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Assumptions on Overfishing Challenged

• 3

Fooling Fish to Grow and Multiply

• 4

Mexican Fishers Throw a Lifeline to Lobsters

• 6

Scientists Challenge Overfishing Assumptions

By Lowana Veal

REYKJAVIK - For decades, fisheries around the world have relied on practices that take for granted certain assumptions about the industry, such as protecting younger fish while exploiting older fish and using trophic levels to monitor the health of fisheries. Recently, however, some scientists have begun to question these unanimously accepted practices. Experts are beginning to think that the science behind the global fishing industry may be completely wrong.

One example of this re-evaluation can be seen in relation to conventionally accepted practices whereby young fish are protected and older fish are exploited. Younger fish are generally smaller and weigh less than their older counterparts, so policies rely on assessing fish population by biomass.

For instance, in Iceland, certain areas will be closed to fishing when there is a large proportion of small fish in the area. Spawning and nursery areas will likewise be protected.

Defying convention, Prof. George Sugihara and his team at the Scripps Institution of Oceanography have begun to criticise the current scenario whereby small fish are protected and large fish are caught. They say that this system can alter the age pyramid within a given fishery, such as pollock, by removing the few, older fish that make up the top of the pyramid while leaving a broad base of faster-growing, small young fish.

Why does this pose a problem? "It's not the young ones that should be thrown back, but the larger, older fish that should be spared," said Sugihara. "Not only do the older fish provide stability and capacitance to the population, they provide more and better quality offspring."

The danger, according to Sugihara, is that current policies that manage according to current biomass targets while ignoring fish size pose risks that can destabilise the entire population. This instability can, in principle, affect the whole ecosystem, magnifying risk for all ecologically related fisheries.

This danger is especially prevalent when trying to rebuild fish stocks, Sugihara said. "Regulations based solely on biomass harvest targets are incomplete. They must also account for age-size structure in the populations.

Current policies and industry pressures that encourage lifting bans on fishing when biomass is rehabilitated - but where maximum age and size are not - contain risk.

"Current policies and industry pressures that encourage lifting bans on fishing when biomass is rehabilitated - but where maximum age and size are not - contain risk," Sugihara warned.

In addition to the practice of exploiting fish based on biomass calculations, other conventionally accepted practices in the fishing industry are beginning to be re-evaluated by experts. One such practice has to do with using trends in trophic levels of fish to measure the health of world fisheries.

In 1998, using global catch data, stock assessments, scientific trawl surveys, small-scale fishery data, and modelling results, scientists developed a comprehensive test that used trends in the trophic levels of fish over four decades to measure the health of world fisheries. As the first of its kind, this system for analysing the health of fisheries was considered groundbreaking.

The trophic level of an organism shows where it fits in a food web, with microscopic algae at a trophic level of one and large predators such as sharks, halibut, and tuna at a trophic level of about four. Twelve years later, confidence in this method of assessment is waning. A new study, carried out by

Trevor Branch from the University of Washington, together with scientists in the U.S., UK, Canada, and Australia, reveals weaknesses in assessing ecosystem health from changes in the trophic levels of what is being caught.

Branch and his team based their findings on a large number of trawl surveys that consider the numbers and types of fish that actually live in these ecosystems, as well as catch data, to dispute the conventional wisdom.

Branch explained that there are two major weaknesses in the accepted metric: "One, in just under half of all ecosystems, this catch metric goes up when the ecosystem gets worse, or goes down when the ecosystem gets better. Two, this metric can remain constant, even when increasing numbers of species are collapsing in the ecosystem," he said.

The significance of these findings is crucial, Branch said, because "the measure is the most widely adopted indicator by which the overall health of marine ecosystems is determined."

For example, the UN's Convention on Biodiversity uses the average trophic level of fish caught as the main measure of global marine diversity.

"The 1998 paper was tremendously influential in gathering together global data on catches and trophic levels, and it warned about fishing impacts on ecosystems," Branch said.

"Our new data from trawl surveys and fisheries assessments now tell us that catches weren't enough. In the future, we will need to target limited resources in the best way, focusing on species that are especially vulnerable to fishing and developing indicators that reflect fish abundance, biodiversity and marine ecosystem health. Only through such efforts can we reliably assess human impacts on marine ecosystems."

Greed, environmental destruction and bad practices bring fish catch down. At one time, fisheries was Pakistan's third largest export industry, but too many nets and too little fish has changed that.

Credit: Zofeen Ebrahim/IPS





Part of the Manta fleet in the fishing terminal. With a population of 260,000, Manta proclaims itself "the world capital of tuna". According to official figures, Ecuador takes the largest tuna catch in the eastern Pacific, followed by Mexico. Credit: Gonzalo Ortiz/IPS

Seasonal Bans Not Enough to Save Pacific Tuna

By Edgardo Ayala*

SAN SALVADOR - The countries that fish for tuna in the Eastern Pacific Ocean see seasonal bans as a form of responsible fishing, but environmentalists argue that they are not enough to ensure the survival of a resource that is threatened around the world.

The Inter-American Tropical Tuna Commission (IATTC, based in California), whose member countries fish for tuna in the tropical Pacific, on Oct. 1 adopted new seasonal bans for 2011, 2012 and 2013 for the three most prized tuna species in the zone: the yellowfin (*Thunnus albacares*), bigeye (*Thunnus obesus*) and skipjack (*Katsuwonus pelamis*).

"What we are doing is preserving for the future; these are necessary conservation measures," Miguel Peñalva, director of operations for the Spain-based Calvo Group in El Salvador, told Tierramérica.

The Calvo Group started its tuna operations in El Salvador in September 2003 with an investment of 138 million dollars. Although this Central American country does not have a tuna industry as such, in virtue of Calvo's presence, it has become the region's principle exporter of canned tuna.

Four of the Calvo Group's boats fish in international waters of the Pacific off the Salvadoran coast, and more than 80 percent of its exports, which totalled 100 million dollars in 2008, are destined for the European Union.

"If we don't comply with the seasonal bans, they would declare our fishing illegal and we wouldn't be able to sell it," said Peñalva.

The IATTC bans, based on studies by its scientific committee on the state of the Pacific's fisheries, halt fishing 62 days per year and are required for all members: Belize, Canada, China, Colombia, Costa Rica, Ecuador, El Salvador, EU, France, Guatemala, Japan, Mexico, Nicaragua, Panama, Peru, Taiwan, South Korea, United States, Vanuatu and Venezuela.

Independent observers report to the IATTC about the countries' compliance with the bans, and the fishing fleets are monitored using satellites to determine their positions.

"The bans take place during the tuna's growth period," said Peñalva, underscoring the importance of heeding the seasonal fishing stoppages.

But according to Sari Tolvanen, of Greenpeace International's oceans campaign, "the bans don't necessarily mean a reduction in fishing."

First of all, the periods are too short to make much of a difference, Tolvanen told Tierramérica from Amsterdam. The fleets that use purse-seine techniques fish 75 percent of the year, and cease operations when they have to undergo mechanical updates anyway, she said.

The purse-seine is one of the least eco-friendly fishing techniques because it allows huge captures in which there is a great deal of bycatch -- fish that are too small or species that are not marketable.

In addition, the purse-seine vessels are quite large and increasingly use artificial

floating objects to catch more fish, such that the seasonal bans make little sense, said Tolvanen.

When fishing for skipjack, those floating devices increase the bycatch of yellowfin and bigeye tuna that are still too small to be sold, further endangering these and other species, like sharks and sea turtles.

"Calvo and other companies rely heavily on the objects," which makes their operations "completely unsustainable," said the Greenpeace activist.

In its resolution, IATTC recognised that tuna fishing in the Eastern Pacific is increasing and that populations could begin to decline if the catch is excessive.

In other parts of the world, tuna populations have fallen to critical levels.

Bigeye and yellowfin tuna have been over-fished in all seas and face serious problems in the central and western Pacific, where their populations were relatively robust just a few years ago, according to Greenpeace.

The bluefin tuna (*Thunnus thynnus*), native to the Atlantic and adjacent seas, is one step away from extinction, and the bluefin of the Mediterranean has seen its population drop 80 percent since 1999.

The International Seafood Sustainability Foundation (ISSF) maintains a tuna stocks status chart on its website, using colour coding for each of the world's seas and their tuna species -- with red indicating the most critical stocks.

On the ISSF chart, the yellowfin and bigeye species are marked in yellow for the Eastern Pacific, because those populations cannot support any increase in catches, and in some cases suffer from overfishing. Only the skipjack is marked in green, indicating a healthy population.

In 2009, approximately 595,000 tonnes of tuna were caught in that region, 14 percent of the world tuna catch, according to the report updated in September, titled "ISSF Status of the World Fisheries for Tuna."

Spain, with the largest fishing fleet of the EU and third in the world after China and Peru, catches most of its tuna in the North Atlantic, the Mediterranean, and off the coast of Western Africa, but according to Greenpeace, the "Spanish fishing armada" sails the world's oceans pursuing more substantial catches of tuna, shark and codfish.

For the 2009-2011 period, IATTC established specific quotas for some of the big fishers in the Pacific: China, Japan, South Korea and Taiwan. In Tolvanen's view, the IATTC and other regional tuna commissions are a long way from achieving adequate management of the tuna species.

The Greenpeace expert stressed that it is just a handful of fishing nations that are negotiating the "tuna pie" and how to make more money, without considering the long-term health of the tuna stocks, the oceans, the means for people to make a living and their food security.

(*This story was originally published by Latin American newspapers that are part of the Tierramérica network. Tierramérica is a specialised news service produced by IPS with the backing of the United Nations Development Programme, United Nations Environment Programme and the World Bank.)

"If we don't comply with the seasonal bans, they would declare our fishing illegal..."

Fooling Fish to Grow and Multiply



Microalgae, essential to rearing juvenile hatchery fish, being cultured in a lab in Alexandria.
Credit: Cam McGrath/IPS

By Cam McGrath

ALEXANDRIA - Surrounded by glass jugs and beakers full of bubbling green slime, Mohamed Ashour appears to be experimenting with a new formula for pea soup. As part of his daily rounds, the Egyptian researcher checks the valves on the tubing connecting each vessel, ensuring their verdant-hued contents are adequately aerated.

It is a tedious task, but an important one. The colonies of microalgae brewing inside the glass vessels form the basic building block of a marine hatchery food chain. The harvested microscopic organisms are consumed by tiny zooplankton, which in turn are devoured by hungry seabass during their initial 30-day larval phase.

Fish that survive this critical stage and mature into fry are reared in nurseries, then shipped as fingerlings to fish farms throughout Egypt. There they are fattened up for about two years to reach commercial size before being sold to markets and fish restaurants.

Last year, Egyptian fish farms produced over 6,000 tons of marine finfish. The government hopes to double this amount within three years, and is pressing the country's six marine hatcheries to expand fingerling production. And that means a lot more green goo.

"The scale of any mariculture operation will depend on your ability to produce sufficient supplies of microalgae," says Ashour.

While marine hatcheries are usually thought of as facilities for breeding and raising juvenile fish, up to 70 percent of floor space is allocated to producing food - microalgae, phytoplankton and zooplankton - for the voracious little larvae. Feasting larval seabass, about the size of aphids, increase their body weight by about 10 percent a day.

"It is possible to grow microalgae in ponds outdoors, but the problem is every culture will be different because of changes in temperature, humidity and water salinity," Ashour explains. "It is much better to produce it in a lab where you can control the conditions - but then there are space limitations."

At the National Institute for Oceanography and Fisheries (NIOF) hatchery in Alexandria where Ashour works, staff scale up stock cultures of microalgae from test tubes to increasingly large vessels, ending in giant

tubs ready for harvesting. The green slime is added to the saline water in the hatchery's larval rearing tanks, where seabass, sea bream and sole fry begin feeding as soon as their yolk sacs are exhausted.

More than two million fertilized eggs are hatched in the facility's four fiberglass tanks each year, says Mohamed Abdel Razeq Eissa, director of aquaculture at NIOF.

"The larvae are very sensitive," he asserts. "The survival rate during the first 100 days is 40 percent max, but the average is about 25 percent. That's still higher than the wild rate, where more eggs hatch but the larvae have no protection from predators."

Egypt began its marine hatchery programme in the mid-1990s to relieve pressure on declining wild fish populations. While hatcheries now produce over three million fingerlings a year, more than 80 million are collected from the estuaries and lagoons of the Mediterranean Sea to seed marine aquaculture projects.

"For freshwater species such as tilapia our hatcheries produce enough fry for all projects, but we still have problems with marine fry," explains Mohamed Fathy Osman, chairman of the General Authority for Fishery Resources Development (GAFRD). "We get most of them from the sea, and in the case of mullet, we collect 100 percent from the sea."

Demand for marine fry has put aquaculture in direct competition with traditional fishermen, who blame the explosive growth of fish farming operations for their declining catch. In an effort to protect wild stocks, GAFRD has given mariculture operators until 2013 to switch to hatchery seed.

"In less than three years a ban on collecting marine fry from the sea will come into effect," says Eissa. "After that, marine aquaculture projects will only be able to use hatchery fry."

A recent expansion of the NIOF hatchery has increased its capacity five-fold to 500,000 fingerlings a year. Egypt's two other government hatcheries are capable of producing up to 1.7 million fingerlings, while three private hatcheries have a combined annual capacity of one million fingerlings.

"It will be impossible for our existing hatcheries to

fill the gap (in fingerling production), even if they expand," says Eissa. "We need to build new hatcheries."

But it is not just about expanding facilities; scientists are looking at ways of making hatchery broodstock more productive.

NIOF researchers have been experimenting with artificial environmental conditions to control the reproductive cycle of seabass. The aim is to induce the fish to spawn out of season, permitting hatcheries to collect fertilized eggs year-round.

Initial results are encouraging. In August, while outdoor temperatures in Alexandria hovered around 35 degrees Celsius, Eissa's team lowered the water temperature in four indoor breeding tanks to 15 degrees Celsius and dimmed the lights. The conditions simulated those of the fish's natural winter spawning grounds off Egypt's northern coast.

"We tricked them into thinking it was time to spawn," says Eissa, adding that the experiment resulted in over 110,000 viable eggs from five broodstock pairs.

Now that the electricity bill has arrived, Eissa has come to the conclusion that induced summer spawning, while feasible, is too costly to be practical. However, the technique could be used to stagger spawning over three seasons, increasing commercial productivity.

"Producing fry in different seasons would allow marine aquaculture projects to continually replace fingerlings as they mature into bigger fish," he explains.

Advances in hatchery production are expected to narrow the gap between wild and hatchery fry culture. Fishers, however, fear Egypt's aggressive mariculture growth will outpace any hatchery gains.

"Increases in aquaculture production always come at the expense of (traditional) fishing and wild stocks," warns Eid Mostafa, an Alexandria fisher.

Fathy concedes that the government waited too long to develop its marine hatcheries. Efforts to create a sustainable mariculture industry, while conserving wild fish populations, will require a shift in focus from building new fish ponds to expanding hatchery facilities.

Bigger Bite Needed into Appetite for Shark Fin Soup



Shark fin from different parts of the world are bound for China.

Credit:WildAid

By Mitch Moxley

BEIJING - Campaigns featuring some of China's biggest celebrities, including basketball star Yao Ming and actor Jackie Chan, have persuaded some Chinese to think twice about eating shark fin soup. But changing attitudes about the centuries-old delicacy, a large contributor to decimated shark populations, continues to be a challenge.

For many Chinese, the soup, which dates back the Ming Dynasty, is considered a matter of wealth and prestige, often featured at weddings and banquets. Some also believe shark fin has medicinal value, despite a lack of scientific evidence.

As China's economy has soared, so has demand for the soup. As a result, many of the world's shark populations have plummeted by as much as 90 percent in recent decades. As many as 100 million sharks are killed each year, about 73 million of these for their fins, according to some estimates. Because shark meat holds little value, fishermen often slice off fins and toss the sharks back to sea to die.

About 50 to 80 percent of all shark fins, or about 10,000 tonnes, goes through Hong Kong's ports, with the majority of the product destined for the Chinese mainland, and to a lesser extent Malaysia, Taiwan, Indonesia and Thailand. The supply of fins from various shark species comes from different parts of the world, including Central and South America, Europe, the United States, Indonesia and Taiwan.

In recent years, high-profile campaigns in China have emerged to do battle against the consumption of shark fin soup. Groups campaigning for a stop to eating shark fin soup assert that the soup is a wasteful delicacy, and can in fact be harmful to humans, because some research has shown that high levels of arsenic, methylmercury and other harmful substances have been found in shark fins.

In 2004, WildAid, a group that fights the trade in illegal wildlife, opened a Beijing office and began working via advertising and public relations campaigns to advocate the protection of sharks. WildAid's most prominent anti-shark fin campaign features basketball star Yao Ming, who was born in Shanghai and plays for the U.S. National Basketball Association.

The advertisements are featured on China Central Television (CCTV), a state-owned broadcaster, and on billboards and public screens in China's major cities. "When the buying stops, the killing can too," Yao says in the advertisements.

The WildAid campaign has had notable success. According to a survey commissioned by WildAid in the run up to the 2008 Olympics, 55 percent of those interviewed had seen the campaign. Of those, 94 percent said it had an impact; 83 percent had stopped or reduced consumption of shark fin; and 89 percent said it should be banned.

"Those kinds of figures are indicative that we are having an impact. But there's a long way to go," Steve Trent, president of WildAid, told IPS. "I can't tell you that we are saving sharks in the wild, but I can tell you that China is increasingly aware and understanding of the problems, and they're willing to act." As a sign of growing momentum, Alibaba, China's version of eBay, recently banned the sale of shark fins on their site. In May, a dozen Hong Kong restaurants and hotels pledged to offer shark-free options for banquets.

In one success story, a restaurant in southern Guangzhou city spent 3,000 U.S. dollars on a live 200-kilogramme nurse shark and then advertised it in a local newspaper to attract customers. Green Eyes China, a Wenzhou-based environmental group that works to expose animal rights abuses and environmental damage, sent employees to pose as customers and found that more than 70 people are already made reservations to try the shark.

Green Eyes petitioned the restaurant to let the shark go, while volunteers protested outside the restaurant with placards. The protests drew media attention and eventually, the restaurant released the shark to Guangdong's fishery authorities, who found a home for it in the province's Ocean Park. Despite growing public awareness, changing deeply ingrained attitudes remains difficult.

According to a study conducted by WildAid China and the China Wildlife Conservation Association, over one-third of the participants surveyed in 16 Chinese cities had consumed shark fin in the past year, while 75 percent said they were unaware that shark fin soup was actually made of shark fins. The trade in shark fins is also a big-money industry.

When Yao Ming said in 2006, "I pledge to stop eating shark fin soup and will not do so under all circumstances," companies from China, Hong Kong, Japan and Singapore signed a joint letter of protest, complaining that the campaign would negatively impact their business.

According to a CCTV programme aired in a January, a single plant in Puqi, a town in the eastern coastal province of Zhejiang, can process 6,000 to 7,000 tonnes of shark fins annually, worth about 67.3 million dollars. That is about 10,000 dead sharks per plant, and Puqi alone has dozens of processing plants.

Fang Minghe, Green Eyes China's leader, said that the public awareness campaigns will be ineffective without a nationwide law to protect sharks. "We need to conduct ethics education, tell people that sharks face extinction and please don't eat them," Fang told IPS. "But, you know, ethics education means nothing if there is no law. If there's a law, things will be different."

READ MORE: IPS coverage of overfishing and illegal fishing on http://www.ipsnews.net/new_focus/fishing/index.asp (English) and http://www.ipsnoticias.net/_focus/pesca/index.asp (Español)



Mexican Fishers Throw a Lifeline to Lobsters

Fishers in Quintana Roo with their lobster catch.

Credit: Courtesy of Equator Initiative

By Emilio Godoy*

MEXICO CITY - Faced with the voracious international demand for lobsters from the Mexican Pacific and Atlantic, fishers and environmental organisations have come together to institute sustainable lobstering practices -- although the financial benefits are slow in coming.

The California spiny lobster (*Panulirus interruptus*) is a specialty of northwestern Mexican cuisine, along the Pacific coast. Fried or boiled, with tortillas, rice and beans, or any number of preparations. But mostly it is exported, to the extent that the species has reached critical depletion.

"We had been caring for the lobster population for years, but we regulated ourselves. We have reason to maintain the product with some measures we have adopted and others that have been recommended," Jesús Camacho, of the Regional Federation of Fishing Industry Cooperatives (FEDECOOP), explained to *Tierramérica*.

Based in Ensenada, a coastal city about 75 kilometres from the U.S. border, FEDECOOP is carrying out a sustainable fishing project on the Baja California Peninsula, with the support of the non-governmental group Community and Biodiversity.

After a three-year process, in 2004 FEDECOOP obtained the sustainable fishing certification from the international Marine Stewardship Council, created in 1997 by the Worldwide Fund for Nature (WWF) and the British-Dutch transnational Unilever, one of the world's largest fish processors.

The MSC blue eco-label, which is granted for five years, covers the entire process, and is issued after monitoring the status of the lobster populations, the degree to which their exploitation affects the ecosystem, and the enactment of a strict management system that ensures its survival over the long term.

Lobster fishing generally utilises artisanal techniques at depths less than 20 metres. Females reproduce once a year, and the adults head to shallow waters in the boreal spring, returning to deeper waters in the autumn.

The FEDECOOP fishers use techniques they have developed themselves, involving a special wire and a cage to catch the lobsters, with a window that allows the smaller ones to escape.

There are at least 592 boats and 1,212 lobster fishers in the area, with some 30,000 traps. They collect about 1,350 tonnes of spiny lobster during the five-month fishing season. The seafood fetches about 31 dollars per kilo.

"The blue label gives us the political recognition we didn't have before. But so far we haven't had the incentive for a better price for environmentally healthy products," complained Camacho.

The association is made up of 13 cooperatives and some 1,500 fishers from the area. In May 2009 the re-evaluation began for renewing the certification, with the hope of concluding the process this year. FEDECOOP is also involved in fishing for abalone, a prized mollusc, as well as conch and several fish species.

MSC became independent in 1999, with its main offices in London. The organisation grants the ecological label to sustainable fishing operations. So far there are 94, including one in Argentina, with another 118 under evaluation, with one in Chile.

Two other Mexican fishing projects -- tuna and sardines -- are under evaluation by MSC in Baja California.

Ninety percent of the live lobster captured by FEDECOOP is destined for the United States, France or China, the last being the hungriest lobster market, and one that does not require sustainable production for its lobster imports.

Europe, meanwhile, wants frozen lobster, which could add value to the product, but currently is beyond the capabilities of Mexico's Pacific coast fishers.

On Mexico's east coast, on the Yucatán Peninsula, the non-governmental organisation *Razonatura* and six groups from the Federation of Fishing Cooperatives of Quintana Roo are planning to launch a collective trademark *Chakay Langosta Arrecife Sano* (Chakay Lobster Healthy Reef).

The project revolves around the evaluation of the Caribbean lobster (*Panulirus argus*) in the nature reserves of Banco Chinchorro and Sian Ka'an, in the state of Quintana Roo, and the possibility of generating added value with "designation of origin" status and fomenting direct connections between fishers and consumers.

The annual capture is about 180 tonnes of lobster.

"Protecting the lobster doesn't mean it can't be exploited in a sustainable way," *Razonatura* biologist Kim Ley told *Tierramérica*.

The Chakay project began in 2004 as part of the government's Programme for Collective Biological Resources. In addition to the cooperatives, comprising 300 marine fishing families, the National Commission for Protected Natural Areas is participating.

In Quintana Roo, lobster fishing is done with special snares, avoiding females with eggs, and fishers do not dive or use scuba equipment, due to the many work accidents resulting from complications related to decompression.

The status of the lobster is critical along Mexico's Atlantic and Pacific coasts due to the high demand, which drives up prices -- and income for the fishers. As a result, Mexico and the Central American countries have imposed bans on lobster fishing during the reproductive season.

Illegal practices continue: capturing juvenile lobsters or females during the banned period, deepwater lobster fishing, or using inappropriate fishing techniques, like nets.

However, sustainable lobstering is not impossible, as long as it is based on scientific evidence, states a 2003 study of the California spiny lobster by Armando Vega, of the regional fishing research centre, under the National Fishing Institute.

"There has to be a coordinated effort involving the government, the industry, scientists and the social sector," said biologist Ley.

In Vega's view, the main challenge is to optimise fishing using a cost-benefit analysis and integrating the species biology and ecology with economic and social factors.

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Delayed Return of Fishing's 'Golden' Years



Fishing at Manta's Tarqui beach. Credit:Gonzalo Ortiz/IPS

By Gonzalo Ortiz

MANTA, Ecuador - "This year there haven't been many 'dorados', but they're beginning to appear now," Ramón Díaz says hopefully as he disembarks with his fellow fishermen after spending the entire night out on the water.

But their optimism is not shared by the high-level experts at the Undersecretariat of Fishing Resources, who believe their hope is unfounded. The current season "is, and will continue to be, very poor" for the dorado (*Coryphaena hippurus*), known in English as the dolphin-fish or by its Hawaiian name mahi-mahi, and in Spanish for its gold-coloured, or "dorado", sides.

In the course of the night, the drag net used by Díaz and his fellow fishermen has caught a wide variety of fish, including "15 to 20 big dorados."

According to the FishBase.org database, the maximum length reported for a dorado is 210 centimetres, the maximum weight 40 kilograms, and the oldest age five years.

But "big" for Díaz is a dorado that reaches 100 cm, and he points out that in Ecuador it is illegal to fish for dorado measuring less than 80 cm.

Biologist Jimmy Martínez, a technical advisor to the Undersecretariat, explains that "We have to ensure its sustainability as a species, and following the code of conduct of the FAO (United Nations Food and Agriculture Organisation) we believe that the fish should have the chance to lay eggs at least once in its life before being captured.

"As we know, sexual maturity in this species is not reached until they are 50 to 60 centimetres long. At 80 cm, we are giving them the opportunity requested by FAO," he says.

The size limit was put in place, according to an official from the National Fishing Institute, after it was found that some boats in a fishing cove on the Santa Elena peninsula, north-west of Manta, were using smaller hooks, and 95 percent of their dorado catch was juvenile fish.

"We had to stop that kind of fishing, even though the fish were being exported to Peru and were generating revenue. To that end, ministerial agreement Number 31 was issued Oct. 8, 2004, banning the intentional catch, transport, and foreign or domestic sale of dorado smaller than 80 centimetres," Martínez says.

The species, that has many names throughout the eastern Pacific -- dorado, mahi-mahi, dolphin-fish, doradilla, perico -- is also found in the Atlantic and Indian oceans. Although it is a coastal species, it breeds out in the open seas.

"Until 2000, the dorado fishing season in the equatorial Pacific was from December to May, and the boats took five to six day trips in coastal waters. But since 2001, the season lasts from November to February, and boats spend 10 to 16 days out at sea," the expert says.

The fishing season coincides with the rainy season in Ecuador's coastal region, but the dorado are available all year long during an episode of El Niño/Southern Oscillation (ENSO) -- the cyclical meteorological phenomenon caused by warm surface currents flowing west-to-east across the Pacific Ocean.

But Ecuador currently finds itself in the opposite phase of El Niño. "We are experiencing La Niña, despite it being one of the rainiest seasons in Ecuador's inter-Andean region," Martínez says.

"At sea, it doesn't rain, because there isn't as much evaporation as in the warm current years. The rains in the Andes are coming from the Amazon," he says.

According to the expert, dorado shortages occur in cycles. While 1997 was a bad year, 1998 was excellent, "because we fished for dorado 11 months," but then in 1999 came "the worst crisis."

Something similar is happening now: the 2008-2009 season went poorly, 2009-2010 was good, while the current period is "terrible, because the cold currents have not permitted the dorado to reproduce or grow," he says.

The figures seem to corroborate his assessment. Ecuador exported 21.7 million dollars of dorado (in the form of frozen fillets) in 2007, and 38.5 million dollars worth two years later.

The dorado makes up 40 to 60 percent of the volume caught by artisanal fishers.

"For them, the dorado is the most important resource, because of the size of the catch and because they really know how to fish for it," Martínez says.

"Artisan fishers are those who, despite having some very sophisticated technology, continue to do the actual fishing by hand," he says.

For example, they use GPS and satellite information, and some of the boats have what are known here in the fishing community as "electronic" nets.

According to fishermen consulted by IPS, these are nets made of nylon cord that shines underwater to attract the schools of fish.

Their other fishing techniques are of the more traditional order, with the most popular being longline (a main line with baited hooks) and throw nets.

According to the Undersecretariat's records, the annual dorado catch in a "normal" year ranges from 12,000 to 15,000 tonnes.

"The dorado is in first place (35 to 45 percent) in Ecuador's white fish exports (both fresh and frozen) so far this century," biologist Luis Arriago, former deputy secretary of fishing resources, tells IPS.

It is also widely consumed in Ecuador. "Its raw meat is whitish, tending to pink, and of excellent quality," says Julio Pincay, chef at one of the restaurants on Manta's El Murciélagos beach.

But if no dorado are caught, the whole chain of marketing and consumption comes undone. "The problem is that the scarcity of dorado will affect the 35,000 artisan fishers along the entire Ecuadorean coast," Martínez says.

Relying on those fishers are, of course, their families, but also -- indirectly -- the truckers, intermediaries and vendors, as well as the processing industry and exporters.

"A bad year for the dorado is a bad year for tens of thousands of people in Ecuador," he says, stressing that "We have to speed up plans for sustainable management of the dorado, a resource of vital importance to the country."

The plan is based on regulation and monitoring of dorado offloading from fishing vessels in Ecuador's main ports, for industrial and artisan fishing alike, and further biological research of the species. "We will be the first country to have a dorado management plan," Martínez says.

Artisan fishers are those who, despite having some very sophisticated technology, continue to do the actual fishing by hand

The EU must start fishing responsibly now



By Ricardo Aguilar (*)

MADRID - The loss of marine biodiversity is hurtling forward at an unprecedented rate. At present, the FAO calculates that

nearly 80% of the world's fisheries resources are fully exploited, overexploited or depleted. Furthermore, marine scientists have suggested that if the current pace of exploitation continues, all fish stocks will have collapsed or disappeared by 2048.

Measures put in place to manage marine resources have failed miserably. They have not only driven oceans into a critical state from an environmental perspective, but have also taken a socioeconomic toll on people and economies around the world. Eight percent of the global population supports itself directly or indirectly from the fishing industry, and over one billion people from the world's poorest countries depend on fish as their main source of animal protein.

The European Commission acknowledges that 88% of stocks for which data exist are being exploited above sustainable levels. Meanwhile, our taste for fish continues to grow with no end in sight, and the biggest challenge that we must now face is how to balance our growing appetite with the proper management of the very oceans that provide for us. The EU has a responsibility to its fishers, its citizens and future generations, to reverse its tendency to overexploit and badly manage our resources.

A comprehensive approach is essential for turning the tide on the state of European (and global) oceans and fisheries, by tackling the factors that contribute to the destruction of marine ecosystems, which include overfishing, habitat destruction, pollution and climate change.

The simple solution to overfishing is to fish less and more responsibly, and to start making changes now. By reducing catches today and fulfilling the EU's commitment to achieve "maximum sustainable yield" by 2015, fishing stocks will be given a chance to recover, thereby increasing tomorrow's fishing opportunities by up to 80%.

Unfortunately it is not only a matter of reducing quotas, but also of limiting fleet capacity, enforcing gear selectivity, curbing illegal fishing, developing scientifically sound management plans, and creating marine sanctuaries where endangered populations can rebuild and thrive again.

One logical place to begin is curbing fishing practices that lead to high bycatch and discards rates, and are destructive to marine environments. Every year, 7.3 million tons of catches worldwide are discarded, an amount close to the entire African continent's annual seafood consumption. In Europe, the news is just as bad. Recently, disturbing (though not surprising) reports reveal that upwards of 1/4 (some estimate 1/2) of North Sea catches are thrown back into the water, dead or dying.

Improving gear selectivity, such as using larger mesh sizes to allow juveniles to escape, is therefore a critical component of any proper management plan. It also plays an important role in preventing the destruction of habitats. Bottom trawlers, for example, which destroy entire sea beds in search of only a few species, should be phased out.

Meanwhile, illegal fishing still occurs. During annual at-sea expeditions, Oceana has observed and reported numerous ships in the Mediterranean still using driftnets, a destructive fishing gear that was banned in 2002

by the EU. Member States also sometimes overshoot quotas, as was the case with France in 2007, when it fished 5,192.60 tons over its annual bluefin tuna quota. Unless we have stricter enforcement of existing rules, objectives for sustainable management simply cannot and will not be met. What is worse is that EU subsidies themselves are sometimes unknowingly funding illegal activities.

With regards to the European fleet fishing illegally outside of EU waters, in addition to the obvious detrimental impact this has on marine ecosystems unable to handle the added pressure, it also prevents developing countries from benefiting from the bounty of their own seas.

To bring stocks back to acceptable levels, it is critical that a network of marine protected areas (MPAs) be developed, particularly in essential habitats. Besides environmental benefits, studies have demonstrated that these areas, which enable the regeneration of habitats and reproduction of species, are also economically profitable in the medium and long term. MPAs have been shown to cause a biomass spillover into surrounding waters as protected populations grow, thus increasing the size and volume of nearby catches.

The UN Convention on Biological Diversity (CBD) requires that a minimum of 10% of oceans be protected by 2012, but countries around the world are failing miserably at meeting these objectives. In fact, the recent CBD meeting in Nagoya unfortunately pushed back the 2012 target

to 2020. At present, less than 1% of the world's oceans are in some way protected, although barely even 0.1% are fully protected. Meanwhile only 4% of the world's ocean surface is considered to be "safe" from any human impact.

The fisheries industry, marine ecosystems, and the livelihoods of millions are inextricably linked and must therefore all be considered in management plans. Unfortunately, current measures are simply not up to the task and often ignore scientific advice when it is available. In 2010, 48% of scientific recommendations on Total Allowable Catches (TAC) for EU fish stocks were ignored, and recent ministerial decisions on fishing opportunities for 2011 ignored 35% of recommendations.

Of course, none of this matters if regulations, quotas and TACs are not enforced. One of the greatest flaws of the current system is that too many countries and vessels are getting away with breaking the rules. This cannot go on any longer.

Finally, another factor affecting the state of the world's oceans is climate change. Rising temperatures affect the abundance and distribution of species, and threaten vibrant coral reefs, through a phenomenon known as 'coral bleaching'. Meanwhile, as more CO₂ is pumped into the atmosphere, oceans, which act as filters for the planet, absorb too much of the gas, creating a phenomenon known as ocean acidification. This makes it harder for many organisms to build their calcium carbonate shells and skeletons, and prevents coral reefs from growing properly.

Restoring the oceans to their previous glory is a daunting task. The list of bad news seems endless, but real solutions do in fact exist. That is why we must not sit by and do nothing - the time to make these changes is now.

(*) Ricardo Aguilar is the Scientific Director at Oceana, the largest international conservation organization dedicated exclusively to the world's oceans.

New Livelihoods to Protect A River's Life

By Lova Rabary-Rakotondravony

ANTANANARIVO - The Nosivolo River has the greatest concentration of freshwater fish species in Madagascar. Strengthening protection of the river's biodiversity has involved transforming the livelihoods of local people.

Species that were on the road to disappearing are now regaining strength thanks to strict regulations adopted - and enforced - by fishing communities to protect them.

The river, which tumbles spectacularly from its headwaters in mountains 1800 metres above sea level through cascades and over waterfalls to where it joins the Mangoro River.

No fewer than 19 fish species endemic to Madagascar are found in the Nosivolo, including four that are found only in its 130 kilometre length.

Conservation International and Durrell Wildlife Conservation Trust came to Marolambo, on the Nosivolo River in 2003 to work to protect this biodiversity. Seven years later, their scorecard is positive.

The practice of "tavy" - clearing land for rice farming using slash and burn methods - had caused heavy erosion of the hillsides, leading to increased turbidity and siltation in the river, according to Benoît Lahimarina, former MP for Marolambo.

"Residents have begun to be aware of the importance of preserving (the environment) and are progressively putting in place new cultural practices," he told IPS.

"To protect the fish and their habitat, it is first necessary to help people," says Hasina Randriamanampisoa, communications officer for Durrell.

The support from Durrell and Conservation International was directed primarily to the construction of community infrastructure such as water standpipes and schools, as well as the financing of numerous micro-projects to generate revenue. Many former fishing families have now become farmers, herders, beekeepers and artisans.

Lahimarina told IPS that the campaign to raise awareness and change attitudes has not been easy. "People were not ready to abandon the habits of a lifetime so easily. But we didn't give up, and today, with the recognition of Nosivolo as a Ramsar Site, we can say that we are on the right path."

"The regulation of the mesh of fishing nets is also more strict than is set out in the law," says Luciano Andriamaro, coordinator of scientific programmes for Conservation International Madagascar.

To help ensure respect for the rules, the associations have also turned to an officer from the forestry administration in their district. Joint control teams, made up of representatives of the local authorities and community members have been put in place.

"The local authorities are very cooperative," says Randriamanampisoa.

The results of these diverse conservation activities have been immediate. "The fish that were in critical danger of extinction are a bit more numerous in the river and its tributaries, and people have noticed that they are also bigger than before," said Andriamaro.

She underlined that despite the tangible changes on the ground, the status of threatened species has not yet changed enough to have them removed from their place on the IUCN status.

Nosivolo is slated to become the first protected area for the conservation of fish in Madagascar. "The process is in progress and will soon be made official," says Andriamaro.

One of the greatest flaws of the current system is that too many countries and vessels are getting away with breaking the rules