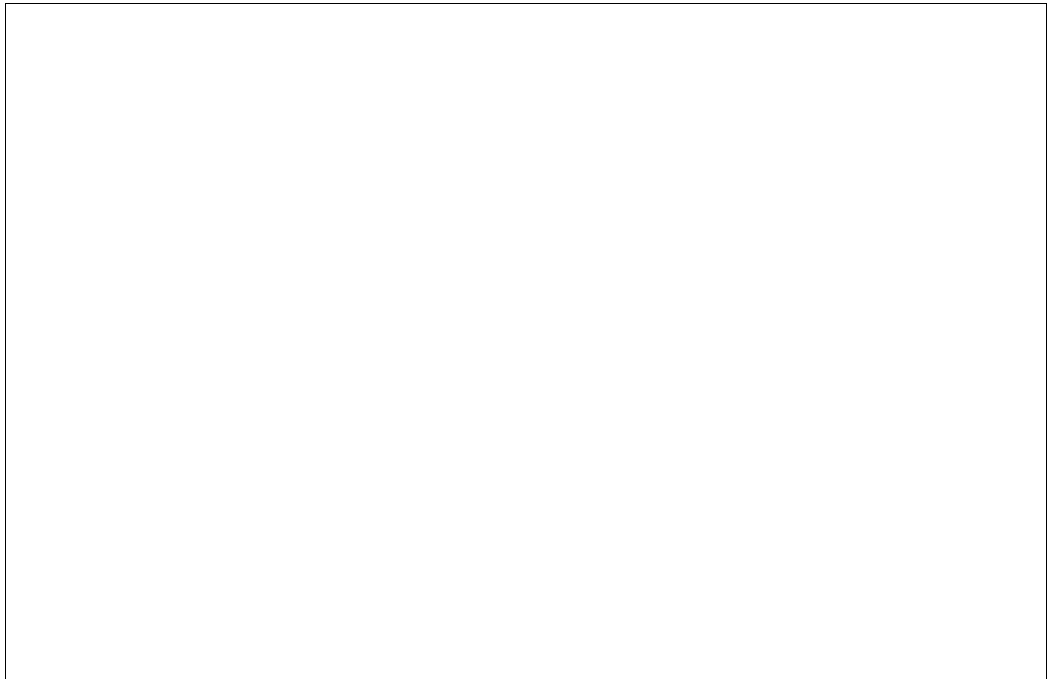
We have seen that, by around 400 BC, the behaviour and anatomy of fish had become of great importance to the Athenians. Their love of fish, and eagerness to exploit edible marine life, had bred a hierarchy of taste, with lowly salted fish and small fry at the bottom for the poor, and with dogfish and tuna steaks at the top and only for the rich.

It is this culture of fish identification and classification that Aristotle drew upon, and on which, despite the occasional display of scepticism, the *History of Animals* relies so heavily.

#### Age estimation

Of course, fishermen's observations aren't always correct, and their mistakes became Aristotle's. For example, when estimating the ages of marine life, Aristotle and his fishermen are spot on with the dolphin,





which was held to be sacred and so was not killed but released when caught:

**T**he dolphin lives many years; some are definitely known to have lived for over 25 years, others for 30, by the following method: fishermen dock the tails of some of them and then let them go again: this enables them to discover how long they live.”

However, no fisherman will throw back a tuna, one of the great catches and likely to fetch a good price at market. Bluefin tuna can reach 15 years of age, but Aristotle’s estimate of their lifespan is sadly out.

“Tunas live for two years; the fishermen consider this to be proved by the fact that once there was a failure of young tunas for a year, and the next year there was a failure of the adult ones.”

Ultimately, however, we should realize the debt of thanks we owe to the inhabitants of the shores of the Aegean, for such lapses are few and far between, and could have been much worse. A famous anecdote from Athenaeus tells the story of how a man from Sparta, Athens’ main rival for power throughout the Classical period and an inland city, got on with his seafood. We can only imagine how bad a book the *History of Animals* might have been had the young Aristotle settled in Sparta...

“A Spartan was invited to a banquet at which sea urchins were served at table, and took one. He did not know how this food is eaten and did not notice how his fellow diners handled it: he put the urchin in his mouth, shell and all, and cracked it with his teeth. He was getting on badly with his helping, having not come to terms with its tough and thorny surface, and said,

‘Wretched dish! I’m not going to weaken and let you go now—but I’ll take no more of your kind!’”

This article is by John Bothwell ([jhbot@mba.ac.uk](mailto:jhbot@mba.ac.uk)), a plant scientist who works for the Marine Biological Association of the UK and whose hobby is reading Greek

## Grab, cage, fatten, sell

**Tuna farming in the Mediterranean raises issues of privatization of common property resources and plundering of a stock**

Statistics from the Food and Agriculture Organization of the United Nations (FAO) for 1999 show that, thanks largely to the contribution of aquaculture, the total world fisheries production (177 mn tonnes) is on the increase. Just under a third, or 30.4 mn tonnes, now comes from fish farming, some 40 per cent of which occurs in the sea. While most of this marine production consists of seaweed and shellfish (molluscs), increasing amounts of high-value finfish are also being produced. From a production perspective, aquaculture has undoubtedly achieved some notable successes; but, in many countries, the intensive production of high-value finfish and crustaceans is coming in for increasing criticism. Intensive industrial scale aquaculture has become synonymous with pollution and destruction of the marine environment, conflicts with other resource users, and high levels of toxins in the fish produced. The spread of aquaculture, a cause of increasing concern and growing alarm, has been described as a cancer at the heart of the coastal environment.

Similarly, tuna farming, which combines capture and culture fisheries activities, raises some serious questions about the use of the tuna resource and its sustainability. It also provides an example of a market-driven fishery that generates huge profits for a few, but produces a large ecological footprint on the entire marine ecosystem, undermining the social and economic fabric of coastal communities that are highly dependent on small-scale fisheries and tourism.

Generally, and with the notable exception of some of the more contentious international fisheries, issues arising from fisheries resource management (which is really the management of marine

ecosystems) get scant attention in the mass media and, as a result, are usually absent from the debate on environmental justice. Due to the extremely complex nature of fisheries (only understandable if looked at through the combined perspectives of biology, economics and anthropology), and the tendency for opacity in the fisheries sector, the management of living marine resources is a difficult subject for the uninitiated. This is a shame, because the world of fisheries encapsulates a fascinating mixture of the difficulties and conflicts (both social and environmental) generated by the rational management of a renewable common property natural resource. Its critical study provides an example of the ethereal, yet urgent, quest for sustainable development.

If there is one current example that combines all these elements and which, in addition, merits detailed study, it is without any doubt the Mediterranean tuna fishery, brought to light through the recent phenomenon of tuna fattening (mistakenly referred to by some as tuna aquaculture).

Today, most of the Mediterranean bluefin tuna (*Thunnus thynnus*) are caught by coastal States through tuna purse-seines, made up of large rectangular nets capable of completely surrounding a shoal of fish. The industrial fleets that operate here are mainly French, and, to a lesser extent, Italian, Spanish, Tunisian, Croatian and Turkish. They are amongst the most technologically intensive in the Mediterranean, providing an exception in a sea dominated by small- and medium-scale fleets.

### **Detection systems**

Sophisticated systems for detecting fish shoals are combined with aerial location

systems using light aircraft and helicopters, with which the denominated fishing capacities of these fleets reach huge—and unrecorded—levels.

**T**una caught in this way is transferred—live—to large transport cages, which are towed from the place of capture at low speed (1 knot) towards their destination, often hundreds of kilometres away, where they are again transferred to fixed fattening cages. There the animals are stuffed with fish (fresh or frozen) for several months so that their flesh reaches the optimal fat content demanded by the Japanese *sushi* market. As can be guessed, the final product fetches a high price in Japan, where *sushi* from Mediterranean bluefin tuna is the most highly prized.

In 2001, production of tuna from fattening units located in Spain, Malta and Croatia (countries where, to all intents and purposes, these types of installations are concentrated) was more than 11,000 tonnes.

The region of Murcia in Spain alone exported more than 7,000 tonnes to Japan, worth more than 150 mn Euro. With figures like these, it is not surprising that the Spanish authorities include tuna farms on the agenda of VIPS visiting Murcia as an example of ingenious local enterprise. It is particularly noteworthy that not a single tonne of fattened tuna

was produced in the entire Mediterranean before 1996, when this activity started in Croatia.

But is this profitable activity sustainable? More to the point, does it provide a tangible example of an aquaculture system that will take over from fish catching, an activity obviously in decline and which depends on seas that are already exhausted? The answer to these and other questions highlights the enormous dysfunctionalities existing in the management mechanisms of our marine resources. It, furthermore, shows how the unstoppable process of the appropriation of public goods by powerful private interests is also extensively at work in marine resources. And all this is happening with hardly a fuss being made.

#### **Wild population**

To start with, as we are dealing with an activity based on catches taken from a wild population (something that many people forget once the fish is stocked in the fattening units), it would seem logical to ask about the conservation status of this natural population. And the answer is far from reassuring. The most important world population (or stock, in fishery science terms) of Northern bluefin tuna is found in the Mediterranean and the adjacent waters of the North Atlantic. If, in the past, tuna was the target of traditional fisheries in the coastal States,

using a wide variety of gear and techniques, the increased demand from Eastern markets—mainly Japan—is driving the development of highly industrialized large-scale fisheries using fleets of longliners and seiners. The absence of exclusive economic zones (EEZs) in the Mediterranean means that international waters begin only 12 nautical miles off the coast, a fact that has favoured the proliferation of pirate industrial and flags-of-convenience fleets that fish the tuna stocks on the high seas with impunity.

**T**hanks to this, and to the strong economic incentives associated with the fishery, the management recommendations made by the International Commission for the Conservation of Atlantic Tuna (ICCAT) are now not worth the paper they are written on, and annual catch quotas are significantly overshot (as even ICCAT recognizes). The most recent scientific evaluation of the stock was undertaken in 1998. It showed that the levels of the breeding population of the stock had declined alarmingly, in less than 30 years, to only 20 per cent of the 1970 levels. What is more, scientists have also voiced concerns over the increasing fishing mortality of both the adult and juvenile parts of the stock. They are recommending a slight reduction in catches—less than 25,000 tonnes—to avoid a stock collapse, which seems highly possible (90 per cent probability) in the next 5-10 years. Of course, reducing fishing effort by the amount needed for a genuine stock recovery plan, which is absolutely necessary, would be even better. Four years down the line, the total quota is 29,500 tonnes and the pressure on the stock has increased alarmingly. The phenomenon of cage fattening or ‘tuna farming’ has much to do with this.

As noted above, tuna from cages contains optimal fat levels, and is capable of producing high quality *sushi*. This has hugely increased the demand on the Japanese market, as it is a previously unheard-of product. Bluefin tuna *sushi* available up to now has either been top quality (pre-spawning individuals), commanding enormous prices affordable only to a select minority, or of a much lower quality (and price), coming from

post-spawning and juvenile stock. As Northern bluefin tuna *sushi* from tuna farms is of a good quality, with an intermediate price, the demand for Mediterranean tuna on the Japanese market has shot up, especially among the middle class.

While this reference to markets may seem somewhat obscure, given the actual impact, there is clearly increasing pressure on the wild stock. Perhaps Algeria best exemplifies what this implies. As the most recent State to become a member of ICCAT (in February 2001), it lacks any fishing quota for bluefin tuna. This is because ICCAT shares out the total quota amongst the various States according to their historical catch records. Union Pêche, a private financial institution, has, through its subsidiary, heralded the construction of a new fleet of tuna seiners. Although not registered in Algeria, they have been built with the declared intention that the country will profit from the new business of tuna fattening. Given the state of the stocks and the flagrant violation of the ICCAT rules that this new fishery initiative implies, this might seem like a joke in bad taste. However, the fact is that the fleet of 21 industrial vessels (20-30m long, with one, 40m) is already under construction in Spanish and Portuguese shipyards. Once again, it is evident that large-scale short-term profits are not governed by considerations of sustainable resource use (even when this threatens the very source of wealth, which, in this case, is the integrity of the tuna stocks).

The practice of tuna fattening is causing an additional problem, though less obvious, for the sustainability of the resource, which makes the eternal problem of obtaining reliable data on the fishery even more pressing. It is worth remembering that rational fishery resource management needs to have scientific data on the conservation status of the stocks in question.

#### **Lack of data**

Significantly, the 2000 ICCAT programme to evaluate the Mediterranean tuna stock has had to be postponed *sine die* due to lack of data. Tuna fattening complicates the situation further, due to transshipments on the high seas (instead of through traditional quayside landings),

which often involve commercial operations between different countries. (Most of the tuna fattened in Spain is caught by French or even Tunisian fleets.)

**T**he tuna fattening process also complicates biological sampling, necessary for understanding the age structure of the population. Generally, today it is more difficult to know, with a minimum of confidence, the quantity and origin of the catch, its biological composition, and the nationality of the fleets involved. ICCAT has recently warned that these uncertainties gravely damage the credibility of future stock evaluations.

It is not only tuna stocks that are affected by the fattening activities but also other species of small- and medium-sized pelagic fish (sardines, anchovies, etc). These species are used in large quantities as feed for the tuna. While some of this fish is imported in frozen form from other seas, the rest comes from Mediterranean fisheries. Thus, in Spain and Croatia, fattening units contract local fleets to supply such local species as sardinella or anchovy, with which tuna is fed.

Again, the fact that the catches destined for the fattening units often do not pass through the local markets (as is apparent, at least in Spain) means that catches are undeclared, and problems are caused for the management of these species. For example, annual consumption figures of 4,500 tonnes of anchovy have been quoted in the case of one fattening unit in Croatia. Catches of these are taken from the Adriatic, a region where the local anchovy stock is under tremendous pressure, and is currently in a state of recovery after experiencing a collapse.

The management of small pelagics is especially difficult in the Mediterranean, where there have been various stock collapses. These species (sardine, anchovy and sardinella) play a central role in the functioning of marine ecosystems, as their populations control both predator and prey species. Increasing pressure on both tuna and small pelagics could cause an increase in the size of the ecological footprint on Mediterranean marine ecosystems, a level of human impact that already

borders on the limits of structural and functional degradation of the ecosystems. In effect, recent studies in the northwest Mediterranean indicate that fishing takes 40 per cent of the total primary production of the ecosystem—one of the largest ecological footprints ever estimated.

Another problem is the social harm caused by the competition with traditional uses of the small pelagics; in Croatia, the increasing demand from some of the tuna fattening units is seriously affecting the availability of sardine and anchovy for the local processing industry.

The tuna installations are also a source of conflict in the use of the coastal zone, already intensively used in the Mediterranean. This includes the conservation requirements of valuable natural spaces. In Murcia, units are found within highly sensitive environmental areas, some categorized in the European Habitats Directive as Areas of Community Interest. The saturation of this area by fattening units has meant that an increasing number of installations are illegal. It is also important to highlight that the technology used only allows the units to be installed a short distance from the shore. In this way, they come into conflict (both directly and indirectly due to all the large-scale activities associated with them) with such coastal activities as navigation, artisanal fishing and tourism. From Murcia to Malta, passing through the Balearics, traditional fishermen are everywhere complaining about the damage being done by the combined activities of tuna fattening and tuna seining.

#### **Low growth rates**

As noted above, the emphasis on fattening up the flesh implies that, in addition to increasing the biomass, the tuna stocked must be adults with relatively low or moderate growth rates. This is especially true in the Spanish context, while in the Croatian case, small-sized tuna are used, many of which are below the minimum legal size (6.4 kg). This raises another problem. This emphasis on high production levels results in high levels of waste, as the conversion rates achieved are very low (20:1, in the Murcian case). This large polluting potential provides a

tangible threat to the adjacent ecosystems, which are often such valuable habitats as seagrass beds. Recent studies have confirmed this damaging effect in Spain and Croatia, although it was already well-known in Australia, where this activity was started.

**A**part from the biological impact provoked by excess organic material, which is likely to cause outbreaks of eutrophication, the danger of polluting the waters used by tourists for bathing is evident. On the other hand, there are references to the inverse problem, that is, the hypothetical presence of unusually high levels of contaminating toxins in the flesh of tuna coming from Mediterranean fattening units. This effect, known as bioaccumulation, consists of increasing levels of toxic substances throughout the structure of the food web. This means that in the apical predator species, like tuna, maximum levels are found. But why, compared to wild tuna, farm-reared tuna should have a higher level of toxins is, however, still unknown.

Now that we have an overall picture, especially concerning the issue of sustainable exploitation of tuna stocks and the possible ecosystem effects, and on the human use of the coastal fringe, it seems appropriate to look in greater depth at the socioeconomic aspects of this 'new industry'. For this, two fundamental questions arise: whom does the resource

belong to, and who benefits from it? The reply to the first question is clear: the resource is a common property, and its exploitation should, therefore, benefit society at large. However, marine species know no boundaries; and even less so, large pelagic species like the bluefin tuna, which undertakes great migrations. As noted above, the lack of the well-known 200-mile EEZs in the Mediterranean means that the Mediterranean tuna stock is mainly caught in international waters, where this species is known to breed. While this may complicate things, it does not mean that the coastal States have not taken up political responsibility to protect and manage the resource rationally. The very existence of ICCAT is an indicator of this, where recommendations produced for management are directed to the contracting parties, including the European Union (EU).

#### **Resource conservation**

On the other hand, the United Nations Convention on the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks clearly establishes the fishing States' responsibilities for the conservation of resources, although these may be found in international waters. The responsibility of coastal States (including the EU) for the management of the tuna fishery also has implications for economic investment in scientific research (geared towards better stock management), as well as public

infrastructure, subsidies for the sector—such as aids for vessel construction—inspection and monitoring activities, etc. All this, it is clear, must come from public funds.

**I**n the opposing camp, in parallel to this public intervention in management (although obviously inadequate), we are witnessing, *de facto*, a whirlwind privatization of resource use, and, as a result, of the benefits obtained. This has led most of the benefits to get concentrated in the hands of the tuna fattening units and the associated large-scale tuna seiners. The live tuna required by the fattening units can only be supplied by the seiners, which means that this gear is monopolizing the fishery. This is to the detriment of the other traditional fleets, such as longliners and other hook-and-line techniques. These could not dream of competing for the resource against technologically advanced industrial fleets, with large catching capacities, capable of searching large areas of the sea with acoustic and aerial surveillance methods. These even use real-time satellite information on levels of oceanic primary production.

The real tuna bosses, however, are the owners of the fattening units. A new economic power, in most cases of local origin—true self-made men—has burst forcefully onto the social and economic scene in the Mediterranean. Significantly, it is an open secret that some of their fortunes have been made in the trade of illegally caught tuna by the famous flags-of-convenience fleets, which work with impunity in the Mediterranean.

It all began in Croatia, after independence from Yugoslavia, where former Australian emigrants successfully transplanted the technique that they had learned there, of fattening Southern bluefin tuna for the Japanese market. Almost immediately, the first units appeared in Murcia (Spain). Today, apart from Spain, Croatia and Malta, there exist imminent prospects for establishing new units in Morocco, Turkey and Italy, with less advanced plans in Tunisia, France and Algeria. The largest Croatian producer of fattened tuna, Kali Tuna, is a joint venture arrangement with Croatian, Australian and Japanese investment. In

Spain, the principal companies are linked to the Fuentes, Abaladejo and Gines Mendez families. Fuentes have established joint ventures with powerful Japanese companies like the multinationals Mitsui and Co. Ltd., Mitsubishi Corporation and the processing and distribution company, Kanetomo Co. Ltd.

While the danger of the imminent collapse of the wild tuna population may be quite apparent, no less worrying is the implication of the unplanned development of the combined industrial tuna seining fishery/fattening units for the socioeconomic fabric of the Mediterranean fishing communities. Faced with the chronic crisis in the traditional fishery, the local and national authorities have been seduced by the apparent attractiveness of a new activity that promises enormous benefits, and, aided by 'new technologies', it has an air of modernity that the traditional sector lacks. This perception is encouraged by a vast coalition of interests within the industry and a wide group of international scientists who, with no qualms, sell the impossible idea of tuna as the 'veal of the future'. They legitimize the validity of the current fattening practices as the first step towards the domestication of the tuna, while, at the same time, obtaining generous financial aid from the EU for their research, which they claim to be of enormous social importance. It has even been claimed, by one of the promoters of the project in a popular French daily, that this is nothing less than a way of "alleviating the world's hunger". Nothing is said about the enormous technical difficulties faced. These are related as much to the process of reproduction (with massive larval mortality) as to the poor progress achieved in the manufacture of alternative feeds to fresh or frozen fish.

#### **Real problem**

And what about the lack of environmental sustainability (in terms of using ecosystem dynamics) intrinsic in the hypothetical large-scale production of a large predatory species? And, what is more important, concerning the real problem facing us: what is happening to the Mediterranean tuna in the meantime? The very scientists engaged in the task of

domesticating tuna recognize that it will take at least 10 to 20 years to achieve this.

**C**oming back to the social impacts of tuna fattening, the most evident one is the danger of the collapse of the sector, a process that can already be observed in Spain. Only with great difficulty can a traditional sector in crisis resist the overwhelming force of a large-scale agroindustrial activity that is covered up by the administration and blessed, through ignorance, by public opinion. A flight of human capital which seems irreversible is happening, with traditional fishermen selling their vessels to become salaried workers in the fattening units.

In one form or another, directly and indirectly (working under contract to supply the fattening units with low-cost fish), the traditional sector is becoming co-opted by the large industrial/tuna fattening fishery—not to mention the loss of influence with the administration of the fishermen's associations due to the tuna fattening industry, whose large concentration of economic power means that it has become the privileged representative with public servants.

The model, then, is clear: appropriation of a common property resource (tuna) and the use of the public marine domain by a few unscrupulous businessmen who are a powerful lobby with the public

administration. This is resulting in the tuna population being exploited to its limits following the paradigm of maximum immediate benefits. In this context, it is seen as naïve to raise questions about the sustainability of the resource when we are caught up in a race for the last fish—a race that is bringing about the probable commercial extinction of the fishery in the short- to medium-term (thus jeopardizing the principle of intergenerational equity).

In fact, the industry admits, in private, that the reason some of the new vessels being constructed for the Mediterranean are of such a huge size is because they may soon be operating in distant waters, such as the Indian or Pacific Oceans, to where they will be exported once the Mediterranean tuna population has collapsed.

All this is happening with the connivance of the administration, who, knowing that this new activity lacks any specific regulatory framework, prefers to steer its way through a comfortable legal lagoon where anything can be legitimized.

#### **Conservationism**

It is not in vain that some Murcian businessmen have already threatened to set themselves up in North African countries should conservationists' demands for developing a specific regulatory framework for the fattening of tuna be taken seriously.



**M**eanwhile, the administrators continue to make obscene boasts, of supporting this new initiative, proving the ingenuity of the private sector, which is capable of transforming something as economically deprived as Mediterranean fisheries into a huge earner of foreign exchange. With loud fanfare, the inauguration of what has been described as “the largest of the Spanish Mediterranean fleet” has just taken place in Catalonia. This tuna seiner, fitted with the latest state-of-the-art detection systems was launched in the presence of the highest fisheries authorities of the Government of Catalonia. It is well known that around one-third of the 2.05 mn Euro costs of its construction have been subsidized with grants from the EU, thanks to a favourable report from the Spanish authorities. The immediate construction of another three vessels has been announced.

Thus, the construction of large-scale fishing vessels, destined to increase fishing pressure on a population of a severely overexploited species for which a theoretical catch quota has been set, has been subsidized by taxpayers’ monies. It seems an absurdity, but the motive is clear: everyone wants a slice of the cake, but the cake is not big enough to go round. The fattening industry needs supplier seiner fleets and tuna in Spain has traditionally been caught by other techniques (handlines, *currican* or bait

fishing, *almadraba* or traps, longlines, etc.). If we want to compete with the French tuna seiner fleet, we must promote the development of a large capacity Spanish tuna seiner fleet. The victims (apart from the bluefin tuna) will be the rest of the traditional fleets, which are technologically much less advanced, and clearly incapable of supplying live tuna for the fattening units. We are faced with a clear case of social injustice in the use of (and benefit from) a common property natural resource.

In September 2001, the Maltese delegation presented a formal proposal to the 26th Full Session of the General Fisheries Council of the Mediterranean. This aimed to establish a fishing zone in international waters to the South of the island, where fishing for tuna with seines and the other associated activities of tuna fattening (clearing the cages, etc.) would be excluded. This initiative was justified by the damage being caused to the local longline fishery, due to competition for the resource and the destruction caused to fishing gear.

#### **Strong opposition**

While this proposal was thrown out due to the strong opposition of the EU (in looking after the interests of its tuna fleets), the case exemplified the serious tensions that are being produced throughout the Mediterranean between traditional fishing activities and the

growing tuna catching and fattening industry. Along the entire Spanish Mediterranean coast there is also a fierce opposition from the local fishermen's *confradías* to new projects underway for installing tuna farms. Some of these are almost being imposed by the autonomous authorities, despite the open opposition of the local fishermen.

**I**n sum, all the usual ingredients are there in the case of tuna fattening farms: privatization of a common good (in this case, with the added risk of its probable destruction in the short- to medium-term), concentration of the benefits into a few hands, public aid provided to pillage a natural resource, dispossession of the traditional resource users, social and economic deconstruction of the traditional fishing sector, complete lack of a regulatory framework, connivance of the administration, ineffectiveness of international supra-Statal organizations, and growing demand for the product from a powerful market.

Faced with such a situation, a wide social movement is growing in the Mediterranean region that is urging for an urgent reflection on the extent of this phenomenon, and that is pushing for the establishment of a regulatory framework to ensure the social and environmental sustainability of this activity. This front—although hardly structured—includes the traditional fishing sector, groups of local environmentalists, scientists employed by public research organizations and international conservation organizations.

In this context, the World Wide Fund for Nature (WWF) is actively working to raise awareness about the issue and to propose solutions, and maintain direct contact with the affected parties. WWF thinks that, as a precautionary measure, an immediate moratorium on the establishment of new fattening units in the region is indispensable, and a step towards developing a regulatory framework valid for the entire Mediterranean. Recently, in May 2002, WWF received unanimous support for a proposal presented to the discussion in the Subcommittee for Stock Evaluation of the Scientific Advisory Committee to the General Fisheries

Council of the Mediterranean. This aimed to create a working group to develop a Code of Conduct to establish the basis of this Pan-Mediterranean regulatory framework. While this implies that the problem is explicitly recognized by the highest scientific authorities of the region, almost everything else remains to be done. And tomorrow may already be too late...

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## Fisheries training

## New school

**A fisheries training institute for Oman is appropriate for a country that has a long history of fishing and seafaring**

**T**housands of applications for employment are sent annually from freshly graduating Omani youth to government and private enterprises. While some of these applicants receive positive responses, many are not so fortunate, thus adding to national unemployment levels in the Sultanate.

The Omani government exerts extensive efforts to absorb as many as possible of these graduates, but the number of job seekers keeps growing, as there are not enough opportunities for employment. In recent years, the government has passed laws to help the 'Omanization' of specific jobs. It has also extended tax incentives to the private sector to employ more Omani nationals.

To support these endeavours, the government limited the entry of foreign workers to the country and deported thousands of illegal workers. It also launched national awareness programmes by organizing seminars and media campaigns last October, in which several ministers were involved in discussing the issue of national employment. Several recommendations were adopted, which the government has promised to implement. Among them was the provision of basic levels of education to nationals, and the development of training and rehabilitation programmes to create a national cadre of professionals in various fields.

Among the sectors of the economy, fisheries stands out as one most eligible for securing employment opportunities for an important segment of the youth population. Besides oil and agriculture, fisheries and the artisanal and commercial sectors, are the most

important areas where 'Omanization' may be gainfully practised. Furthermore, the government has supported the establishment of a 'Youth Fishing Boats Project', by which the commercial fishing sector will provide enterprising and well-trained youth with inshore and offshore fishing boats on a partnership basis. The government will provide training and overall supervision of the project, while the Oman Development Bank will provide low-interest loans, with the collaboration of the commercial fisheries sector. These programmes are also intended to produce, in the longer run, technicians and technocrats who may eventually occupy top positions in productive institutions, and raise the levels of proficiency and responsibilities.

Along these lines, the Government of the Sultanate of Oman, represented by its Ministry of Agriculture and Fisheries, has requested the Fisheries Section of the Arab Academy for Science and Technology and Maritime Transport (AASTMT), a professional agency of the League of Arab States, to prepare a study for a national plan to establish a Fisheries Training Institute targeting high school graduates or equivalent, which will enable its graduates to receive internationally recognized standards of training in the various aspects of inshore and offshore fisheries. AASTMT has recently prepared the requested study.

**Specialized cadre**

The study deals with the establishment of a Fisheries Training Institute comprising of two branches, one for the inshore fisheries, including training on aquaculture practices, and the other for offshore, deep-sea fishing operations. The Institute aims to train and produce a specialized cadre of Omanis in the various aspects of marine fisheries and

aquaculture. The Institute should be able, when fully operational, to provide the Omani national fishing fleet, both artisanal and commercial, with the required crew.

**T**he Oman government's request involved the establishment of the Institute and the acquisition and crewing of an appropriately equipped, multipurpose Fisheries Training Vessel. Upon completing training, the trainees should:

- have acquired professional and practical capabilities in fishing operations and practices on board small (under 24 m) fishing boats, and deep-sea vessels (over 24 m) manned by an adequate number of crew;
- be able to operate successfully within Omani coastal and deep-sea waters;
- be capable of using modern fishing devices on board the vessels; and
- ensure high quality standards for the catch.

It is initially understood that the training institute(s) and the proposed training vessel will be located in coastal towns along the Omani coastline, where the inhabitants are predominantly fishermen.

Due to the direction and strength of the monsoon, the coastal waters of Oman, which border the Gulf of Oman and the northwest Arabian Sea, are characterized as amongst the most productive waters in the world.

Oman has a geographic area of 212,457 sq km and a coastline of about 1,700 km, divided into six fishing areas, and an Exclusive Economic Zone (EEZ) of about 350,000 sq km. It covers the coastal area from the Strait of Hormuz in the north to Dhofar region in the south.

According to 1999 figures from FAO, Oman's total fish landings are estimated to be about 110,000 tonnes, valued at RO55.42 million (US\$145 million), of which 49,150 tonnes are landed by the traditional sector and 6,370 tonnes by the commercial sector. (There has been a declining trend in landings since 1995, when landings exceeded 140,000 tonnes).

These landings included 31 per cent large pelagics (tunas, king fish, jacks), 29 per cent small pelagics (sardines, small jacks, anchovies) and 31 per cent demersal fish (emperors, sea breams, groupers, ribbonfish, croakers).

#### **Declining catches**

Lobsters, abalone and cuttlefish are also caught in notable quantities, although latest figures show a decline in their landings. All catches are from marine

waters. In 1999, Oman exported about 45,630 tonnes, valued at RO35.46 million (US\$92.3 million).

**T**raditionally, fishing has been one of the main professions of the Omani people. A large section of the population (estimated at 2.4 million in 1999), especially those who inhabit the coastal areas, are engaged in fishing. In 1999, the number of traditional fishermen was estimated to be 27,500, using about 13,000 small (approximately 19-30 ft.) fishing boats. Most of the boats are of fibreglass, while others (*dhow*s) are made of wood and aluminum. Most are motorized. The production of the traditional fishermen is estimated to be about 80 per cent of the total catch. The traditional artisanal fleet use drift-nets, gill-nets, beach- and purse-seines, and lobster traps. The larger industrial vessels (10 longliners for tunas and 11 for trawling), owned by five commercial companies, are restricted to a quota system as well as mesh size regulations, and operate in offshore areas (10-20 miles from the coast), landing the remaining 20 per cent of the total catch.

Coastal fishing operations are possible all year round, except for lobster and abalone resources, since their fishing is restricted to two months a year. The commercial fleet has a closed season of about five months (between mid-June to mid-November).

Several resource surveys were carried out in previous years by international organizations, such as FAO, and research vessels of other countries to determine the potential of the resources in the waters that border Oman. While further confirmation on the findings is still awaited, it is clear that the annual landings from these resources can be enhanced since the preliminary figures indicate that the overall production from the Gulf of Oman and the northwest Arabian Sea can exceed 400,000 tonnes annually, mostly of small and large pelagics. The mesopelagic resources of the Gulf of Oman (estimated to be 1-2 million tonnes) is another untapped resource whose methods of exploitation and utilization are yet to be determined. However, it should be noted that, according to recent indications, a number

of stocks have reached their maximum levels of exploitation, and various management measures need to be carried out.

The training of fishermen has been a priority of the Government of Oman since the early 1970s. Several trainees in various disciplines were sent on fellowships abroad, mainly to the US and Egypt, for different durations. Other training was carried out at the Subregional Fisheries Training Centre that was established in Kuwait during the period 1975- 1984. The immediate objective of the Centre was twofold: (a) to help the member countries of the sub-region provide training on various aspects of small-scale fisheries to its citizens so that they could become skippers, mates, mechanics and fishermen; and (b) to produce extension workers to train those employed in the traditional, artisanal fisheries. It was also intended to produce graduate trainers to train others back home. However, due to a shortage of qualified candidates at the time, only three Omanis benefited from the training. It should be noted that, in addition, the Omani government established various shore facilities and extended generous subsidy schemes for fishermen.

The establishment of a fisheries training institute in Oman, under the present situation of good demand, is a national necessity that will complement the already established Marine Science and Fisheries Research Centre. The proposed institute and the training vessel will be the means to enhance a major component of the Omani economy and help diversify contributions to the overall well-being of the growing Omani population.

#### **Deep-rooted tradition**

Despite fishing being a deep-rooted tradition in Oman, fishing practices did not develop sufficiently to attract the new and better-educated youth from fishing communities, especially after the discovery of oil and the creation of new economic activities. These potential recruits to the fishing profession were better equipped than their fathers to seek employment in other sectors of the economy. But these sectors offered few opportunities and were more competitive. Therefore, they could not absorb sufficient

numbers of graduates, thus creating a high percentage of unemployed youth. (It is estimated that around 15,000 high school or equivalent graduates are produced every year, but only about 4,000 find employment.)

Considering these limitations in other sectors of the economy, the Government of Oman is keen on promoting more efficient and modern practices in the fisheries sector due to the good potential it offers for employment. Towards that end, the government has set the following objectives in its five-year plan:

- diversify sources of national income;
- promote rural development and curtail internal migration to the cities;
- open employment opportunities for graduates at various levels of education;
- improve nutrition among its citizens by providing high-quality fish and fishery products, and increase consumption levels, especially in the interior areas;
- introduce responsible management of its fisheries resources through better

education and training in fisheries research, fishing operations, fish processing, marketing and distribution; and

- promote trade in fish and fishery products from Oman to markets worldwide as a means of enhancing income to the national economy.

Various other benefits are expected to emerge from related activities, such as the establishment of a database on the country's fisheries resources and fishing activities, networking with other countries in the region, interacting with the Marine Science and Fisheries Research Centre in Muscat, Raysoot Research Laboratory in Salalah and Qaboos University, as well as other fisheries research institutions and organizations in the region.

Eventually, the Institute, when fully operational, should be able to provide Omani nationals with the necessary skills to build up a cadre of small, self-sufficient fishermen entrepreneurs who can economically stand on their own, without government subsidies.

#### **New opportunities**

It is expected that the new employment opportunities eventually created will result in indirect benefits, such as to fishermen's families. Large quantities of

inputs of different sorts are expected to be used in the fisheries, and the fish caught will be subject to various forms of processing to add value to the new products. Thus, for each fisherman at sea, five jobs are expected to be created on land, in related industries.

**I**t will be difficult for most of the existing fishermen, who are largely illiterate and set in their ways, to adopt new fishing techniques or skills. However, a few, especially the younger ones, may be recruited for training. The proposed institute will have to target the younger, educated generation, especially those who are between 18 and 20 years of age and belong to fishing communities along the 1,700-km long coastline. These potential recruits may be graduates from high schools or vocational schools, and have basic fishing experience. The number of annual recruits will be determined in due course, based on the capacity of the facilities at the institute.

The trained graduates are expected to become certified skippers, master fishermen, navigators, mechanics who maintain outboard and inboard engines, fish handlers and quality control specialists, net makers and menders, and fish processors. The training may involve fisheries administrators, statisticians, enumerators and marketing and distribution experts. It may also involve on-the-job training, fellowships and study tours for further advanced training on electronics, boatbuilding and refrigeration at sea. There will be a need for several appropriately equipped laboratories for training in chemistry and hydrobiology. A variety of equipment will be required, among which are:

- Sea-fishing simulator, which should include an electronic nautical chart, echo sounder, net probe, navigation instruments, sonar, radar and chart table.
- Fish processing unit, consisting of tables, refrigeration unit, ice-making machine and necessary tools.
- Net making unit, with necessary tools, wires and nettings of various types.

The idea of establishing a fisheries training institute, along with the acquisition of a fisheries training vessel, in the Sultanate of Oman is wise and appropriate for a country that has a long history of fishing and seafaring, coupled with rich marine fish resources. In recent years, fisheries resources around the world have come under increasing pressures of exploitation. This situation makes it necessary for Oman to apply more responsible fishing practices that are sustainable and that may continue to provide benefits to national economic, social and nutritional objectives.

In this connection, modern training in fisheries exploitation and utilization is, therefore, highly relevant and would fit quite suitably with the developmental plans of the Government of Oman. Building an internationally recognized infrastructure facility (the first of its kind in the subregion) that would create employment opportunities, promote the advancement of an educated and professionally skilled class of young citizens, is a noble and highly regarded national activity.

Fisheries in Oman have a lot to offer its citizens and should, therefore, be exploited in a more responsible and efficient manner by well-trained Omanis. The proposed institute should be in a position to provide such training and bring long-term benefits on a continuous and sustainable basis. **3**

This report comes from Izzat H. Feidi ([ifeidi@thewayout.net](mailto:ifeidi@thewayout.net)), former Chief, Fish Utilization and Marketing Service, FAO

## Funding support

### A new fund has been set up to support independent certification of fisheries and labeling of seafood products

A new fund, called the Sustainable Fisheries Fund (SFF), is being launched to help provide support for fisheries that wish to be assessed for possible certification under the auspices of the Marine Stewardship Council (MSC, [www.msc.org](http://www.msc.org).) and its fisheries ecolabelling programme. To create the SFF, the MSC is working with the David and Lucile Packard Foundation and the Resources Legacy Fund (RLF) of Sacramento, California. The Packard Foundation has provided a substantial grant to RLF to launch the new fund, which will make smaller, more targeted, grants and loans to help defray the costs associated with fishery assessments.

The MSC is an international nonprofit organization dedicated to creating sustainable fisheries around the world by using market-based incentives. It has developed an environmental standard for sustainable and well-managed fisheries, and any fishery may voluntarily choose to be assessed against the MSC standard by an independent third-party certifier. Fisheries that meet the MSC standard may use the MSC ecolabel on their products, and this tells consumers that they are choosing products that are the best environmental choice in seafoods.

Danielle Wilson of RLF, who has extensive experience working with the Packard Foundation's Conserving California Landscapes Initiative, will provide the organizational leadership for the new SFF. Jim Humphreys, MSC's US Director, will serve as a consultant to RLF and will manage the new programme.

Specific guidelines are being developed to guide the operations of the new fund through a transparent application and review process. To assist in that process, a guideline development workshop was

held in London on 19 June 2002. Invited to that workshop were representatives from developing world fisheries, fishworker's organizations, environmental NGOs, and international foundations. Many of those attending the workshop are also members of the MSC Stakeholder Council, which met in London on 17-18 June 2002.

The workshop sought advice on four major areas: (i) guidelines for supporting fishery pre-assessments; (ii) guidelines for supporting full assessments of fisheries; (iii) guidelines for small grants to support stakeholder participation in assessments; and (iv) guidelines for support of projects that assist fisheries to move towards MSC certification.

The MSC has made significant progress in developing its global fisheries ecolabeling programme. Six fisheries have been successfully certified, another six are currently undergoing full assessment, while approximately 20 to 30 additional fisheries have completed confidential pre-assessments. Currently, more than 100 companies are selling labeled seafood products from fisheries certified under the MSC programme.

As the MSC programme has moved through this early stage of its growth and development, the cost of certification has emerged as an obstacle to participation. This is especially true in the developing world and in economically depressed fisheries.

#### Two stages

There are two major stages in the assessment process leading to certification: pre-assessment and full assessment. Pre-assessment is the initial scoping study of a fishery to identify the major issues and potential barriers to certification. Full assessment is a



comprehensive peer-reviewed scientific assessment of the fishery against the MSC Principles and Criteria for Sustainable Fisheries. For each of these assessments, the MSC has set specific requirements regarding how the assessment is conducted and the qualifications of the assessment team members. This helps ensure that the assessments and resulting certifications conform to the high standards of the MSC and accepted international standards for certification.

**M**any fisheries have realized significant value in conducting either a pre-assessment or a full assessment under the MSC's programme even if a specific fishery is not immediately successful in earning certification. For example, *SAMUDRA Report* reported in August 2001 that a pre-assessment of the Brazilian Prainha do Canto Verde lobster fishery helped identify gaps in data and management and created opportunities for both media coverage and co-operation among the varied stakeholders.

A confidential pre-assessment is the first step in the MSC process. For fisheries that are well managed, it can provide the necessary information to move ahead for a full assessment and perhaps MSC certification. For fisheries with management and/or ecosystem problems, a pre-assessment can identify those major issues and provide the

fishers, fishery managers and stakeholders with an agenda for improvement. Problems being identified through a pre-assessment with a long-term goal of achieving MSC certification can be a valuable tool in helping fisheries make necessary improvements.

Full assessment may lead to MSC certification, which is recognition that a particular fishery meets currently accepted international standards for sustainability and management. Fisheries found to conform to the MSC's Principles and Criteria for Sustainable Fishing reflect best management practices for scientifically based fisheries management with an ecosystem management component. Certification helps distinguish these fisheries as examples for others to follow.

Stakeholder participation is an important element at all stages in the assessment and certification process. Stakeholders vary widely and the MSC is developing guidance to help accredited certifiers ensure that all interested parties are consulted during the fishery assessment.

#### **Limited resources**

However, full participation in the assessment process sometimes requires a significant investment of time and energy by organizations that may have very limited resources. The SFF will make small

grants available to help ensure broadbased stakeholder input into fishery assessments.

**W**hen a fishery moves through the assessment process, opportunities may emerge or deficiencies may become apparent that can not be immediately resolved. For example, a fishery may lack information on the size, status and health of the target population. The SFF may provide some limited and targeted support to help fill such gaps, fund limited data collection and leverage larger projects. The new fund will not be in a position to support large-scale research projects or other programmes that might typically receive funding from development agencies.

The input from the London workshop was extremely valuable, and is now being used to help draft guidelines for the SFF. These guidelines will then be presented to the board of the RLF at its September meeting, and if approved, applications for support may be accepted shortly thereafter. ¶

This piece is by Jim Humphreys (jim.humphreys@msc.org), us Director, Marine Stewardship Council, Seattle, us

Book launch

## Conversations

The new publication *Conversations* was officially released at ICSF's General Body meeting at Maputo on 10 June 2002

**C**onversations: A *Dialogue on Power, Intervention and Organization in Fisheries*, written by ICSF Members Aliou Sall, Michael Belliveau and Nalini Nayak was officially released by His Excellency, Mr. Cadmiel Filiane Mutemba, Minister of Fisheries, Mozambique on 10 June 2002, at the General Body Meeting of ICSF in Maputo, Mozambique.

The Minister launched the book by handing over a copy to Reginald Comeau, Regional Co-ordinator of the Maritime Fishermen's Union (MFU), whose Executive Secretary had been Michael Belliveau, one of the authors of the book, who passed away on 26 January 2002.

The book's blurb gives an overview of its origins and significance: "In the winter of October 1999, as part of a programme of ICSF, three persons converged on the Treasure Guest House in Accra, Ghana. They came from three very distinct parts of the world, each bringing along a different baggage of culture and upbringing. What they shared, however, was a history of intimate involvement with the fisheries of their respective countries.

During the course of slightly over a week, the three discussed, almost threadbare, the gamut of issues that lie at the heart of fisheries and fishworkers in the artisanal sector, at a time when various factors are combining to alter the status of both fisheries resources and fishers' livelihoods. In the process, their dialogue often meandered into areas of

philosophy, ethics, politics, history, sociology and epistemology. The result is this book, a work of abiding value that goes beyond fisheries, fishworkers and organizations, offering powerful insights, inspired reasoning and composed passion.

In *Conversations*, Aliou Sall, Nalini Nayak and Michael Belliveau talk the reader through a world of tribulation, challenges, success, failure, temerity and grit, all in the belief that 'we make no contribution to the world by just getting agitated by what is going on around us. We have to find the right point at which to strike.'

*Conversations* is a valuable resource for fishworker organizations, researchers, activists and anyone interested in trade unions, organizations and fisheries. A well-produced paperback of 400 pages, including maps, *Conversations* is now available from ICSF at a price of US\$ 25. It can also be ordered online at ICSF's website ([www.icsf.net](http://www.icsf.net) or [www.icsf.org](http://www.icsf.org))

This notice comes from the Documentation Centre of ICSF ([icsf@vsnl.com](mailto:icsf@vsnl.com))

## Reading the perfect storm

**Only an integrated approach to disaster preparedness can work, especially in the context of artisanal fisheries**

### *November 1996*

One of the most severe cyclones of recent times hit East Godavari district of Andhra Pradesh, India on 6 November 1996. Although cyclone warnings kept coming out from early morning, there was no way the information could reach the fishers at sea or in the outlying areas. Conventional warning systems more or less depended on the time-tested word-of-mouth technologies, which were unfortunately not adequate to deal with emergencies and long-distance transmissions. When the cyclone did hit the coast, the damages were enormous, and as many as 2,560 people lost their lives, of whom, as many as 1,435 were fisher people. Of the fishers, 600 died at sea fishing on mechanized boats, and 830 people lost their lives while collecting shrimp seed. They had been away at sea before the cyclone started, and had no warnings, except for those who had transistor radios. Some of those who had received such warnings could not move to safer locations fast enough. Around 7.12 mn people (over 80 per cent of inhabitants of the Godavari delta) were affected by the storm.

There were very few deaths in the villages due to the cyclone, in spite of the great loss of housing and property. The deaths occurred at the seed collection grounds: about 830 people—women, children and men—died while engaged in shrimp seed collection in remote seashore areas away from the villages. These were some of the poorest people in the region, and also the most vulnerable.

A baseline study done by Action for Food Production (AFPRO), sponsored by the Food and Agriculture Organisation of the United Nations (FAO) soon after the cyclone, indicated the following factors to be responsible for the high death toll in the worst affected areas.

To begin with, the communities were caught mostly unawares; the last experience of a cyclone of such intensity was in 1969, and the development in the area since then—construction of flood banks, bridges to the mainland, roads connecting the remote villages, cyclone shelters, and general overall improvement in the quality of life as well as infrastructure—have all led to complacency. Fishing activities generally peak during May and November, which are also the most cyclone-prone periods of the year, and a period of high risk for the fishers. Moreover, according to the Indian Meteorological Department, one of the reasons for the high death toll was the atypical nature of the cyclone itself, which manifested in unusually rapid development and highly organized form.

Although phones were available in most of the villages, investigations revealed that most of them had been defunct, and were not used to send warnings anyway. The cyclone shelters in most places were hardly functional, and were scarcely used during the cyclone. Only a fraction of the houses in the villages were of concrete, and the rest afforded poor protection to the inhabitants.

### **Radio transmissions**

The only source of information on the impending cyclone during this period was the All India Radio transmissions, and more sporadic warnings on the television. Most trawlers did not carry a transistor radio, and the crew did not regularly listen to the weather forecasts. Many fishers did not take the warnings seriously until it was too late. The local administrative structures were ill equipped either to receive or transmit emergency information. The chain of information flow in such cases was found to be tortuous and lengthy, and was prone

to breaks or delays that could significantly or completely erode the useful time left for a response at the village level before the cyclone struck. It was also found that people had a very poor comprehension of the warnings.

**T**he community-level preparedness to face catastrophes of this intensity was very low. The fishers were not prepared to meet a cyclone either at sea or in their place of work or in their villages. The erosion of natural barriers such as forests and mangroves too was found to have increased the vulnerability of the fishing communities. However, it was also noted that the strategies adopted by fishermen and their families in the face of disaster—though fatalistic in most instances—were also more collective, indicating a strong sense of social cohesion.

The boats were not built for manoeuvring in rough seas, particularly in times of cyclones, and consequently, either foundered or capsized. The boats carried little by way of floatation devices, and, where available, these were seen to have saved many lives. The safety equipment on board was neither adequate, nor properly maintained. The Coast Guard reported that, without exception, fishing boats fail to carry the mandatory safety equipment. Being so ill-equipped, it was not surprising that so many fishing crews perished when the vessels foundered. Moreover, the fact that none of the fishing boats carried any means of communicating with the outside world made it impossible to search and locate these vessels.

As the enormity of the disaster took time to sink in, the State government realized the need for a comprehensive disaster preparedness programme to deal with such emergencies in future. It sought the help of the Government of India for a Sea Safety Development Programme (SSDP), which, in turn, approached the FAO for assistance. The FAO sanctioned a project, TCP/IND/6712, to assist the State Department of Fisheries in the implementation of a pilot project in and around Kakinada, which investigated and introduced measures that could reduce casualties amongst fishers both on sea and on land in times of cyclones. The

project involved setting up a Very High Frequency (VHF) shore-to-vessel communication system, provision of life-saving equipment, provision of diesel engines to assist in the rescue of shrimp-seed collectors in emergencies, and a comprehensive programme for community-based disaster preparedness in fishing villages, which involved facilitating the formation of self-help groups in 30 remote villages.

As part of the radio communication system, two VHF shore stations were established, one in Kakinada and the other at Balusutippa, both in East Godavari District, which, between them, covered most of the area affected during the cyclone of 1996. FAO-trained Department of Fisheries (DOF) personnel were employed to monitor these stations round-the-clock. The shore stations are meant to ensure:

- Life safety of fishers when they are at sea
- Periodic broadcasts of the weather forecast
- Transmittal of cyclone warning messages well in advance for the fishing community (at land and on sea)
- Co-ordination of search-and-rescue operations in case of any emergency at sea

The range achieved by these shore stations exceeds 50 km radial distance. The shore stations were equipped to receive the cyclone warnings from the Meteorological Office in Visakhapatnam via the East Godavari District Collector's office on VHF channels 15 and 16. Once a message is received, it will only need to be broadcast on the VHF frequency to all vessels having the handsets.

#### VHF sets

As part of the FAO project, a total of 150 25W VHF radio transceivers (powered through 12V batteries) were provided to the mechanized boatowners based at the Kakinada fishing harbour free of cost. Training in using the VHF sets was given to two members of each boat's crew. Even those boats that did not have handsets

received information almost as quickly because most boats tend to congregate in particular fishing grounds.

**F**ixed VHF radio transceivers with 3 dB GP antennas, mounted on 90-ft masts, were considered for installation in the remote villages on the coastal islands to establish a voice communication link during the cyclone periods as a disaster preparedness measure. These radios are powered through 12V lead acid batteries as standby power supply.

Two safety workshops were conducted for boatowners, operators and inspectors to provide them the necessary information on the maintenance and management of the VHF sets in vessel-to-vessel and vessel-to-shore communications, besides discussing the safety aspects in boatbuilding, amending and enforcing regulations and using sea safety equipment.

The project demonstrated a prototype Fibreglass Reinforced Plastic (FRP) life float for carrying on board the mechanized boats, which costs less than Rs7,000, but has the advantage of being locally made and maintenance-free. It can keep the survivors together in case of their boat capsizing, and, being brightly coloured, can attract rescue boats or aeroplanes. The float can be fitted on the top of the boat's wheelhouse in such a way

that it will float free in case of capsizing. The project manufactured and distributed 100 life floats to the mechanized boats to increase awareness about their usefulness.

In spite of much improvement in relief and rehabilitation efforts of the government and NGOs, there were still areas where the responses were not adequate.

Very little work had been done to enable the communities themselves to be more prepared and able to receive, comprehend and respond to warnings. The cyclone of 6 November 1996 focused attention on the need to take a fresh look at disasters and their management.

The awareness programmes for disaster preparedness included:

- Training 20 Storm Safety Extension Officers (SSEOs), two of whom were sent to observe disaster preparedness systems in Bangladesh and also attended a training course on Community Disaster Preparedness at the Asian Disaster Preparedness Centre, Asian Institute of Technology, Bangkok. Of the 20, ten SSEOs were drawn from the DOF and the rest from local NGOs, with the express intention of building stronger working relationships between the two.

- Establishing and training 30 volunteer disaster preparedness groups called Storm Safety Action Groups (SSAGs) in 30 villages, which was expected to reduce vulnerability within the villages. Each SSAG comprised 25 volunteers, who were mobilized by raising awareness about cyclones and disaster preparedness in their village, and then trained in a range of disaster preparedness skills by a team of SSEOs.
  - Equipping the SSAGs with transistor radios to receive warnings, megaphones to transmit the warning throughout the village, torches, first-aid kits, coats, hats and boots (for the SSAG members), lifejackets (for the shrimp seed collector rescue crew). The SSAG will manage the safety of the community through their Community Cyclone Contingency Plan (CCCP), and, ultimately, everyone in the village should know where to go, and who to help, etc., in the event of a cyclone warning.
  - Specific components to warn and rescue the shrimp seed collectors in times of cyclone threat, for, besides the mechanized boat crews, shrimp seed collectors were the other group of worst affected people in the cyclone.
  - Making an educational video about Community Disaster Preparedness and Storm Safety Action Groups.
- The project took into consideration the need to maintain a gender balance amongst the SSEOs, and tried to ensure equal participation from men and women in the programme.
- June 2001*  
Prior to 1996, cyclones were mostly taken for granted and fishers looked upon them as no more than occupational hazards, at best upsetting the fishing operations for a few days. But now, all that has changed. Cyclones have come to be taken more seriously, and so are the VHF sets.
- “November 1996 will not happen again, not in this area anyway,” insists Siva, a mechanized boatowner based at Kakinada. “The radio handsets are easy to carry on board, cost next to nothing in maintenance, and are a great source of comfort and protection; having them on board is like taking a life insurance,” he says.
- Five cyclones**  
In the last three years, there have been at least five cyclones which came close to the shore in the area, and every time, it was

possible for the Kakinada boats to reach the shore quickly.

**A**nother boatowner, Srinu, adds, “It is not as though the VHF sets are useful only in emergencies. Once we started using VHF handsets, we quickly found other uses for them such as keeping in touch with the base regularly and communicating from boat to boat on possible good fishing grounds and so forth.” The DOF is also exploring possibilities for relaying remote sensing application data on possible fishing grounds in a consistent and reliable manner, which will automatically add to the value of the service.

The Government of Andhra Pradesh, which was convinced of the efficacy of the FAO project, stepped in with a project of its own to set up more shore stations and to provide handsets to the boatowners at a subsidized price. The DOF in Andhra Pradesh has so far provided 400 VHF sets after the pilot phase came to an end, and the programme will continue. The boatowners quickly realized the multiple uses that the VHF sets can be put to, and the DOF constantly receives enquiries for VHFs from other boatowners. The Government of Andhra Pradesh also set up a Vulnerability Reduction Fund (VRF), under which in the year 2000, 10 more shore stations have been established along the coast of Andhra Pradesh.

Gangadhar, a semi-retired fishworker of 70, who lost a son in the cyclone, can not help wondering if having VHF sets on board could not have saved his son. “I understand how painful it is to lose someone so close. I did not allow my other sons to go fishing for fear they may not return, although we were starving. Now, with the radios on board, I feel more confident, and my sons have started fishing once again.”

A cyclone of such magnitude affects a wide range of people with different backgrounds and livelihood strategies, and the response to it should necessarily have to be as wide-ranging as possible. One particularly significant outcome of the programme, which has long-term implications not only in terms of disaster preparedness, but also in other development initiatives in the coastal

areas, is the networks that the project managed to establish: between the government and the NGOs and between the secondary stakeholders and the fishers. Even between different government departments, it was possible to establish horizontal linkages through training and awareness generation.

Most SSEOs, both from the DOF and from the NGOs, have reported that the project helped them understand one another’s roles and responsibilities better. It also sensitized them to the problems and constraints that each organization and individual within a system is regularly exposed to, and this, in turn, has led to very productive post-project interactions and the establishment of personal relationships. This appreciation of the integrated nature of development—be it disaster preparedness, sea safety, resource management or sustainable livelihoods—has also led to joint initiatives with a holistic approach to all these issues.

Most importantly, it is the response of the fishing communities to the programme that is overwhelming. Interactions with the fishers involved in the programme indicated that they felt it had been instrumental in opening doors to many agencies and individuals previously considered unapproachable.

In summary, it can be concluded that an integrated approach to the issue of disaster preparedness—which means considering not just the technical issues, but also the social, cultural and economic implications of any intervention among the artisanal fishers, and recognizing the need for a multidisciplinary and multisectoral approach, involving the primary stakeholders at every level of decision-making—does not only work, but also provides a framework for development as a whole. **3**

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## Safety at sea

**SOS****A recent one-day consultation discussed sea rescue systems for fishermen of Kerala**

**A** workshop on “Sea Rescue Systems for Fishermen” was organized by the South Indian Federation of Fishermen Societies (SIFFS) at the Institute of Management in Government (IMG), Trivandrum, Kerala, India on 18 June 2002.

Inaugurating the workshop, P C George, former Fisheries Development Commissioner, Government of India, stressed the importance of matching technology with needs and affordability. He said that the protection of life and property and ensuring safety at the workplace is the responsibility of the government. However, various practical, financial and organizational problems make this objective difficult to achieve. Though technologies are available in other countries, it is not easy to use them for the kind of small motorized boats that dominate the Kerala fisheries. Various adaptations are required to suit local needs.

Raveendran Nair, Deputy Director of Fisheries for the Marine Enforcement Division (MED), made a detailed presentation on the current sea rescue methods and operations of the Kerala State government. In the last five years since 1997, 418 accidents were reported, in which 72 fishermen died and another 22 were missing. The rescue operations of the MED, in co-operation with other agencies and the fishermen themselves, led to the rescue of 1,150 fishermen. Nair, however, stressed that many accidents were non-fatal, and the rescue operations conducted by the local communities were not reported to the MED.

According to Nair, the existing sea rescue system works under the co-ordination of the District Collector and involves nine departments, namely, Revenue,

Fisheries, Ports, Police, Navy, Coast Guard, Meteorology, Fire Force and Health. Kerala has five fisheries stations at Vizhinjam, Neendakara, Vypeen, Beypore and Kannur, from where sea rescue operations are launched. The five speedboats that were being used for sea rescue operations have been scrapped and put up for auction as they were found to be unsatisfactory. At present, the MED has hired 11 mechanized boats, over 43 ft in length, which are stationed in different locations.

The MED’s major initiative has been to develop a Fisheries Information Network (FIN) based on the use of Very High Frequency (VHF) radio sets. The State government has established base stations at places like Vizhinjam on the coast, and set up hill-top repeater stations at places like Ponmudi. The current coverage extends from Vypeen in the north to Vizhinjam in the south, and 200 handsets have been distributed to selected fishermen on an experimental basis. Feedback indicates that the system is quite useful and has a range of 40-50 km in the sea. Fishermen are also able to use the walkie-talkie to communicate important messages to the shore, to enquire about fish prices, and so on. The government has already sanctioned Rs4.3 mn to extend the FIN to the northern parts of the State, which will mean setting up hill-top repeater stations at Ezhimalai and Palakkad.

**Technological options**

Krishna Warriar, Joint Director, Electronic Research and Development Centre (ER&DC), Department of Electronics, Government of India, explained the various technological options available for fishing boats to send distress signals and for shore-based systems that are needed for picking up the signals and

locating the fishing boats at sea. He elaborated on a low-cost radio beacon that had been developed by the ER&DC some years back.

**H**owever, the project could not be completed due to the failure to develop a low-cost direction finding equipment to be used on the rescue vessel to locate the boat in distress. The change in government policies that led to the closure of the Department of Rural Electronics in the ER&DC led to the premature closure of the project. Warriar also felt that since technology options have now widened due to the easy availability of imported equipment, a fresh review of all options should be considered. He stressed that multifunctional devices will be more useful and better accepted among fishermen than the simple radio beacon. Warriar suggested combining a radio beacon with voice communication facility or a Global Positioning System (GPS).

Local fishermen, who had experience using the VHF handsets as well as mobile phones, shared their experience at the seminar. Fishermen using nets found the range of the communication adequate for their needs, but those who are involved in hook-and-line operations in places like Vizhinjam, Poonthura and Marianad, found the range grossly inadequate. In general, it was accepted that the VHF communication system would be suitable

for most fishing grounds in Kerala and needs to be further promoted. The problem of non-functioning for a large number of handsets distributed by the government was raised. As the handsets are owned by the government and given to the fishermen on a nominal rental basis, it is up to the government to maintain them.

Unfortunately, no system is in place to ensure prompt repairs and maintenance of the handsets. This has led to a majority of them getting shelved. It was, therefore, recommended that the government seriously move towards a policy of allowing handsets to be owned by individual fishermen. This would ensure that only those who are in genuine need would acquire the handsets; it would also ensure that they are maintained properly. The private companies distributing the handsets would have to create a proper after-sales network. The government needs to promote such a scheme by providing subsidies for fishermen who wish to acquire handsets.

#### **Waterproof handsets**

It was also pointed out that the widespread use of walkie-talkies led to airways getting jammed, in the absence of discipline and restraint in the use of the handsets. It was also pointed out that the existing handsets are not waterproof; only waterproof handsets will be really useful in marine operations.

## What's at stake

Each year, the southwest monsoon is a testing time for the fisheries sector of Kerala. The trawl ban and coastal erosion are two regular problems. To these is added the perennial problem of loss of lives at sea and the difficulties in sea rescue. No year goes by without some fishermen and boats going missing and the resultant hue and cry about the failure of the government machinery. However, we believe that it is not a simple matter of government apathy. The problem appears to be one of lack of appropriate technologies, systems and procedures.

The problems of sea rescue can be summed up under the following three points:

1. There is no mechanism for immediate information to reach the shore when an accident occurs at sea. Given the uncertainties in fishing, a long period is allowed to elapse before the families concerned can even be sure that fishermen are missing at sea. By the time the alarm is raised it may be too late.
2. The actual location of the boat or fishermen is difficult to ascertain and it is like searching

for a needle in a haystack. Without precise information, it needs a lot of luck to locate the fishermen or boats in the vast sea, especially in conditions of lashing rains and high waves.

3. The rescue system is also weak with so-called 'speedboats' that are not suitable for rough sea conditions and whose maintenance is an expensive affair. Given the government's normal procedures for getting some equipment repaired, the problem is further aggravated. Equally problematic is that government staff on board rescue vessels may be unsuitable for the risky operation of sea rescue.

We, therefore, need a totally new approach and system for sea rescue with appropriate technologies, systems and procedures. Some of the questions that need to be explored are:

1. Which categories of boats are most vulnerable? Which centres, areas and regions are more vulnerable?
2. What are the technological options available for communication and signalling in the case

The workshop participants were quite critical of the sea rescue systems. They narrated a number of experiences where the rescue boats were not pressed into service promptly due to lack of fuel and poor maintenance of vessels as well as unwillingness and lack of capability on the part of the staff. It was suggested that greater community control of the sea rescue system could ensure its proper functioning.

Cleetus, a third officer in the merchant navy, expressed strong reservations about the various approaches that are currently in vogue with respect to sea rescue systems for fishermen. He felt that sea rescue systems should be linked to the marine rescue co-ordination system that exists for larger vessels. He said that the rescue co-ordination centres are currently functioning at Mumbai and Visakhapatnam. There are no such centres further south. He felt that lobbying was necessary at the level of the Central government to bring a sea rescue co-ordination centre to Kochi and Tuticorin. Once the fishing boats are

covered under the system, the passage of information will be quick and the sea rescue system prompt. All ships at sea can then be easily identified and those in the vicinity of the distressed fishing boat can be directed to conduct prompt rescue operations. Cleetus also felt that the rescue vessels need to be much larger, better designed and equipped. He proposed vessels about 25m long for rescue operations, as the small mechanized boats currently used are incapable of operating under adverse sea conditions.

After wide-ranging discussions among the participants, who included government officials, the following recommendations were accepted:

1. The government should encourage fishermen to acquire VHF handsets on an individual basis by providing adequate subsidies.
2. The handsets for marine operations need to be well selected or else the existing handsets should be made waterproof.

of an emergency, on small boats that are used by artisanal fishermen? Are the mechanized boats properly equipped?

3. What are the investments needed for such technologies to be used? What are the investments in common facilities and what are the investments on individual vessels? Can the State and the fishermen afford these investments?
4. The Fisheries Department is already experimenting with radio communication at Vizhinjam. What has been the experience so far? Is the range of the equipment adequate, given the long distances motorized boats go nowadays? Is the technology and its economics suited for universal use on all artisanal boats in Kerala?
5. SIFFS and ER&DC had experimented 10 years ago with a low-cost radio beacon and tracking system. This was given up due to lack of funding. Is this idea still relevant? Has easy access to imported technology and new technologies made this obsolete?
6. What about satellite-based surveillance and rescue systems? Are they affordable?

7. What are the limitations of the current sea rescue system of the government? Are their vessels suitable? Are their staff capable of what is expected of them? What are the problems of information, co-ordination and decision-making? Is the amount spent on the current system worth it?

8. What kinds of vessels are suited for sea rescue? Is it feasible to hand over the rescue operations to fishermen themselves? If so, how would such a system look like?

Perhaps one can argue that fishermen can avoid some of the accidents if they take proper precautions. The motorized boats are no more interested in taking along sails, just for emergency situations. Often the problem is engine failure and this can be avoided by proper preventive maintenance. The issue of accident prevention or avoidance is an important issue and SIFFS is itself working on some of these issues and will conduct a training programme for fishermen soon.

*This background note was prepared for the workshop by V. Vivekandan, Chief Executive, SIFFS.*

3. For fishing boats that go beyond the 40km range, especially for hook-and-line fishing, the technological options need to be carefully reviewed and different schemes developed.
4. The State government needs to discuss with various Central agencies, including the Indian Space Research Organization (ISRO), the possibility of bringing the small fishing boats of Kerala under the sea rescue co-ordination centres.
5. There should be a complete revamp of the existing system of sea rescue based on the boats managed by the Fisheries Department. A proper review of the type of boats that are required, their staffing and control need to be done before a new system is put in place. Subsequently, the scope for community participation and control over the rescue vessels needs to be looked into.
6. It was recommended that SIFFS should set up a small study group to go into all the issues raised at the workshop and to develop greater clarity on the various technological and organizational options that are available.
7. NGOs like SIFFS and the government need to build greater awareness among the fishermen about the various ways of reducing accidents and also the impact of such accidents. **3**

This report is based on a summary by V. Vivekanandan ([vivek@siffs.org](mailto:vivek@siffs.org)), Chief Executive, South Indian Federation of Fishermen Societies (SIFFS)

## Fisheries access agreements

## A Trojan horse

**A new deal between the EU and Chile shows how future fisheries access agreements may now shape up**

**A** new deal recently concluded (but not yet ratified) between the European Union (EU) and Chile covering trade, political dialogue and co-operation, shows how future fisheries access agreements concluded between the EU and its Southern partners may shape up. The portents are disturbing: fisheries resources are likely to be used increasingly as the bargaining chips against which trade concessions (particularly concerning market access) are to be negotiated.

On 17 May, following the Madrid Summit between European and Latin American heads of State (the II EU-Latin America Summit), the signing of an 'Association Agreement' between Chile and the EU was announced. The agreement provides a framework for free trade, investment, co-operation and political dialogue in a number of sectors, of which fisheries is but one.

In April, when agreement was reached at the political level between the EU and Chile, Commissioner Lamy boasted that the negotiations had delivered "the most ambitious and innovative results ever for a bilateral agreement by the EU", describing it as a "fourth generation plus" agreement. As far as fisheries is concerned, this is a major new development. It is the first time that fisheries access for the EU, on the one hand, and export tariff concessions for a third country, on the other, have been included as part of a package deal.

Up to now, formal EU fisheries access agreements with developing countries have been on a strictly sectoral basis, involving 'cash for access', often described as 'first-generation agreements'. The only second-generation fisheries access agreement (vessel

transfer through joint ventures) concluded by the EU was with Argentina in 1992. This agreement was to prove disastrous for the Argentine hake fishery and, prior to the agreement's conclusion in 1999, the Argentine authorities were forced to take drastic action to prevent complete resource collapse. The agreement has not been renewed, and neither has any other second-generation agreement been subsequently concluded.

The first concrete indications of how subsequent generations of fisheries access agreements would shape up came during the negotiations between the EU and South Africa on the conclusion of a 'Trade, Development and Co-operation' agreement. In this case, the EU had pressed for a fisheries component to the agreement that made export tariff concessions for South African fishery products conditional on South Africa signing a fisheries access agreement acceptable to the EU. So far, South Africa has declined to be bowed by EU pressure. It must also be noted that making resource access contingent on market access directly goes against the FAO's Code of Conduct for Responsible Fisheries (Articles 11.2.7 and 11.2.8).

A further development occurred earlier this year in June, when EU foreign ministers unanimously approved a far-reaching mandate for the European Commission to negotiate 'Economic Partnership Agreements' (EPAs) with 76 African, Caribbean and Pacific (ACP) countries.

### Major shift

According to Commissioner Lamy these agreements will "mark a major shift in the Community's trade policy towards deeper economic relations with developing countries". These EPAs will

## Demands of Chile's Fishworkers

At the political level, the agreement makes resource conservation and sustainable and equitable fisheries management, responsibilities shared by the EU. The artisanal fishermen, therefore, demand that the European parliaments, institutions and civil society ensure:

- the application of the precautionary principle to the fisheries protocol in the EU-Chile agreement so as to avoid irreversible damage to Chile's marine resources, to the artisanal sector, and to the food security of the local population;
- that, as proposed by the European Commission in its Communication on

Fisheries and Poverty Reduction, information about the agreement, particularly the fisheries protocol, be diffused in such a way as to enable the professional organizations in the artisanal sector to analyze its content and potential social, economic, environmental and cultural impacts;

- that the ratification of the EU-Chile agreement includes measures that guarantee sustainable marine resource and ecosystem management, defend the rights of coastal communities and the artisanal fishery, and sustain the contribution of fisheries to local food security.

include a comprehensive package of aid and trade measures where, no doubt, attempts will be made to make export tariff concessions conditional on fisheries access for the EU long-distance fleet.

**T**his points to the EU-Chile agreement becoming a blueprint for future fisheries access agreements. In the Chile case, there are two main components dealing with fisheries. On the one hand, a protocol on fishing enterprises establishes the possibility for European investors to purchase 100 per cent ownership rights in Chilean fishery enterprises, on a reciprocal basis. On the other hand, within the trade component of the agreement, conditions for rules of origin and the removal of tariff barriers are established. Mention is also made, in other parts of the agreement, of bilateral and/or multilateral agreements covering fisheries on the high seas; developing regional co-operation in fisheries matters; and the rights and obligations of both parties under the 1982 United Nations Convention on the Law of the Sea.

The protocol on fisheries enterprises has five main conditions governing:

- ownership and control, which, on the one hand, authorize EU companies to own a major stake in, and to control and manage, new or existing fishery enterprises in

Chile, and, on the other, authorize reciprocal rights for Chilean companies in EU member States;

- registration and operation of fishing vessels, which entitle EU companies owning Chilean companies to apply for, register and operate fishing vessels in Chile under the same conditions as Chilean companies. Reciprocal rights apply to Chilean companies owning companies registered in EU member States;
- fishing permits, which entitle EU companies to obtain fishing permits and their corresponding individual quotas (with reciprocal rights for Chileans);
- transfer of licences and vessels, which entitle EU companies to receive, by means of transfer, fishing authorizations and vessels under the same conditions as Chilean companies; and
- reciprocity, which establish the provisions for ensuring the fulfilment of the reciprocal aspects of the agreement

### Tariff elimination

A comprehensive schedule for eliminating tariffs on the export of fishery products from Chile is given in a separate

Annex. For most fishery products, with the notable exception of hake and some salmon and tuna products, tariff barriers will be reduced to zero within four years, with a maximum transitional period of 10 years for 95 per cent fisheries products exported from Chile to the EU.

**W**hen the agreement was announced, Chilean President Ricardo Lagos was reported as saying that: “Today, the dreams of 15 million Chileans are with us and also the hopes of all Latin America, the natural area to expand the agreement”. Why then, just one month later, should a delegation from Chile visiting Europe, representing Chile’s artisanal fishermen and NGO communities, denounce the agreement as “a Trojan horse for the Spanish fishing industry”? Their fears are that the Chilean fishery will be sold off to gain concessions for Chile’s wine industry, and to gain tariff-free access to the European market. In particular, they fear that the initiative will undermine the sustainable development and jeopardize the food security of the Chilean people.

The agreement is based on three main principles that, respectively, refer to the respect for democratic principles and fundamental human rights; the promotion of sustainable economic and social development; and good governance. Despite this, during the negotiating process, coastal community

representatives, indigenous people who depend on fishing, and artisanal fishermen were totally excluded from the debate. Furthermore, no environmental, social or economic impact analysis has yet been carried out on the fisheries protocol of the agreement. This risks causing a resource crisis and the disappearance of their sector.

The trade deal with the EU is directly linked to the Chilean government’s initiative to privatize fishery resource access rights through the introduction of individual transferable quotas (ITQs). On 11 June, the Chilean government submitted a draft bill to the parliament, called ‘Limite Maximo de Capturas por Armador’ (maximum catch limits for boatowners). The parliament must vote on this bill, before 31 December. In conjunction with the establishment of the EU-Chile agreement, from 1 January 2003, the introduction of the ITQ system will also allow a trade in licences and fishing quotas between the large Chilean industrial operators and future European investors.

#### **Fisheries protocol**

As noted above, the fisheries protocol in the agreement gives European investors the right “to apply for, register and operate a fishing vessel under the same conditions as Chileans, and to receive, by means of transfer fishing authorizations and vessels, and their corresponding

individual quotas". Thus, if ratified by the Chilean president in October, the EU-Chile agreement will enable European (mainly Spanish) fishing companies to invest in Chilean quotas, with the same rights as Chileans, namely, to buy, sell, trade, speculate on, lease or mortgage fish quotas.

**T**he ITQ system will initially be confined to the fisheries classified as 'fully exploited'. These stocks include species fished jointly by both artisanal (for local food supply) and industrial sectors (for reduction to fishmeal). The bycatch from the industrial sector on these species includes as many as 30 species of prime fish targeted by the artisanal sector.

The initial quota share will be based on historical catch records, with the lion's share going to the industrial sector. The quotas are to be allocated for 15 years on a renewable basis. A massive invasion of European vessels into this fishery risks marginalizing even further the artisanal sector and promoting fishmeal production over human nutrition.

European companies will also have open (and free) access to 'underexploited' Chilean fisheries resources. These include more than 90 species of high-quality white fish species of high commercial value, which form the backbone of the artisanal fishery and of local value-adding processing plants.

The removal of tariff barriers on salmon from aquaculture will promote significant production increases in Chile, with negative impacts on the coastal environment (pesticides pollution, escaped salmon that destroy local fauna, etc.). The increasing occupancy of the coastal area by salmon aquaculture also affects the access rights of coastal communities in the coastal zone. The EU has undertaken to promote a responsible approach to fisheries management at a global level and to make sure that, in its relationships with countries in the South, the needs of the coastal communities and of the local population are respected and protected. It is essential that these principles are put into practice in the proposed EU-Chile agreement, which is currently on the table, as well as in future

## The Privatization Process

In 2001, the Chilean government instituted a 'transitory fishery law' that established individual non-transferable quotas. This law has already enabled the industrial sector to obtain the lion's share of the quotas.

In the case of one of the largest Chilean fisheries, for horse mackerel (*Trachurus murphyii*), the industrial fishery sector obtains 98 per cent of the global annual quota. The allocation of quotas is based on the catch track record over the last five years. Apart from the commercial catches, the industrial fishery has the right to include a whole series of catches, including those taken for scientific purposes. On the other hand, the catches of the artisanal fishery, because of its informal nature, have not been fully registered. As a result, the artisanal fishery has only been able to obtain 2 per cent of the global quota in this fishery, which is insufficient to maintain the levels of its activities. The artisanal fishery for horse mackerel is an important source of local food security, while the industrial fishery transforms this fish into meal for animal feed (and takes a large bycatch of species important to the artisanal sector).

fisheries access arrangements that may become part of the EPAs negotiated between the EU and 76 ACP States.

Given the experience to date with the EU-Chile agreement, it is likely that future fishery access agreement negotiations will be surrounded in commercial secrecy. The danger is, therefore, that trade and short-term investment priorities will take precedence over long-term sustainable social and economic development, sounding the deathknell for artisanal fisheries in many parts of the world. ❧

This article is by Brian O'Riordan ([briano@skypro.be](mailto:briano@skypro.be)) Secretary, ICSF's Brussels Office



## Fishery co-operatives

## Economic powerhouses

### The pioneer of Japan's fishery co-operative movement gives a concluding overview

In Hokkaido, there are currently 129 Fisheries Co-operative Associations (FCAs), all of which have been established by the member fishermen. These 129 FCAs have, in turn, organized three federations at the prefectural level, namely, Dogyoren, Shingyoren and Shidoren. These three prefectural federations are the constituent members of Zengyoren, the National Federation of FCAs.

The average FCA in Hokkaido consists of 200 member fishermen. The largest FCA has more than 1,000 members, while the smallest has only 40. In 1992, the total number of fishermen who were members of the Hokkaido FCAs was 29,500, of which 27,731 were regular members and 1,769 were associate members. Regular members are those who are engaged in the fishery for more than 120 days per year and who, therefore, have voting rights. Those who fish for fewer than 120 days per year, as well as certain small-scale fish processors and others engaged in fishery-related business, are referred to as associate members. They may use the services of the FCAs just as regular members, but they have no voting rights. More than 80 per cent of the member fishermen rely on family labour and use boats of less than 10 tonnes gross weight. In such cases, only one member of the family is a member of the FCA.

Japanese FCAs are administered democratically, based on the principle of the International Co-operative Alliance. The General Meeting of an FCA consists of all the members, each of whom has one vote. The General Meeting meets once a year to discuss the yearly business plan, the budget and the report of its business and finances, and every three years it holds elections for a board of directors and a board of auditors. The budget and

any other proposed bills need a majority vote to be approved. The General Meeting may also vote to revise established bye-laws. Any revision of an FCA bye-law requires a two-third margin to pass.

The Board of Directors is responsible for administering the FCA. It must ensure that the decisions made by the General Meeting are applied and that the directives it has given are properly implemented. Since the directors are member fishermen who themselves work in fisheries, it is impossible for them to serve in their elected positions full-time day in and day out. The directors may, therefore, hire employees to perform the daily business.

The Board of Directors meets once or twice a month to discuss important affairs of the FCA, review loan applications from the fishermen, and set prices for certain products such as salmon, scallop, and kelp.

One of the directors is elected President of the board, and he is the chief representative of the FCA. As most fishermen are not experienced businessmen, they can rarely foresee any possible difficulties. In order to deal with any problems that may arise, they have to select the General Manager from among the most able and experienced staff members.

#### Financial affairs

Two or three members of the FCA are elected to the Board of Auditors, which is responsible for managing the financial affairs of the FCA. Since the members of the FCA may not have much experience in finance, Shidoren, the Educational Federation, maintains a staff of about 25 experts in fiscal and financial affairs to assist and advise the FCAs.

FCAs in Japan are engaged in many different aspects of work and life in the fishing villages, and they are thus called multipurpose co-operatives. They function as the economic centres of communities, and are involved in fisheries from the point of production to the point of consumption.

**T**he Department of General Affairs is in charge of bookkeeping, including control of expenditures, personnel, the agenda for the Board of Directors and the General Meeting. The Department of Marketing is in charge of selling the products caught by the fishermen, collecting the money from the buyers, and distributing the payment to the fishermen. The Department of Credit is in charge of savings and loans. The Department of Insurance is in charge of fire and life insurance, both of which are underwritten by the National Insurance Federation of FCAs. The Department of Guidance is in charge of controlling the fishing rights, education in the co-operatives and promoting the activities of youth groups and women's groups.

The joint marketing system is an important pillar of support for an FCA. Most of the Hokkaido FCAs operate their own fresh-fish markets. A smaller FCA may choose not to establish a fish market, but, instead, transport its products to the market of a nearby FCA, to which they will pay a 3 per cent commission to sell its products. This 3 per cent is over and above the 5 per cent that the member fisherman is required to pay his own FCA.

Under the joint marketing system, the FCA will designate certain wholesalers as buyers. In order to ensure that payments are made, the FCA requires a security deposit from each buyer. The fish buyers are then advanced a line of credit, which is normally several times the amount of the security deposit. Certain limits are prescribed in the contracts between FCA and the buyers, such that the buyers can not make unreasonably large purchases.

The fishermen bring their products into the fish market every day, after which the products are scaled by the FCA staff and put on ice. The buyers come in and, based on their information regarding the consumer markets, check to see which

products are available and which products they should buy. The prices of the products are determined by auction. In this way, the fishermen can get the highest possible price for their catches.

Occasionally, buyers will purchase large quantities of fish, such as salmon, saury and scallop, at prices that have been negotiated beforehand by the buyer and the FCA. The products will then not be auctioned at the market, but loaded directly from the boats on to the buyers trucks.

Many FCAs commission Dogyoren to collect the payments from the buyers, at a rate of 1 per cent. The buyers remit the money to Dogyoren, which deposits it into the FCAs' accounts with Shingyoren.

The money that the FCA receives from the buyers is routed through the Credit Federation, which automatically deposits it into the savings account of the respective fishermen. In accordance with pre-arranged agreements between the fishermen and the Credit Department of the FCA, varying percentages of this income may be directed to separate accounts for the repayment of loans, for payment of various monthly expenses, or for payment of general living expenses.

Once the various charges and expenses have been deducted from the fisherman's income, the remaining balance is deposited into his savings account. Such an account will be a fixed-term account, and, in that way, the FCA can increase its operating fund.

Furthermore, this system allows the FCA the opportunity to determine appropriate credit limits for member fishermen, based on their income. Of course, the FCA would not refuse credit to those members who did not sell their catch through the FCA market, but the fishermen realize that it is in their best interests to work with the FCA, which will always extend them credit and give them loans. As a result, the marketing affairs of an FCA are closely linked with its credit affairs.

#### **Financial independence**

As it would be difficult for each FCA in Hokkaido to be financially independent and to extend loans to all its member

fishermen, the FCAS throughout Hokkaido have concentrated their savings in Shingyoren, the Credit Federation. With its accumulated funds, Shingyoren can extend a helping hand to the weaker FCAS and ensure the financial stability of all the FCAS in Hokkaido.

**W**ith regards to the capital of the FCAS, it must be realized that it may be difficult for the fishermen to come up with the required funds, due to the relative poverty of small-scale fishermen. Therefore, the minimum subscription may be fixed at one share for the poorest fishermen, while the owners of larger vessels may be required to buy more shares as they grow in size, depending on the circumstances. Each fisherman will, nevertheless, have only one vote in the General Meeting.

We in Hokkaido know how difficult it is to increase the amount of capital of an FCA. Therefore, we at Shidoren continually advise the FCAS to deposit their money into the capital, thereby strengthening the financial structure of the FCA.

Certain progressive FCAS have adopted a system in which a set amount is withdrawn from the fisherman's account each month, based on his estimated income and on his living conditions, and is used to pay for his living expenses. This is almost like paying a salary.

The Fishery Law and the Fishery Co-operative Association Law are the two basic laws that govern the fishing industry and the activities of the fisheries co-operatives in Japan. The Fishery Law provides the fundamental legal framework for the fishing industry. In particular, it covers aspects regarding the use of the fishing grounds, such as which fishing grounds may be used, who can use them, what kind of fishing gear may be allowed, and what kind of fish may be caught.

Under this law, the fundamental principle guiding the operation of the FCAS is that of *res nullius*, by which ownership of the fish is granted to those who catch the fish. This regulation is intended to prevent any major disputes about ownership of fish among

fishermen and fishery co-operative associations and to guarantee reasonable use of fishing grounds.

For that reason, two management systems have been established; one regarding fishing rights and the other regarding fishing licences. Coastal and inland water fisheries are managed under the fishing rights system, while offshore and open-sea fisheries are managed under the fishing licence system.

The first system specifies three types of areas, each with different fishing rights: common fishing rights area, demarcated fishing rights area and set-net fishing rights area. The common fishing rights area is defined as the total area controlled by a certain FCA. That FCA has exclusive ownership of the fishing rights in that area, and each and every member fisherman in the FCA is granted a permit by the FCA to operate within that area.

Demarcated fishing rights areas are small sections within the aforementioned area. Within these demarcated areas, fishers have the right to engage in aquaculture of such products as laver (a type of seaweed), oysters and scallop.

Set-net fishing rights areas indicate areas for which permits are granted for fishermen to position large set-nets. These areas consist of waters that are over 27 meters deep. Farther offshore from these three areas, there are common FCA fishing right zones, which are controlled by several FCAS.

Apart from the fishing rights system, there is a fishing licensing system for fishing in the open-sea areas that lie past the common FCA fishing right zones.

Large-scale fishers working in those areas are granted licences by the prefecture to fish for such products as skipjack tuna, Pacific saury and squid. The licences are approved by the Prefectural Adjustment Commission.

#### **Pelagic fisheries**

In the areas farthest offshore, only large-scale pelagic fisheries are licensed to operate. Such licences are granted by the Central Government's Ministry of Agriculture, Forestry and Fisheries.

### Milestones in Japan's Fisheries History

Year	Important Changes	State of Affairs
1868	Meiji Restoration	Japan abolishes feudalism and begins shift towards a modern system of Western-style capitalism
1886	Regulation for Fishermen's Associations (FAS)	Fishermen's Associations established in each fishing community and FAS authorized to maintain and control coastal fisheries
1894		Takatoshi Ando born in Fukushima prefecture
1901	Meiji Fishery Law (MFL)	Fishery rights legally endorsed under MFL and allocated to the FAS
1910		1st Amendment of MFLFAS permitted to undertake such business practices as marketing, supplying, processing, and collecting savings
1916		Ando hired as police officer in his hometown, after working in photo shop for several years
1923		Ando comes to Hokkaido for the first time as inspector of illegal fishing practices
1929	Great Depression-Worldwide	Great Depression deals devastating blow to Japanese economy
1933	2nd Amendment of MPL	FAs begin to use capital accumulated by fishermen, and FAS renamed Fishery Co-operative Associations (FCAS), marking first steps toward modern co-operatives
1933		Ando becomes head of the FCA Section of the Hokkaido government
1938	3rd Amendment of MFL	Credit services established, and law establishing Central Bank for Industrial Co-operative Associations enacted. FCAS become entitled to use services of this bank
1941	Fishery Organization Law (FOL)	During World War II, FCA abolished under FOL, and fisheries controlled by military government
1945	End of World War II	Japan occupied by US, led by General McArthur
1949	Fishery Co-operative Association Law	New FCA Law enacted, incorporating internationally accepted principles of co-operatives 206 FCAS established in Hokkaido Hokkaido Credit Federation of FCAS (Shingyoren) established, with Ando as first President
1952		Ando becomes Vice President of National Federation of FCAS ( <i>Zengyoren</i> ).
1954		Ando becomes President of Hokkaido Federation of FCAS ( <i>Dogyoren</i> )
1961		Hokkaido Educational Federation of FCAS (Shidoren) established, with Ando as first President
1964	Fishery Damage Compensation Law	Mutual Fishery Damage Insurance Associations established in 39 coastal areas. Ando becomes President of both National Federation of Mutual Insurance Associations and Hokkaido Fishery Mutual Insurance Association
1967		Ando becomes President of National Federation of FCAS ( <i>Zengyoren</i> )
1972		At the age of 78, Ando retires from all posts. He begins work on his autobiography, <i>Recalling My 80 Years of Life</i> .
1990		Ando dies at the age of 96

Japan's Fishery Law is complex and elaborate, but it is also very systematic. The primary characteristic of this law is that it provides a limited-entry system that is much more comprehensive than in any other country.

**O**ne example of direct government support of FCAs is the regular audits of their accounts by administrative authorities. The objectives of the inspection are to determine if any illegal activities are being engaged in, and if there are any problems with the administration and accounting, to diagnose the soundness of the management of the co-operative, and to provide any necessary guidance and advice.

This is based on Article 123 of the FCA Law, which reads: "The administrative authorities must inspect the business details and the accounts of FCAs once a year, by referring to accounting books and other relevant documents". This inspection is the responsibility of the prefectural government. The government is responsible for half of the cost of this inspection. 3

This twelfth and concluding instalment forms the appendix to *The Autobiography of Takatoshi Ando*, translated by Naoyuki and James Colyn

## From cowrie to rupee

**Trade in cowries in the Maldives dates back to the mid-9th Century and was established through a complex network of maritime trade routes**

The Indian Ocean region has had foundations for intra-regional trade for at least 4,000 years, establishing a complex network of maritime trade routes, linking earliest civilizations in the Mediterranean, the Gulf littoral, South Asia and China. This led to the cross-fertilization of cultures, ideas, beliefs, ethnic technologies, politics and economies.

The Maldives lies on the crossroads linking the sea trade routes between Southeast Asia/China and the East African coastline. History reveals that the Maldives has had a number of differing ethnic contacts with the Indian Ocean Rim (IOR) countries, dating as far back as the 5th Century AD. It has been tentatively suggested that the Maldives (and Seychelles) may have played a key role as mid-ocean staging posts in the Indonesian migrations to eastern Africa and Madagascar, thought to have occurred during the 4th and 5th Centuries AD. Of more certain significance to the whole of Africa has been the trade in Maldivian cowries (*Cypraea moneta*).

As early as the mid-9th Century AD, the Maldives was known to the Arab merchant Sulaiyman as a producer of cowries, the tiny shells once used as a medium of exchange in Bengal, China, Southeast Asia and throughout large parts of Africa. Although there are no indications of a direct trade in cowries with East Africa, it is known that large quantities of these shells were taken to the ports of southern Arabia as ballast in Arab dhows crossing the Indian Ocean from Southeast Asia by way of the Maldives. These cowries must have been re-exported to Africa via Sinai, or sailing directly to ports such as Mogadishu, Lamu, Malindi, Mombasa, Zanzibar and Kilwa.

Trade in cowries lasted more than 700 years. The profits attached to the cowrie trade were substantial. Ibn Batuta, who visited Maldives in 1343-44 and again in 1346 (and who was himself also involved in some cowrie trading) records that cowries sold at Malé for between 400,000 and 1,200,000 to the gold dinar. Seven years later, this same traveller saw Maldivian cowries sold at the Kingdom of Mali in West Africa, 1,150 cowries to a gold dinar.

Interaction with the IOR countries have been, to a large extent, limited to the monsoon winds as well as the transport of pottery between China and the Persian Gulf communities. Thus, seafarers, merchants and travellers have interacted in various atolls at various periods. Due to the nature of the monsoon and the currents in the Indian Ocean, most of the Arab travellers had contacts with the northern atolls, while the Southeast Asians visited the southern atolls. This aspect is still visible within the communities of these regions of the Maldives. During these contacts, which could last up to a full monsoon, exchange of goods, ideas and culture developed micro-communities in small low-lying islands within a larger atoll system to the macro-level of a State or an independent nation called the Maldives.

### Skilled craftsmen

The unique ocean space occupied by the Maldives archipelago provided favourable conditions for maintaining a regularity of trade and transport; thus, Maldives became a major player of this historical trade. The cultural contacts developed fisheries, agriculture, manufacturing and trade. Skills in repairing seagoing craft were highly developed, due to the repairs done on these vessels by the craftsmen of the atolls.

This craftsmanship remains highly developed, compared to other coastal States in the Indian Ocean Region.

These contacts greatly influenced those communities that began to emerge with collective ideas—religious and political—as well as their arts and crafts, transforming them to adapt to the local environment. Ethnic technologies were developed to cater for the influx of traders. Processing of tuna meat has been well documented by Chinese travellers during the 12th Century.

Due to such early contacts in ancient times with the world's earliest urban civilizations in the Middle East, the Gulf littoral, East African coastline, and South and Southeast Asia, linked by sea-borne commerce, the Indian Ocean was a thriving network of trade and community links. By the time Maldives embraced Islam during the mid-12th Century AD, it had developed a unique form of governance, highly adapted to the archipelagic conditions of the Maldives. Each atoll had highly developed autonomous governance, whereby the resources were shared within the immediate community as well as the State.

Following trade, peoples and ideas spread across the Indian Ocean, leading to a cross-fertilization of cultures and technologies. From South Asia, Hinduism and Buddhism spread to Southeast and East Asia; similarly, from the 7th Century, Islam spread across the Indian Ocean and was vital to the integration of eastern Africa and Southeast Asia into an Indian Ocean economic and cultural world, which stretched from the South China Sea to the South African coasts.

The coming of the Europeans during the 15th-16th Century was a significant period for the old countries to become new nations. A largely self-contained, self-sustaining, tightly interwoven economic and political and cultural identity began to unravel.

Following the process of colonization, the natural resource base of nations had to accommodate the extra demands placed

on them. Arab domination of the cowrie trade between the Maldives and east Africa was taken over by the Portuguese and then by the Dutch.

During the 16th and early 17th Centuries, Maldivian cowries were shipped in bulk to the west coast of India, often on board Maldivian vessels, and then re-exported in European ships to both the east and west coasts of Africa. During the latter half of the 17th Century, the Maldivian cowrie trade was largely routed through Sri Lanka, which had fallen under Dutch control. This trade went on fuelling the slave trade that was expanding on the west coast of Africa. By the middle of the 18th Century, when the West African slave trade was at its peak, the Dutch had taken full control of the cowrie trade from the Maldives. Due to this change of hands and the market, Maldivian cowries made less impact on the east coast of Africa, which started its own cowrie trade. By the 19th Century, even though Zanzibar and some of the small coastal States had developed a cowrie industry, it was short-lived, mainly because of the small size of the cowrie, compared to the cowries of the Maldives. This trade continued until about 1921, when it was replaced by the rupee. ❸

This piece is excerpted from *Indian Ocean Coastal Communities: Sculpting a Vision for the 21st Century*, a paper presented by Maizan Hassan Maniku at the Indian Ocean Conference at Chennai, India, on 9 October 2001

## Many things to many people

**Maizan Hassan Maniku lived an accomplished and acclaimed life, serving his country well, as this biographical note shows**

**M**aizan Hassan Maniku was a mentor, friend, colleague, academic, researcher, historian, environmentalist, artist, poet, writer, photographer, and many other things to many people of different walks of life and nationality. The list of his achievements and contributions to society and academia is far too long to note in brief. Hence, at this sad moment of his passing, let us note some of his major contributions to his country, the Maldives, and to the region, in the field of fisheries development, marine resource management and environmental conservation.

Maizan Hassan Maniku began his acclaimed career spanning over 20 years as a fisheries expert and marine scientist. From his appointment as a Fisheries Development Officer at the Ministry of Fisheries, Maldives in 1979, Hassan Maniku swiftly came to personify Maldivian fisheries both within the country and in the region. As Project Director for the First IDA/World Bank Fisheries Project (1979-1981) and other major fisheries development projects, he was instrumental in guiding the Maldivian fisheries industry through an accelerated phase of fleet mechanization, introduction of new fisheries and fishing technologies, socioeconomic development of fishing communities, and the development of post-harvest activities.

Hassan Maniku's work in Maldivian fisheries development included serving as

Project Director for major fisheries development and marine resource management projects, including the Maldives Fishwealth Exploitation Project (1982-1988), FAO/TCP Exploratory Tuna Fishing Survey (1983-1987), UNDP/FAO Reef Fish Research and Resources Survey (1986-1988), ICOD/Canada Collection and Identification of Economically Important Fish Species (1988-1990), ICOD/Canada Crown of Thorns Starfish Programme (1989-1991), ODA/GoM Rehabilitation of Degraded Reefs using Artificial Blocks (1990-1995), and the Tuna Stock Assessment under the Third IDA Fisheries Project (1992-1996).

During his lifetime, Hassan Maniku was the breathing force behind scientific research into the marine resource base of the Maldives. He was instrumental in establishing the Marine Research Centre and building its institutional and

human resource capacity for marine research and marine resources management. Hassan Maniku served as Head of the Marine Research Centre from its inception in 1984 until his early retirement in 1999. During this period, he was Director of Fisheries Research and Development (1989-1995) and Director-General of Fisheries Research and Development from 1995 to 1999.

Further, Hassan Maniku raised interest in, and awareness of, biodiversity and environmental conservation in the 1980s, culminating in the establishment of



regulatory frameworks and institutional arrangements for environmental management and conservation in the Maldives. He was a leading proponent of integrated reef resources management, and worked nationally and internationally to establish the framework and methodologies for such management. He was instrumental in the establishment of a coral reef monitoring network and unit, and strove to undertake and promote such joint work in the region.

**H**assan Maniku was a strong proponent of community-based management of marine resources, and the utilization of indigenous knowledge in resource management structures. His research also looked into traditional and indigenous knowledge systems and community-based management practices in the Maldives, Asia and Africa.

Hassan Maniku's notable scientific and academic research included research into marine species and their habitats, collection and identification of flora and fauna in the Maldives, marine resource management, integrated reef resources management, tuna tagging studies and tuna management, environmental management of mangroves, corals and island ecosystems. He also began publication of the *Maldives Marine Research Bulletin* in 1994 and guided it through its formative years to become the established scientific journal it is today.

Hassan Maniku was honoured in 1990 by the Government of Maldives with the Presidential Award for contributions to the development of fisheries in the Maldives. Further, in 1994, he was presented with a Presidential Award recognizing his outstanding contribution to the establishment of marine research in the Maldives.

Born on 24 April 1953, Maizan Hassan Maniku completed his Bachelor of Science (Marine Zoology) degree at the University of Beirut. He completed his Diploma in Education (Teaching of Sciences in Secondary Schools) at the American University of Beirut. Hassan Maniku is survived by his wife, Mariyam, and three children. ♣

This obituary has been written by Dr. Faathin Hameed ([fish1@fishagri.gov.mv](mailto:fish1@fishagri.gov.mv)), Director, Fisheries Development and Extension Section, Ministry of Fisheries, Agriculture and Marine Resources, Republic of Maldives

## A fine human being

**The large-hearted man from the tiny islands of Maldives, and a new Member of ICSF, passed away on 13 July at Perth, Australia**

**B**ureaucrat, fishery researcher, entrepreneur, artist, musician, theatre professional, photographer, scuba diver, technology historian, lover of early-morning walks—Maizan Hassan Maniku was all these and more. What you got to know of him depended on the 'avatar' of him that you knew.

As far as I was concerned, Hassan's fame preceded him. He was a close friend of a close friend of mine, and I had heard a lot about him. Finally, we met for the first time at a meeting in Bangkok a decade ago. He was then Director of Fisheries Research of the Republic of Maldives. With his salt-and-pepper French beard, grey hair combed back, and a youthful and easy gait, he didn't fit with the stereotype image one had about bureaucrats. He had heard about me too from our common friend and this was adequate to warrant a warm embrace that marked the beginning of a close comradeship.

For a fisheries researcher, Hassan's concerns went far beyond fish resources and well into the life and struggles of fishworkers. Fishing craft, the sociocultural significance of their designs, and the skills of those who made them, were among his passions. We had some common ground there too. This helped to get him easily roped into the concerns of the International Collective in Support of Fishworkers (ICSF) and, while in government service, he extended his moral support to ICSF. In fact, he was one of the few open supporters of our Rome Conference in 1984. When he left his job in government, a few years ago, to, in his words, "do what I like at my own pace," his involvement in the activities of ICSF often showed more commitment than that of a regular member.

Our last and closest interaction was the week we spent together in Maputo, Mozambique in June 2002 at the ICSF General Body meeting. We stayed together in the same large cottage, which was the hub of activity for all the participants during the happy hours after sunset and dinner. Those of us who were there will always cherish those moments. Hassan was very happy and proud of having been granted membership in ICSF. On the last day of our African sojourn, we were again together, at the City Lodge in Johannesburg *en route* to India. There, Hassan talked well into the night about the various ICSF initiatives that were needed in the Indian Ocean region, for which he could help in the future. But all that was to be after August, by which time he would settle a pending land deal in Sri Lanka and make a visit to his daughter in Australia.

Alas, that was not to be. We will now forever miss his charm and the passion with which he took on his multifarious commitments. He impressed you as a large-hearted person. His first love was Maldives, but whichever 'avatar' of Hassan you dealt with, one thing came through well: you were dealing with a fine human being, someone who cared, someone who went out of his way to reach out to you. ❧

This obituary has been written by John Kuriem ([john.kuriem@vsnl.com](mailto:john.kuriem@vsnl.com)), Fellow, Centre for Development Studies, Trivandrum

# News Round-up

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## **Angry Chile**

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The government's refusal to bow to the demands of the artisanal fleet in **Chile** and hike the jack mackerel quota has provoked violent protests among 2,000 or so fishers from Mar de Lo Rojas in Coronel, reports FIS.com. According to the fishermen, about 80 vessels remain moored because the authorities won't permit the catch of 60,000 tonnes of jack mackerel over a six-month period.

The Federation of Artisanal Fishermen's Organizations (Ferepa) is calling for a solid policy, as there are social and unemployment problems affecting thousands of people.

Artisanal fishermen are also angry because they see factory vessels operating off the coast while they're denied the right to fish. The artisanal sector is dissatisfied with modifications to the Fishing Law

negotiations for free-trade agreements with Europe.

## **Shoo away!**

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No more licences for the 20-odd foreign vessels that target tuna in the **Maldives**, says the country's Foreign Investment Promotion Board. The measure is a bid to protect the local industry and safeguard stocks.

Maldives' tuna-rich waters provide the country with much-needed foreign revenue. The industry grew by about seven per cent a year in the past decade, thanks to government aid for infrastructure, boatbuilding and canning factories.

Maldives is now able to catch and process much more of the tuna itself. The traditional fishing vessel is a *dhoni*, less than 15 ft long, of which there are about 1,700 operating. Since they were motorized, catches of skipjack tuna (*Katsuwonus pelamis*) and

yellowfin tuna (*Thunus albacaraes*) have risen dramatically.

Maldivian fishermen say their tuna industry is probably the most environmentally friendly and sustainable one in the world. They use pole-and-line fishing methods with live bait and do not snare dolphins.

The booming industry reports exports by private parties of more than US\$61 mn a year, mainly to Sri Lanka, and other Asian and European countries.

## **Citing fish**

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The Secretariat of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) has announced the receipt from member governments of 54 proposals to amend the lists of species subject to trade controls or prohibitions.

The CITES lists, or Appendices, are revised every two-and-a-half years. Appendix I prohibits all commercial trade in some 900 species that are threatened with extinction. Appendix II regulates

trade in 4,000 animal and over 22,000 plant species through a system of permits. The Convention's 158 Parties will meet in Santiago, Chile from 3 to 15 November to decide whether to accept, reject or modify the proposals.

Of particular interest will be the debate over the proposed listing in Appendix II

of two species of toothfish, or Chilean sea bass. The toothfish proposals raise the issue of CITES' role regarding valuable and heavily traded fish stocks and its relationship to regional fisheries agreements, the Food and Agriculture Organization and other international regimes. Other species proposed for inclusion in Appendix II include bigleaf mahogany, seahorses and 26 species of freshwater turtles.

## **Trawl crawl**

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**Indonesia** has agreed to extend the period of fishing concessions for Thai trawlers from six months to one year, reports *The Bangkok Post*.

The concessions are for Thai vessels with

registered capacity of 60-150 gross tonnes to fish in Indonesia's exclusive economic zone in the South China Sea.

Other issues discussed between the two countries concerned types of fishing equipment allowed, licence fees,

areas permitted and the number of Thai vessels allowed to fish in Indonesian waters.

It was initially agreed to set the licence fee at US\$155 per gross tonne per year, but that has still to be approved by Indonesia's finance ministry.

For years, Indonesia had restricted the number of Thai trawlers in its waters to 500. The quota became redundant when Indonesia banned all foreign fishing vessels in December 1999.

Despite the ban, fishermen from several countries, including Thailand, continued to operate in Indonesian waters illegally, using boats flying the Indonesian flag.

Around 3,000 Thai vessels are said to be

interested in obtaining fishing concessions from Indonesia.

### **UN atlas**

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The UN Atlas of the Oceans ([www.oceansatlas.com](http://www.oceansatlas.com)) is an Internet portal providing information relevant to the sustainable development of the oceans. It is designed for policymakers who need to become familiar with ocean issues and for scientists, students and resource managers who need access to databases and approaches to sustainability. The UN Atlas can also provide the ocean industry and stakeholders with pertinent information on ocean matters.

Material contained in the UN Atlas is copyrighted, but can be freely used for any personal and non-commercial

purpose provided that the UN Atlas of the Oceans is cited.

The UN Atlas supports Chapter 17 of Agenda 21, the blueprint for the sustainable development of oceans adopted at the

1992 Earth Summit in Rio de Janeiro.

### **Fishers tent**

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The Artisanal Fishers Association of the Republic of **South Africa** will be hosting a fishers "tent" on 24 August in Johannesburg at the World Summit on Sustainable Development.

At the tent, international guests will debate the effect of globalization on fisheries, fishers' access rights, building alliances and networking, and using international activism for change.

Before that, a train taking the fishers to the summit will travel from Cape Town to Johannesburg.

### **Indian Ocean**

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The Department of Ocean Development, Government of **India** has just released *Vision Perspective Plan 2015*, aimed to help the Indian government improve the understanding of the Indian Ocean by "conceiving and implementing long-term observational programmes and incubating cutting-edge marine technology".

The plan hopes to assess living and non-living resources of the seas and how they can be sustainably utilized;

contribute to climate forecasts; and spread awareness of the concept of "one" ocean among Indian Ocean neighbours. The document also sets as goals promoting ocean science, mapping ocean resources and developing safe and reliable deep-sea technology for better human comprehension of the depths of the ocean.

### **Fish festival**

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The South Indian Federation of Fishermen Societies (SIFFS) will hold a

'Fisherfolk Festival' at Trivandrum, Kerala, **India** from 14-16 September 2002 to celebrate the remarkable knowledge, skills, and unique culture of the traditional fisherfolk of south India.

Apart from an exhibition of fishing technology, the event will feature a cultural programme of fishers' song, dance and martial arts, and a public meeting to highlight issues relating to the fisheries and fisherfolk of the four southern States of India.

*The ebb of a spring tide always draws the water off a broad strip of this mud, and then flocks of gulls appear from all over the Upper Bay and light on it and thrash around and scratch for clams. They fly up with clams in their beaks and drop them on the concrete walk that runs along the top of the island's sea wall, and then they swoop down and pluck the meats out of the broken shells.*

— from *The Bottom of the Harbour* by Joseph Mitchell



ICSF is an international NGO working on issues that concern fishworkers the world over. It is in status with the Economic and Social Council of the UN and is on ILO's Special List of Non-Governmental International Organizations. It also has Liaison Status with FAO. Registered in Geneva, ICSF has offices in Chennai, India and Brussels, Belgium. As a global network of community organizers, teachers, technicians, researchers and scientists, ICSF's activities encompass monitoring and research, exchange and training, campaigns and action, as well as communications. SAMUDRA REPORT invites contributions and responses. Correspondence should be addressed to the Chennai office.

The opinions and positions expressed in the articles are those of the authors concerned and do not necessarily represent the official views of ICSF.

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