Against the Current

The range of diversity of geography, gear and techniques of fishing in Peru forces the country's small-sale fishers to grapple with difficult working conditions

The small-scale fisheries sector in Peru is extraordinarily diverse, particularly in terms of the gear used to gather or catch resources, which comprise a wide range of nets, lines, traps and harpoons. There is also diversity in the vessels used for fishing. They are usually under 15 m in length, and have a hold capacity below 32.6 cu m, and, in most cases, use manually lifted gear. There are also those who fish without boats.

Geographical diversity exists too, as fishing takes place on the shore or in coastal and open waters. The different regions of the country—the north, the south and the central parts—have their own specificities. The duration of fishing operations varies too: some last a few hours, others up to three weeks.

The markets range from the country's smallest villages to its largest cities (including Lima, the capital, home to almost 30 per cent of the Peruvian population) as well as international destinations across the world.

If anchovy (anchoveta) has been historically Peru's flagship species, mahi-mahi and giant squid have considerably grown and become, in recent years, the largest artisanal fisheries in the world for these species.

While the last decades have seen an increase of exports from small-scale fisheries—destined for markets in Asia, Europe and North America—domestic markets have also grown greatly (with a demand so high it has also boosted imports, in a country generally considered a major fishing power), both at household and food-industry levels (which, in particular, has expanded greatly).

A census of the small-scale marine fleet, carried out in 2012, provides data on the number of fishworkers and fishing vessels, as well as additional information about the sector.

There are over 44,000 fishworkers, with 3.1 per cent being women (mainly in the southern regions, where they engage in seaweed collection). According to the census, 44.4 per cent of the fishermen live in the northern regions of Peru (Tumbes, Piura, Lambayeque), 39.5 per cent in the centre (La Libertad, Ancash, Lima, Ica), and 16.2 cent in the south (Arequipa, Moquegua, Tacna), of the country.

...domestic markets have also grown greatly (with a demand so high it has also boosted imports, in a country generally considered a major fishing power...

In 2012, 49.8 per cent were aged 30 to 50 years. A further 28.2 per cent were under 30 and 22 per cent over 50 years of age.

Two major school education levels exist in Peru—the primary and the secondary. For the purposes of the census, fishermen having attended at least one year in the upper level were classified under the secondary education level. Fifty-eight per cent followed at least a year of secondary education, 31.4 per cent attended only primary education and 9.1 per cent took further education.

Younger fishermen attended more years of school than their older colleagues: 65.5 per cent under 30 years attained secondary levels (with 24.1 per cent having completed

*This article is by **Juan Carlos Sueiro** (jcsueiro@oceana.org), Director of Fisheries, Oceana, Peru, and **Melanie Pajuelo** (mpajuelo@oceana.org), Intern, Oceana, Peru. Translated from Spanish by **Mercedes Rafael Ramos** (meche_rafa@hotmail.com)*

only primary school), while among the over-50s, 40.9 per cent said they attended secondary education, while 51.7 per cent attended only primary school.

Finally, of the total of over 44,000 fisher men and women, 5 per cent reported having had an accident, and 12 per cent, an illness in the last 12 months.

While it is true that the fisheries raise higher expectations now than in the past, the activity remains firmly anchored in the transmission of knowledge and the building of identity

With regard to the fleet, the census registered 16,045 boats, although a small number (several dozens) are registered for transport in coastal areas and a similarly small number are not operational. Vessels are classified in three groups according to length: between 15 and 11 m (the largest sub-group), 11 to 7 m, and finally, below 5 m.

The first group (larger vessels) includes a significant number of seiners, a fleet segment that has increased in the last decade due to easy access to anchovy resources for human consumption. More recently, the fleet targeting giant squid and mahi-mahi has also expanded greatly. This group represents 13 per cent of the total fleet.

The second group includes vessels targeting giant squid and mahi-mahi, as well as seiners and other types of vessel targeting pelagic (tuna, mackerel, horse mackerel) and demersal species (mullet, lorna drum, hake). They represent 54 per cent of the fleet.

Vessels with a length below 7 m include mainly coastal craft that use hooks-and-line or gillnets, targeting a wide variety of inshore species, as well as supporting boats supplying compressed air to divers gathering shellfish (scallop, clam, mussel and sea snail). They represent 29 per cent of the registered small-scale fleet.

The census further indicates that 59 per cent of the fleet lacked valid fishing licences. This partially explains how the fisheries operate, to a great extent, in an informal context—with implications for working and safety conditions aboard fishing vessels.

ILO: Conditions of work in the fishing sector

The International Labour Organization (ILO) adopted the Work in Fishing Convention (Convention 188) in 2007, establishing decent conditions of work on board fishing vessels, according to boat size and other parameters. It came into force by end 2016, but Peru has not yet ratified it. We will try to analyze how the small-scale fishing sector in Peru stands with regard to different aspects of the Convention.

Working age

Although Peru has recently passed legislation regulating working age in the fishing sector, tradition determines that children learn the trade at an early age, normally by helping their fathers (in most cases) or other relatives (less frequently). Many fishermen, having been raised in coastal areas (though there are numerous migrant workers in the activity), defend this practice as they recall how they learned to fish and who taught them. While it is true that the fisheries raise higher expectations now than in the past, the activity remains firmly anchored in the transmission of knowledge and the building of identity. Children below working age may be found in the fishing sector, but they normally carry out ancillary tasks, such as catch landing.

Onboard working conditions

Onboard working conditions depend on the size of the vessel and the duration of the fishing operations. By their very nature, they are conducted at different times of the day, and they last as long as the skipper deems fit.

The number of crew members is determined by the type of gear used. Catches are not normally processed on board Peruvian fishing vessels, including the small-scale sector,

with the exception of some specific fisheries where some basic processing takes place; therefore, working hours are not exceedingly extended in order to add value to the catch.

Working conditions related to safety, rest and health are poor due to the lack of adequate space and equipment. Crew members answer nature's call by leaning overboard, generally grabbing a rope to avoid falling to the sea.

Risks in marine fisheries

While fishing is generally acknowledged as an intrinsically risky activity, some fishing operations are particularly dangerous. The higher risk exposure in Peru concerns divers, who collect shellfish underwater, breathing compressed air supplied from a vessel through a pipe that divers secure with their teeth. Although accidents are relatively frequent, neither do they gain national media attention nor are they captured in a centralized register. There is a lack of information about possible harmful effects of non-fatal decompression accidents.

On the other hand, the good (or bad) functioning of the engine or other power-supply mechanisms may compound the effect of other risk factors. Mechanical failure is the most common cause for a fishing vessel's loss of course or communication. Strong waves or winds, and/or overload or specific individual incidents may also increase the risks aboard a fishing boat.

Access to health services

Small-scale fishermen and women may be affiliated to the country's social-security regime for salaried workers, where contributions are made by both the employee and the employer. In the case of small-scale fishworkers, contributions do not confer a right to a retirement pension, but provide healthcare, with the minimum contribution being around US$23.6. For a further US$1.60 per month, fishworkers may subscribe to a life-insurance regime supported by the national social-security system. Fishworkers are required to register, and payments are collected monthly through small-scale fisheries organizations. A series of mechanisms was put in place that disappeared with regionalization.

Nevertheless, the legislation regulating these matters excludes self-employed small-scale fishermen from the coverage of risky activities, even though fishing is a dangerous profession. This type of insurance can be secured for a monthly fee of US$9.8.

The situation has created a sort of grey area, as it contradicts the general principle that fishing is a dangerous activity per se and should be covered by adequate high-risk insurance (established over two years ago), and it seriously reduces its reach, already restricted by the informal character of fishing operations and by the attitude of regional governments towards artisanal fisheries.

According to social-security statistics, in March 2017 there were 2,645 registered artisanal fishermen and women, accounting for 6 per cent of the total registered fishworkers in 2012. It is worth mentioning that the number has increased to 23 per cent since then.

By end July 2017, the National Parliament passed legislation providing accident insurance in fisheries, inspired by existing car-insurance legislation. Shipowners are

JUAN CARLOS SUEIRO

Gillnet craft at Chimbote bay, Peru. The markets range from the country's smallest villages to its largest cities as well as international destinations across the world

JUAN CARLOS SUEIRO

Fishermen day celebration, Cabo Blanco, Peru. Small-scale fisheries in Peru is extraordinarily diverse, particularly in terms of the gear used to gather or catch resources

required to take out private health insurance in the case of accidents at work (from pre-harvest tasks to catch landings). They are also required to pay for this type of coverage but they can also transfer the cost to crew members, deducing such expenditure from their salaries. This requirement is applied both to individuals and companies, as long as they are formally recognized shipowners.

Fisheries are conducted in an informal labour context, with frequent illegal practices that must be curtailed, as it is precisely in this type of operations that decent-work conditions and safety standards are not respected.

The impact of El Niño events

Recent years have seen the emergence of two important modalities of the El Niño effect. The first starts in the central region of the Pacific Ocean and, after several weeks, reaches the American coast. Sometimes it hits Peru in full; at other times, such as in 2016, it brings less severe conditions in its Eastern rim, just south from the Equator, next to and within, Peru's territorial waters.

In the summer of 2017, a different event took place, which was mainly felt in Peru, although with a shorter development. Although it greatly damaged the coastal cities in the north (which, these days, are bigger and more vulnerable), it was short-lived, (compared to the long and heavy rains of the 1998 El Niño Southern Oscillation (ENSO) episode, which had a bigger impact on infrastructure and on fishing work conditions, in terms of suspension of fishing activities and destruction of public and private facilities on the shore. A depletion of traditional fishery resources was not felt, although other species, such as prawns and tuna, increased their presence in the 2016 ENSO.

However, the negative impact of El Niño should not be underestimated, as it resulted in more than 160 fatalities and several hundred million dollars in material losses. In the north of the country, the gross domestic product (GDP) fell to an extent that can only be compared to a similar contraction derived from the 1983 El Niño. Furthermore, it brought about a breakout of dengue, a disease that was unheard of in this territory, even in the urban coastal environment, and not only in fishing areas.

For more

https://www.icsf.net/en/samudra/detail/EN/3847.html?detpag=mapart
Diversionary Tactics

http://www.worldbank.org/en/news/feature/2017/03/06/peru-anchoveta-pescadores
In Peru, Fishing Less Anchoveta Pays Off

http://ac.els-cdn.com/S0308597X13002194/1-s2.0-S0308597X13002194-main.pdf?_tid=7671bad4-964a-11e7-bacd-00000aacb35d&acdnat=1505063401_84917f4a0f695b6aba21bf7044eb0b30
Valuing Seafood: The Peruvian Fisheries Sector

https://www.icsf.net/en/samudra/detail/EN/918.html?detpag=mapart
On The Verge Of Collapse

Diversionary Tactics

Allocating exclusive fishing grounds for artisanal fleets fails to secure more anchoveta for direct human consumption in the absence of rules and regulations

Peru's multi-species, highly diverse artisanal fisheries make a strategically important contribution to the nation's food security, having traditionally provided fish for local consumption. However, the sector is dwarfed by the industrial fishery, dominated by fleets which mainly target a single species—the Peruvian anchoveta—for fishmeal production. This marked differentiation in the fishery sector provides the basis for classifying Peruvian fisheries into two broad categories: a sector which produces fish for 'indirect human consumption' (IHC), that is, for fishmeal and fish oil, and a sector which produces fish for 'direct human consumption' (DHC).

Peruvian anchoveta is prone to massive fluctuations in abundance thanks to the *El Niño–Southern Oscillation* (ENSO) system that characterizes the Humbolt Large Marine Ecosystem. When a strong el Niño event coincides with heavy fishing pressure, as happened in 1972, anchoveta stocks can collapse, with dramatic knock-on effects on the entire marine ecosystem. Just prior to the collapse, annual catches peaked at 12 mn tonnes, but took years to recover. Over the first decade of the 21st century, published anchoveta landings fluctuated between 8.808 mn tonnes in 2004, down to 3.45 mn tonnes in 2010, up to 7.103 mn tonnes in 2011 and down to 2.653 mn tonnes in 2012 due to the impact of ENSO-related phenomena on anchoveta stocks, and government action to cut quotas.

The fishmeal fishery in Peru is essentially an industrial sector, deploying mechanized fleets, fishing intensively, catching between five and 10 mn tonnes annually, providing highly refined ingredients for animal feeds, and generating enormous profits and foreign-exchange earnings. Fishmeal production is dominated by vertically integrated transnational companies, owning their own fleets of vessels dedicated to supplying their factories. For example, vessels owned by the fishing giants Copeinica ASA and China Fisheries are allocated around 32 per cent of the total anchoveta catch quota.

The DHC fishery is essentially an artisanal sector, using traditional motorized craft and manual operations, catching tens of thousands of tonnes of fish and several hundreds of species (Peru has 736 known marine fish species), mainly for local consumption. In 2012, according to Ministry of Production statistics, 287,200 tonnes of marine fish was landed as fresh catch, 202,600 tonnes as canned, 700,400 as frozen, and 2,250 as cured. These would have come mainly from the artisanal fisheries sector.

The importance of artisanal fisheries for direct food consumption and food security has long been strategically recognized in Peru.

Direct food consumption

The importance of artisanal fisheries for direct food consumption and food security has long been strategically recognized in Peru. In 1992, the Fisheries Ministry

*This article, by **Juan Carlos Sueiro C** (jcsueiro@csa-upch.org), Associate Member of ICSF and Researcher at the Centre for Environmental Sustainability at the Cayetano Heredia University, Lima, Peru, has been translated by **Brian O'Riordan** (briano@scarlet.be) of ICSF's Belgium Office*

Diversionary Tactics

Allocating exclusive fishing grounds for artisanal fleets fails to secure more anchoveta for direct human consumption in the absence of rules and regulations

Peru's multi-species, highly diverse artisanal fisheries make a strategically important contribution to the nation's food security, having traditionally provided fish for local consumption. However, the sector is dwarfed by the industrial fishery, dominated by fleets which mainly target a single species—the Peruvian anchoveta—for fishmeal production. This marked differentiation in the fishery sector provides the basis for classifying Peruvian fisheries into two broad categories: a sector which produces fish for 'indirect human consumption' (IHC), that is, for fishmeal and fish oil, and a sector which produces fish for 'direct human consumption' (DHC).

Peruvian anchoveta is prone to massive fluctuations in abundance thanks to the *El Niño–Southern Oscillation* (ENSO) system that characterizes the Humbolt Large Marine Ecosystem. When a strong el Niño event coincides with heavy fishing pressure, as happened in 1972, anchoveta stocks can collapse, with dramatic knock-on effects on the entire marine ecosystem. Just prior to the collapse, annual catches peaked at 12 mn tonnes, but took years to recover. Over the first decade of the 21st century, published anchoveta landings fluctuated between 8.808 mn tonnes in 2004, down to 3.45 mn tonnes in 2010, up to 7.103 mn tonnes in 2011 and down to 2.653 mn tonnes in 2012 due to the impact of ENSO-related phenomena on anchoveta stocks, and government action to cut quotas.

The fishmeal fishery in Peru is essentially an industrial sector, deploying mechanized fleets, fishing intensively, catching between five and 10 mn tonnes annually, providing highly refined ingredients for animal feeds, and generating enormous profits and foreign-exchange earnings. Fishmeal production is dominated by vertically integrated transnational companies, owning their own fleets of vessels dedicated to supplying their factories. For example, vessels owned by the fishing giants Copeinica ASA and China Fisheries are allocated around 32 per cent of the total anchoveta catch quota.

The DHC fishery is essentially an artisanal sector, using traditional motorized craft and manual operations, catching tens of thousands of tonnes of fish and several hundreds of species (Peru has 736 known marine fish species), mainly for local consumption. In 2012, according to Ministry of Production statistics, 287,200 tonnes of marine fish was landed as fresh catch, 202,600 tonnes as canned, 700,400 as frozen, and 2,250 as cured. These would have come mainly from the artisanal fisheries sector.

The importance of artisanal fisheries for direct food consumption and food security has long been strategically recognized in Peru.

Direct food consumption

The importance of artisanal fisheries for direct food consumption and food security has long been strategically recognized in Peru. In 1992, the Fisheries Ministry

*This article, by **Juan Carlos Sueiro C** (jcsueiro@csa-upch.org), Associate Member of ICSF and Researcher at the Centre for Environmental Sustainability at the Cayetano Heredia University, Lima, Peru, has been translated by **Brian O'Riordan** (briano@scarlet.be) of ICSF's Belgium Office*

passed a landmark law—Supreme Decree DS 017-1992-PE—establishing an exclusive artisanal fishing zone out to five miles from the coast. Defending the five-mile zone has provided a rallying call for artisanal fishermen to protect their fishing grounds from industrial fishmeal vessels. Currently, increasing the contribution of fisheries to national food security is a strategic objective for Peru's President, Ollanta Humala. In recent years the quantities of anchoveta being used for DHC has increased significantly, from 43,464 tonnes in 2006 (0.7 per cent of total anchoveta catches, 71 per cent as canned) to 109,010 tonnes in 2011 (1.5 per cent of total anchoveta catches, 77 per cent as canned). In 2012, due to strong ENSO conditions, anchoveta catches were curtailed at 2.654 mn tonnes, compared to 7.103 mn tonnes in 2011. Even so, 1.3 per cent of the total catch was processed for DHC. Peruvian government statistics show that anchoveta is processed for DHC as canned, fresh, frozen and cured products.

Fishing vessels classified as artisanal, driven by strong market incentives and an enabling environment of lax enforcement and legal loopholes, have been catching increasingly large quantities of fish...

In recent years, the distinction between the two sectors has become blurred. Fishing vessels classified as artisanal, driven by strong market incentives and an enabling environment of lax enforcement and legal loopholes, have been catching increasingly large quantities of fish, mainly Peruvian anchoveta, for IHC.

Peru's fishery is also full of idiosyncrasies. In 2006, a World Bank-commissioned evaluation report on the country's marine fisheries sector described the Peruvian industrial fishery for anchoveta as "overcapacity in the fleet and processing sectors; displaying low efficiency; causing significant losses in rent, and high environmental and social costs for the Peruvian State; and generating huge foreign-exchange earnings that benefit a minimal fraction of the industry."

Yet, in 2008, despite having a fleet four to five times the capacity needed to catch the resources, scientists at the University of British Colombia ranked Peru's fishery as the most sustainable in the world. In September 2012, Copeinica, a multinational company listed on the Oslo stock exchange and one of the largest vertically integrated fishmeal and fish oil companies in Peru, successfully underwent Friends of the Sea (FoS) certification, having been found to comply with all the FoS criteria for sustainable fisheries. Meanwhile, the Marine Stewardship Council (MSC) and others flirt with the idea of certifying Peru's fishmeal fishery as sustainable.

Yet, managing Peru's fishery is fraught with problems. Over the last 12 months, no fewer than five fisheries ministers have been appointed. In May 2012, when Patricia Majluf, a marine conservationist of world renown, resigned as Fisheries Vice-Minister, she expressed her "complete dissatisfaction with the way that fisheries were being managed."

This article highlights some of the fishery-management challenges facing Peru. It looks at some of the changes occurring in the artisanal fishery, and points out how the evolution of the larger vessel fleet segment in the artisanal sector has resulted in it being reclassified as 'smaller-scale' (*menor escala*). The perverse effects of this evolution, the threat that this fleet now poses for the sustainable use of Peru's resources, and the response of the government are discussed below.

Due to a series of factors (common to fisheries throughout the world), the capital invested in most of Peru's fisheries substantially exceeds the sustainable productive capacity of the fishery resources. It is vital that taking account of, and addressing, this fact should become the chief priority of State fishery regulations.

Social inclusion

From the policy perspective of the current government, for whom social inclusion is a key element in the fight against poverty and inequality in the

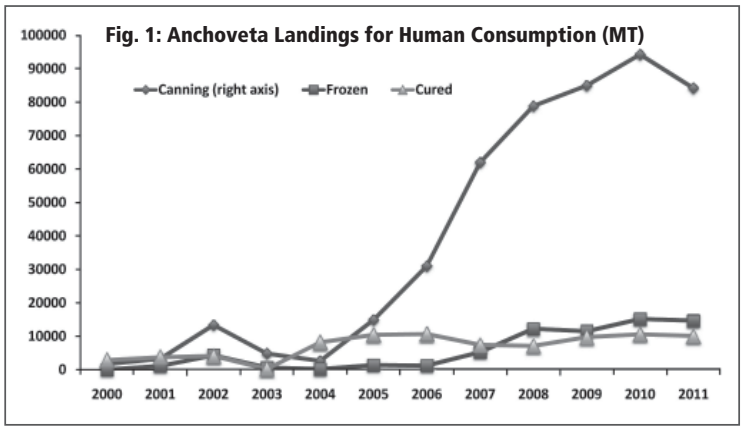
country, a fundamental requirement of fisheries management is to ensure the sustainability of the resources. Social inclusion in fisheries activities will not be possible if resources are overexploited and stocks depleted.

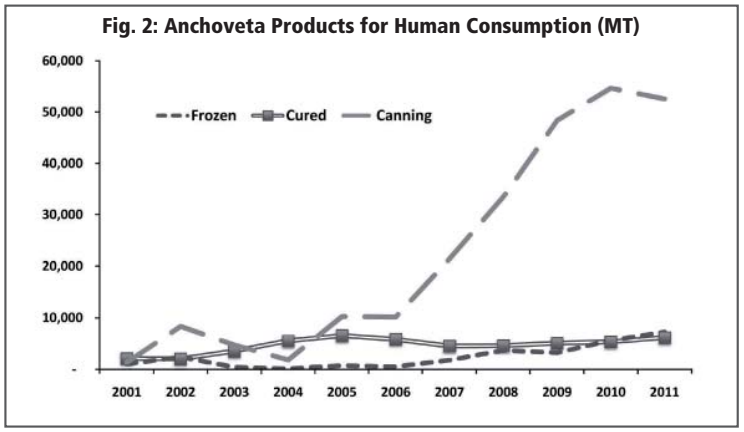
At the same time, social inclusion suffers when a culture of impunity and corruption prevails, preventing the application of the regulations and sanctions established and made law through fisheries-management instruments. This is exemplified by the fact that instead of applying already established fishery-management regulations, successive governments have applied provisional fisheries regimes over several years. These are considerably more lax in terms of regulating and conserving resources. The system of sanctions and fines is chaotic and disorganized, with processes that are still labour-intensive, open to discretion and manipulation and with a very low level of collection of fines—around six per cent of the total imposed in the final year of the previous government.

Given the enormous volume of fish landed and the need for rapid transfer from ship to factory, the monitoring of landings has shown a history of abuse by some parts of the sector, which employ various subterfuges to report lower levels of landings than actually made. Control methods have evolved in line with technology—satellite vessel monitoring system (VMS), automated weighing, computer databases, etc. Currently, the control system is privately run, but State supervision is weak, with weighing systems technologically vulnerable to manipulation. All this goes on despite the existence of technical alternatives that could be adopted.

Peru introduced a system of individual vessel quotas in 2009. Although various administrative as well as labour-related faults with the implementation of the law of individual quotas for anchoveta fishing for fishmeal are evident, they still prevail.

We will focus on the issue of anchoveta for human consumption because of its relevance for artisanal fisheries, and discuss how, in recent years, it has grown in importance, the serious distortions taking place, as well as the recently approved legislation that relates to anchoveta.





Since 2006, thanks largely to the boost provided by Anchoveta Week, which gave an innovative thrust to promoting anchoveta for human consumption, landings of anchoveta have grown enormously. This resulted in the formulation, in 2010, of a fisheries-management regulation specially designed for this activity. This ruled that the artisanal fishing vessels involved in fishing for anchoveta for human consumption (with hold capacities of up to 30 tonnes) should have supply contracts with processing (canning) plants—there are hardly any sales of fresh anchoveta in Peru—and should insulate their holds.

Irregularities

However, there were irregularities, and often only one inspection, with serious technical shortcomings, was undertaken. Also, implementation was mediocre, ignoring the balance

SANTIAGO DE LA PUENTE

Artisanal purse-seiners landing anchovies in Pisco, south of Peru.
Eight of every 10 tonnes of anchoveta catch goes to fishmeal

between processing capacity (high) and the capacity of these vessels to make responsible management decisions (low).

Added to all of this, the system of surveillance and control for this fishery is practically non-existent, highly vulnerable to being corrupted and has no competence to intervene in clandestine establishments that both process anchoveta for fishmeal and finance fishing trips to secure their supplies.

At the same time, a series of public-sector fishery obligations, established under the Regulation of Fishery Oversight (ROP) for anchoveta for human consumption in 2011 and under complementary rules, have, to all intents and purposes, not been implemented.

All this has led to a serious distortion of the system, resulting in around 70 per cent of the catches destined for processing into products for human consumption being illegally diverted into fishmeal production—either in clandestine establishments or in other plants that have deviated from their authorized purpose, which is to use the residues and discards produced in the industry.

This is highlighted in Figures 1 and 2, which contrast the statistics of anchoveta landings destined for canned, cured (for human consumption) and frozen fishery products with the volumes actually produced of these products.

The ratio between the landings and production output (fresh, frozen, cured, canned, meal and oil) are, in general, proportional, which is to say there is a correspondence between the volume landed for a certain purpose and the production levels attained. That would indicate that only landings that effectively enter the productive process for human consumption are registered.

However, warnings have been made by several sources in various parts of the country about the serious diversion of wastes from solid waste treatment plants to clandestine, but fully operative, low-quality fishmeal plants on the outskirts of cities, with the State (at national and regional levels) unable to stop their operations.

Thus, for example, at the Conference on Marine Science (CONCIMAR) in 2012, some research findings by Peru's Marine Institute (IMARPE) in Pisco were presented, which showed that in 2011 around 77 per cent of the anchoveta landings for DHC were diverted to fishmeal production. Assuming that at the national level, 80 per cent of the anchoveta catch destined for DHC is diverted, one can estimate that around 450,000 tonnes (a volume which is over half the entire Spanish fish catch) are being diverted in this way.

There is also a large difference in the capacity to generate employment. While a plant processing for DHC may employ several hundred people, mainly women, no more than 15 people are involved in fishmeal plants of this kind. There are more buttons on the control panels of these plants than persons working in them.

Fishmeal

The resulting situation is unsustainable. It exerts a heavy burden on the fishery—eight of every 10 tonnes of catch goes to fishmeal, seven of which are illegal. This makes it impossible to develop anchoveta's potential for feeding not only

Peruvians, but also contributing to low-cost, high-quality food needed by a large segment of the human population globally. This is an ambition shared and promoted by the Centre for Sustainability of the Cayetano Heredia Peruvian University (where the author of this article is based).

Through the recent issue of Supreme Decree DS 005-2012 (a legal norm of executive power, with the signature of the Minister and the President), the Production Ministry (line ministry of the Fisheries Ministry) has sought to remedy the above situation. We shall describe below its proposals and limitations.

For a long time, there has been an ongoing discussion in the Peruvian fisheries sector on redefining the criteria that apply to artisanal fisheries, in a way that distinguishes the mechanized and relatively highly capitalized fleet from smaller-scale activities in which manual operations predominate.

Supreme Decree DS 005-2012 establishes that vessels with a hold capacity of less than 10 cu m are artisanal and have exclusive access to fish in the first five miles; and those with hold capacities of 10 to 32 cu m are 'smaller-scale' (*menor escala*) and have exclusive access for anchoveta fishing in the 5-10-mile zone. The industrial fishery for anchoveta starts outside the 10-mile limit.

There are also administrative implications, as the smaller-scale vessels fall under the competence of the Production Ministry (of the central government), while artisanal vessels continue under the competence of the regional government.

Putting to one side the protests of interested parties in the fishmeal sector or of those contracted to defend their interests, it is important to make an objective assessment of the above regulation. Firstly, it must be said that the situation in the fishery will not be changed by a single regulation; several more are needed. Also, their implementation will require sufficient political will, in a context where the breakdown of the fishery governance system is the main threat.

Thus, while the regulation establishes that the smaller-scale vessels must have a VMS to enable regulation of their trips, the budget will have to be increased to allow for the effective monitoring of these activities, in the same way as is done for industrial vessels.

Equally, the rule that regulates the proportion of discards from processing anchoveta for DHC (mainly by canning) should be modified to differentiate details by process rather than lumping them all together, as is currently the case.

There are also inconsistencies in the law. Article 11 of DS 005 2012 lays down that only smaller-scale vessels can have up to 10 per cent of the fish catch as unfit for human consumption, but it is Article 12 of DS 005 2012 that has the gravest consequences as it establishes that DHC processing plants may discard up to 40 per cent of the volume coming from the smaller-scale fleet (that is, send it for fishmeal). However, this is not allowed with catches coming from the artisanal fishery. That is to say, by definition, there are no discards from fish derived from the artisanal fleet.

The main challenge is to drastically reduce the diversion of anchoveta into fishmeal, which might otherwise contribute to anchoveta products for human consumption, effectively realizing their food potential. The next step is to include anchovy catches for human consumption in the overall catch quota. The resulting better focus on artisanal fishermen and vessel owners will allow for more effective State support for small-scale fisheries, with policies that are sustainable and inclusive.

Are there changes afoot in the Peruvian fishery? For sure, there are, as expressed in the Strategic Fisheries Sectoral Plan ratified this year (but not originating from the present government) and which is expressed in the three basic pillars of sustainable resource use, social inclusion and the effective fight to end corruption. However, policies and regulations need to get off the paper and into practice.

For more

www.fao.org/fi/oldsite/FCP/en/PER/profile.htm
FAO Fisheries Profile

www.economist.com/node/18651372
Fishing in Peru: The Next Anchovy - Economist May 5 2011

www.huffingtonpost.com/the-center-for-public-integrity/perus-vanishing-fish-ramp_b_1233798.html
Peru's Vanishing Fish: Rampant Cheating and Lax Controls Plague Industry. Huffington Post 01/26/2012.

www.huffingtonpost.com/2013/02/04/peruvian-anchovy-overfishing_n_2618275.html
Peruvian Anchovy Overfishing Raises Concerns About Food Security. Huffington Post 02.04.13

cies.org.pe/files/documents/investigaciones/regulacion/Eficiencia_y_equidad_en_la_reforma_de_la_pesca_en_el_Peru.pdf
Eficiencia'y' equidad'en' la' pesca' peruana: 'la' reforma'y' los' derechos' de' pesca

www.icsf.net/en/samudra/detail/EN/2933.html?detpag=mapart
Peru : Fishmeal Fishery

Towing the Line

The Chile-Peru border dispute jeopardizes the region's deep-sea artisanal shark fishery

The crew of the *Gamalu II*, a 30-ft fishing boat based in the Peruvian port of Ilo, were happy to arrive safely home. Their August shark-fishing trip had been eventful, to say the least.

Two hundred miles or so out to sea, all radio contact had been lost when a wave broke over their wheelhouse, smashing the windows, soaking their equipment and putting their high-frequency (HF) radio—their only means of communication—out of action. Their desperate attempts to repair it proved in vain.

While in Chilean waters, Peruvian fishing vessels must report their position every six hours.

Faced with the choice of a 700-plus-mile round trip back home to evade crossing the Chilean patrolled seas, or cutting the corner and taking a straight line home, they chose the latter to avoid running out of fuel.

The legal course would have involved sailing north to cross the line of parallel marking the border with Peru, and then turning east.

Picked up by a Chilean spotter plane, they were chased by the Chilean navy, but narrowly escaped capture and the consequent loss of their valuable catch. The plight of these feisty Peruvian deep-sea fishermen is pitiable.

Due to a festering border dispute and arrangements that place severe restrictions on their movements, they have to constantly chance their luck and pit their wits against the Chilean navy border patrols.

The *Gamalu II* had set sail 31 July 2007 and returned to Ilo port on 22 August 2007. With a catch of 800 kg of mako shark, 3,000 kg of blue shark and 350 kg of fins, the gross estimated earnings for the trip would be around US$8,200. According to local sources, mako-shark meat fetches between US$1.5 and US$2 per kg, blue shark, between US$0.8 and US$1.5, and fins, between US$11 and US$12 per kg.

Under current arrangements with Chile, vessels wanting to sail through this sea area must request permission three hours in advance before arrival at the border. Subsequent authorization then takes between one and three hours. While in Chilean waters, Peruvian fishing vessels must report their position every six hours.

When they return from international waters, permission must be requested again. With its radio out of action, the *Gamalu II* had no way of asking for permission.

Crew deported

Without prior permission, or if caught fishing in Chilean waters, the fishermen can be intercepted and their small boats towed back to the port of Arica. Here their catch would be dumped, the crew deported back to Peru, and the vessel owner obliged to pay a heavy fine of around 3 mn pesos (around 4,000 Euros or US$5,920). The Chilean navy does not listen to excuses, or take account of equipment failure, or involuntary

*This article by **Brian O'Riordan** (briano@scarlet.be) is based on inputs from:*
- *Toribio Mamani Machaca (toribiomm@hotmail.com), Editor Defensa Marina; (www.defensamarina.org)*
- *Oannes: Señor de las Olas, Foro Hispano Americano de Intercambio de Información sobre Temas de Mar (www.oannes.org.pe/)*
- *Rodrigo Barría Reyes, "Chile - La vida en el límite marítimo: El complicado control de la Armada chilena sobre los pesqueros peruanos", article in El Mercurio, Santiago de Chile, 27 August 2007*
- *Wikipedia: Controversia de delimitación marítima entre Chile y el Perú (es.wikipedia.org/wiki/Controversia_de_delimitaci%C3%B3n_mar%C3%ADtima_entre_Chile_y_el_Per%C3%BA)*

blackouts in communication. Any non-authorized vessel is treated as illegal.

On Monday 13 August 2007, Chile recalled its Ambassador to Peru in protest over Peru disputing the position of the maritime boundaries between the two countries. It followed the publication by Peru of an official chart showing a maritime territory claimed by Chile as an 'area of controversy', in need of resolving (Supreme Decree No 047–2007).

Peru considers that the maritime borders with Chile have never been properly demarcated. Not so, says Chile; the boundaries are clearly defined in the provisions of international treaties that are in force. Peru claims that the border should follow a straight line that bisects the coastline, passing through agreed baselines. For Chile, the border follows a line of parallel, 18° 21' 00".

The international treaties referred to by Chile include the 1952 Maritime Zone Declaration (Santiago Declaration: Declaración de Zona Marítima) and the 1954 Agreement on Special Maritime Frontier Zone (Convenio sobre Zona Especial Fronteriza Marítima), signed by Chile, Peru and Ecuador. The former recognizes that the jurisdictional rights of each country extend 200 nautical miles out to sea.

The latter establishes a special 10-mile-wide zone, either side of the line of parallel that constitutes the maritime border, starting from outside territorial limits (12 nautical miles). The purpose of this corridor is to regulate the frequent 'innocent and accidental' violations of the maritime boundary zone between the countries by artisanal fishing operations.

Peru says that the 1954 Agreement on the Special Maritime Frontier Zone is only a fisheries agreement, and not a border treaty. According to Peru, it is only by mistake that maritime limits are mentioned, and that these are not defined in any treaty.

The affair was given impetus following Chile's ratification of the United Nations Convention on the Law of the Sea (UNCLOS) in 1997. The nautical charts submitted by Chile to the UN in September 2000 showed the 18° 21' 00" line of parallel as forming the maritime frontier between the two countries. Peru responded by sending a note to the UN rejecting this line of parallel as the maritime boundary between the two countries. Peru is unwilling to ratify UNCLOS, which it sees as violating its national sovereignty.

Peru considers that the maritime borders with Chile have never been properly demarcated.

Then, in 2005, a draft bill was submitted to the Peruvian Congress that proposes where the baselines of Peru's maritime boundaries should be. It sets out to establish where the Peruvian coastline ends, where its territorial sea begins, and the extent of Peru's maritime jurisdiction out to a distance of 200 miles. It defines the maritime border with Chile as a line bisecting the coast at right angles and extending 200 nautical miles out to sea. The bill was approved on 3 November 2005, and, on 12 August 2007, through Supreme Decree 047 - 2007, a new map of Peru's maritime boundaries was approved as part of Law No 28.621 on the Baselines of Peru's Maritime Dominion. It high-

TORIBIO MAMANI MACHACA

Crew of the fishing vessel *Pamela*, which has just returned from a 15-day fishing trip outside Chile's EEZ

REED TORIBIO

Inside the radio room of Pamela, a fishing vessel based in the port of Ilo, Chile

lights the area of around 38,000 sq km over which Chile claims sovereignty as an 'area of controversy'.

So far, Chile has refused Peru's requests to open negotiations on signing a maritime boundary agreement. It argues that the treaties of 1952 and 1954 constitute boundary treaties between the two countries. Peru has announced that it will try to resolve the dispute peacefully using conciliation procedures available under international law.

With this in mind, Peru is preparing a case to present to the International Court in The Hague, in similar fashion to Nicaragua and Honduras. Under the Bogota Pact of 1948 (the American Treaty on Peaceful Solutions), to which both Chile and Peru are signatories, in cases where a solution cannot be found, both parties have the right to go to the International Court of Justice, where the decision on the interpretation of treaties or questions of international law is binding.

In practice, Chile continues to exercise sovereignty over this 'area of controversy'. Its naval patrols are mandated to detain and tow back to Arica any vessels that stray across the parallel 18° 21' 00" into Chilean-claimed waters, confiscate the catch and deport the crew, after imposing a heavy fine on the vessel owners. The joint Chile-Peru naval exercises also recognize the area south of this line of parallel as Chilean territory.

UNCLOS indicates that, in general, in such a dispute between two States, a median line should be taken as the boundary, based on points equidistant to the baselines claimed by either side, and following geographic lines such as lines of latitude or lines of meridian. In the case of Peru, if the baseline is taken from the point of Concordia, as defined in the 1929 Treaty of Lima, and the border follows the line of parallel that runs through this point, 18° 21' 08", then Chile's maritime zone begins only 80 nautical miles from the fishing town of Mollendo, 40 miles from the port of Ilo, and zero from Tacna.

For the fishermen of southern Peru and northern Chile, the relative positions of maritime boundaries are clearly all-important. Some Chilean industrial-fishing-sector estimates put the market value of resources extracted annually from the area under dispute at around US$500 mn. Some US$300 mn come from sales of anchoveta, and another US$200 mn from mackerel and horse-mackerel sales. Chile and Peru are world leaders in catching fish, and their economies are heavily dependent on fish exports. In 2005, Chile was ranked third, after China and Peru, with catches of 5.33 mn tonnes, and with fish exports worth US$3.08 mn. One-third of Chile's fish catch comes from Northern Region I of Tarapaca, which borders Peru. It seems unlikely to give up access to this 'area of controversy'.

In southern Peru, the boundary lines have far-reaching implications for the deep-sea artisanal fishermen of Ilo and neighbouring fishing hamlets (*caletas*). They have to cross this marine territory to access their fishing grounds outside the 200-mile zone, facing the coast of Chile. Either that, or undertake a zig-zag 700-mile-plus round trip, at huge extra costs in fuel, and wear and tear on vessels, equipment and crew, considerably increasing their risks.

Artisanal fleet

According to the Peru Ministry of Production Statistics, 56 per cent of the artisanal fleet of Ilo, some 269 vessels, engage in longline fishing. Based in

the port of Ilo, Toribio Mamani, who has been following the fishing in Ilo for most of his life, confirms that all these vessels are engaged in deep-sea fishing. According to Toribio, as fishing crews rotate, there are probably at least 2,000 fishermen working out of Ilo on these vessels. He reckons that an additional 1,500 or so work from adjacent centres, such as Vila Vila, Moro Sama in Tacna Region and Matarani and Mollendo in the Arequipa Region.

Toribio provides a repair-and-maintenance service from his electronics workshop in Ilo. On a completely voluntary basis, and at his own cost, he also operates a radio link with the fishermen out at sea. This is used to feed messages to, and from, the fishermen's families, serving as an emergency communication channel, and through which he is able to provide verbally transmitted weather reports, and other such information. His equipment is basic, and he dreams of being able to provide fishermen with meteorological information on a real-time basis, and to be able to know the exact positions of the artisanal fleet on a real-time basis in case emergencies arise.

"Our deep-sea fishing vessels have two main seasons," says Toribio. "During the six months from September to February, they target *perico* or *dorado* (dolphin fish or *mahi mahi*, *Coryphaena hippurus*), with fishing trips lasting one week on average. From April to August, their main quarry is the blue shark (local name *tiburon azul*, *Prionace glauca*) and shortfin mako shark (local name *tiburon diamente*, *Isurus oxyrinchus*), with sporadic catches of swordfish. Shark-fishing trips last between 15 and 20 days, depending on how far away the fish are. When the wind reaches around 28 or 29 knots (Beaufort 6-7), it is not possible to work, and vessels must try to keep position with sea anchors made of nylon rope."

A small part of the shark catch landed in Ilo is consumed locally. Most is transported to Lima, where it is distributed to other centres. Shark meat is a popular dish in Peru. Specialized traders buy the fins for export.

Writing in Chile's *El Mercurio* on 27 August 2007, in an article entitled "Chile: Life on the Maritime Frontier: The Chilean Navy's Complicated Job of Controlling Peruvian Fishermen", Rodrigo Barría Reyes graphically described the plight of these fishermen. He takes up the story from the angle of the Chilean navy's search operation for the Ilo-based vessel, the *Gamalu II*, "a tiny and aged Peruvian fishing vessel that is sailing through Chilean waters with all the grace of a chunk of Styrofoam", and which "all day has had to evade the frenetic search of the *Contramaestre Ortiz*, the Chilean naval vessel that is giving its all, with engines at 1,600 rpm, to reach and capture it."

In southern Peru, the boundary lines have far-reaching implications for the deep-sea artisanal fishermen of Ilo and neighbouring fishing hamlets...

Here, such a task, out at sea almost 200 km off the Chilean coast, is enormous. To find a tiny little boat in this infinite sea is a painstaking task that must combine technology and persistence, says Barría Reyes. He describes the naval vessel leaving the port of Arica, with the ship's commander, Frigate

TORIBIO MAMANI MACHAKA

The plight of these feisty Peruvian deep-sea fishermen is pitiable due to a festering border dispute with Chile

Captain Jorge Felipe Keyer, playing his favourite Los Cuatro Cuartos compact disc, with "Los que nunce volverán" ("Those who never return") through the ship's loudspeaker system. Commissioned in 1993, the *Contramaestre Ortiz* is 42.5-m long, displaces 518 tonnes, has a crew of 33, a top speed of nearly 20 km/hr (15 knots), and is armed with 20-mm, 40-mm and 60-mm machine guns. It is heading for the exact area where "Peru currently disputes as its own a portion of sea that Chile has no intention of giving up."

Be that as it may, the voyage of the *Ortiz* is no more than routine in a zone where the search for Peruvian fishing boats that enter illegally or that fish with no licence inside the 200-mile exclusive economic zone (EEZ) is a constant. "It's a completely routine job for us and has nothing to do with the boundaries affair that has arisen in recent weeks," explains Kenneth Pugh, responsible for Naval Zone IV, the maritime area that stretches from Arica to Taltal. The current issue is this, says Barría Reyes: The fishermen of Ilo port have a penchant for the *tiburón azul* fishery—for blue shark—a species whose fins are particularly important, being considered as a potent aphrodisiac in some Asian markets. The problem for the Peruvians is that this shark prefers only those waters between 18 and 20 degrees, which are located a little further out than 200 nautical miles, facing the Chilean coast.

What they do have is navigation equipment and global positioning system (GPS) units, which allows them to know perfectly well whether they are in Chilean or Peruvian waters.

"What they usually do, is ask for authorization to cut the journey by passing through Chile's bit of the sea and so arrive in international waters where they proceed to catch shark", Captain Juan Carlos Diaz, maritime governor of Arica, told Kenneth Pugh. "But it is not so rare for the Peruvians not to ask permission, fishing directly in Chilean waters or that their boats don't match up to the minimal safety conditions required to undertake crossings that usually last 15 days. If they have no permission or are fishing in Chilean waters, then we intercept them and tow their small boats back to Arica. The *Gamalu II* is precisely one of these 'poor little boats' that spend hours evading the *Ortiz*, which, despite having two lookouts on either side of the boat with their eyes glued to their binoculars and radar screens, was unable to distinguish something so small on the water.

In the hunt for *Gamalu II,* suddenly another Peruvian fishing boat appears, the *Pamela*. "To see these Lilliputian boats bobbing about like pieces of driftwood, one cannot but help be moved and amazed by the courage and lot of their crew", says Barría Reyes. Crew members are generally four in number, and live on survival rations, with no toilet facilities and sleeping spaces on deck.

Most of the boat is given over to the bait storage and, in the lower part, in spaces with ice, every effort is made to preserve the shark catch. What they do have is navigation equipment and global positioning system (GPS) units, which allows them to know perfectly well whether they are in Chilean or Peruvian waters.

The *Pamela* has asked for permission, which is why she is not boarded. Megaphone in hand, an official of the *Ortiz* fires questions, while the Peruvians answer in a lively voice. "Where are you from? – Ilo; When did you set out? - Two days ago; Where are you headed? - International waters…"

Meanwhile, from the Iquique air base, a navy plane has taken off and is soon over Chilean waters, combing the area. In truth, without such aerial support, no search attempts whatsoever undertaken by navy ships would yield positive results in this maritime vastness.

Aerial surveillance

The airplane locates the Peruvian fishermen, identifies them and advises the *Ortiz* where it can intercept them. The *Ortiz*, which was already headed back to Iquique, turns, accelerates its engines and sets off in hunt of a vessel that does not have permission to sail

in Chilean waters and which may have fished in the national economic zone.

The chase lasts for several hours. The *Ortiz* doubles the speed of the *Gamalu II*, but although it can be seen as a tiny speck on the radars, the lookouts scrutinizing the horizon ceaselessly cannot locate it. Suddenly, there to starboard, they manage to make out the silhouette of the *Gamalu II* a long way off, making its escape.

"It looks like they are going to escape. Normally, they don't sail at more than 10 km per hour. Let's see if they burn out their motor or run out of fuel," says the commander of the *Ortiz* in hopeful tones, and in full pursuit. On the bridge, activity is frenzied. There are people on the communication system, on the radar, tracing routes on a map and on lookout. Everyone is analyzing and calculating what can be done to catch up with the *Gamalu II*.

The satellite phone rings. From the command centre ashore, the chief asks about the chase. The commander of the *Ortiz* hangs up and advises his crew: "We will do what we can to catch her. But if she crosses the border, then there is nothing we can do". A rapid-assault craft is readied, while a boarding party prepares suits and rifles. But the *Gamalu II* does not end up burning its motor out, nor does it run out of fuel. With the *Ortiz* only 2 km away, the Peruvians manage to cross the border.

Captain Keyer picks up a microphone and issues a statement: "The Peruvian vessel has crossed the maritime border. The chase is over. Everyone did well. Next time, he won't escape!" While the *Ortiz* changes course for Iquique, from out of the loud speakers come the patriotic melodies of Los Cuatro Cuartos.

According to Rodrigo Barría Reyes, the Chilean navy carries out patrols in the northern frontier zone every two weeks, and in 2006, six Peruvian boats were taken to Arica and their crews deported. So far this year, 350 Peruvian vessels have requested permission to cross Chilean waters; around 30 per cent of Peruvian boats sighted by the Chilean navy plane are not found by the navy's ships.

Peruvian fishermen invest around 3 mn (US$5,920) pesos in their 15-day fishing trips in search of sharks. Peruvian fishermen may earn between 150,000 and 200,000 pesos (US$296 and US$395) on one of these voyages.

Clearly, resolving the problems of these feisty Peruvian fishermen is far from simple...

While the *Ortiz* was in hot pursuit of the *Gamalu II*, in the port of Ilo the families of its crew were desperately awaiting news. Having lost radio contact, they were expecting that its radio distress buoy would be activated at any time. But, as there was no emergency as such, the crew could not do this.

"It arrived at the expected time. Everyone safe and sound. The fishermen's families and children were the happiest. As soon as it had come alongside, I asked the captain of the *Gamalu II* what had happened, and why he had been out of radio contact for one week. He told me that there were strong prevailing winds and high seas where they were fishing. In a sudden squall, a wave had crashed over the wheelhouse,

BRIAN O'RIORDAN/ICSF

Without prior permission, or if caught fishing in Chilean waters, the fishermen can be intercepted and their small boats towed back to the port of Arica

smashing the windows and soaking all their HF radio communications equipment."

Clearly, resolving the problems of these feisty Peruvian fishermen is far from simple, but Toribio feels that there are at least three areas where some actions could be taken:

- in cases of involuntary communications blackout, as with the *Gamalu II*, penalties could be waived or reduced;
- the Chilean authorities should be open to mitigating circumstances; and
- the right of Peruvian vessels to innocent passage across Chilean waters should be recognized.

...the right of Peruvian vessels to innocent passage across Chilean waters should be recognized.

Toribio points out: "It is just over a year now that we have been requesting permission (from the Chilean authorities) to go and fish in international waters. This has the merit of far fewer artisanal vessels being captured than in previous years when making the crossing to and from these waters."

Meanwhile, Toribio dreams on: "We long for telecommunications equipment that would enable more effective transmission of information to our artisanal fishermen… for example, having a radio repeater and autopatch that would make it possible to use a telephone for radio communication, or a small portable transceptor. Imagine having an operating system that allows for the transfer of meteorological data via HF radio signal and a high-seas vessel with radio, laptop and an interface through which any kind of information can be received; where they could comfortably download information that I had stored on my shore-based computer…Imagine our fishermen with satellite-communications equipment, and being able to know, at each hour of the day, where a boat is working, to be able to locate it in case of emergency, or to see it on a computer screen…These are dreams, my friend, but we are making progress, and with the arrival of the *perico* season, we are developing a fluid radio system both as backup and to provide necessary information…"

Meanwhile, silence has temporarily fallen on the diplomatic dispute between Peru and Chile over their maritime border, a dispute that the Peruvian deep-sea artisanal fishing fleet have learned to live with, and adapt to.

For more

www.defensamarina.org
Defensa Marina

http://es.wikipedia.org/wiki/Controversia_de_delimitaci%C3%B3n_mar%C3%ADtima_entre_Chile_y_el_Per%C3%BA
Wikipedia Entry in Spanish

Fishmeal fishery

Golden goose or albatross?

Behind the apparent success of Peru's fishmeal export industry lies a sorry tale of low efficiency, and high environmental and social costs

After the boom years of the 1960s that bust in the 1970s, it is boom time once again for Peru's fishmeal industry. Preliminary figures for 2006 indicate that Peru's export earnings from fishery products (both fishmeal and for direct human consumption) reached historic levels of around US$1,761 mn, an increase of 7.9 per cent over 2005. Despite a 30 per cent drop in production, fishmeal retains its place as the jewel in Peru's fishery export crown. At around US$1.136 bn, the estimated fishmeal export earnings in 2006 are slightly down on 2005.

But this is rather cosmetic, as behind this success story lies a huge, unaccounted cost, which Peru can ill afford. The annual extraction of 8-10 mn tonnes of anchoveta, a mainstay of the entire marine food web of the Humboldt Current large marine ecosystem (LME), is homogenizing Peru's rich marine biodiversity and destabilizing the marine ecosystem.

In 2006, a World Bank-commissioned evaluation report on Peru's marine fisheries sector, described the Peruvian industrial fishery for anchoveta as "being overcapacity in the fleet and processing sectors; displaying low efficiency; causing significant losses in rent and high environmental and social costs for the Peruvian State; and generating huge foreign-exchange earnings that benefit a minimal fraction of the industry."

This report highlights the fact that the fishmeal export balance sheet does not account for the:

- impact on the wider marine ecosystem, the food web, and the sustainability (and development prospects) of Peru's other fisheries, particularly the artisanal fishery;
- impact of fishmeal production on the wider coastal environment (the impact of waste discharge into the sea, air and land), and on the health of the coastal-dwelling human populations;
- highly skewed distribution of benefits, with Peruvian society at large gaining precious little from the relatively large earnings being made (at high, externalized, environmental and social costs); or
- opportunity costs of transforming all the anchovy catch into fishmeal, even as malnutrition and poverty affects 40-60 per cent of the Peruvian people.

The 'Anchovy Week' campaign took place in Lima from 4 to 10 December 2006. Organized by the newly formed Sustainable Environmental Centre (CSA), based at Peru's Cayetano Heredia University, Anchovy Week targeted the highest socioeconomic sectors of Lima's population. It aimed to change the image of anchoveta as food fit only for animals or the poor, into a luxury, gourmet product, and to stimulate investment in the production of anchovy for direct human consumption. The campaign also drew attention to the need to ensure:

- the sustainability of Peru's marine resources;
- the long-term economic viability of Peru's fishery enterprises;
- that future generations should not bear the costs of today's fishmeal factories; and
- that fishery activity contributes not only to wealth creation, but

also to sustainable development and the reduction of malnutrition in Peru.

According to the organizers, all the above is achievable if "less fishmeal is produced and more anchoveta is consumed".

Currently, the Peruvian State receives as revenue only around US$1.15 per tonne of anchoveta landed (a total of some US$9-12 mn annually, given declared anchoveta landings of 8-10 mn tonnes), which is used to cover the costs of fisheries administration and research. This is a pittance, compared to the earnings of the fishmeal sector as a whole, and can hardly be described as correct practice.

Marcos Kisner, a Peruvian fisheries specialist, points out that as one tonne of fishmeal requires around 4.4 tonnes of anchovy, every tonne of fishmeal exported generates just over US$5 for the State. Given average 2006 prices of around US$600 per tonne, and today's prices of around US$1,400 per tonne, the Peruvian fishmeal sector is making windfall profits.

Put another way, the Peruvian government is incurring a significant loss of potential revenue. Kisner argues that as it uses natural resources of such national and international importance, the fishery sector, as a whole, should contribute to the State's coffers in proportion to its earnings.

The January 2007 flotation of Peru's fourth-largest fishmeal company, Copeinca, on the Oslo Stock exchange shows just how large private earnings are. With 37 vessels and five processing factories, Copeinca reportedly grossed earnings of US$90 mn in 2006, boasting an operating margin of 40 per cent. In other words, the earnings of just one company are around 10 times the total annual revenues that the Peruvian State receives from fishing. The opportunity cost of allowing a privileged few to squander Peru's rich fisheries in this way is enormous.

Given the huge levels of investment required to improve the catching, landing, processing and distribution of fish to meet the demands for direct human consumption, the State can ill afford such huge losses of potential revenue not to mention the costs of managing and regulating the fishery; training; research and development; and combating illegal fishing.

Same prospects

As regards sustainability, the Peruvian fishmeal industry today faces the same problems, and perhaps the same prospects as it did in the boom year of 1971, just prior to its spectacular bust. The fishing fleet has the capacity to catch four

to five times the anchovy stocks available in years of abundance (when there are no ENSO events). In a single day, the fleet can catch over 100,000 tonnes, reaching the annual quota in just three or four months.

The processing plants have a combined processing capacity of 146 mn tonnes—20 times the allowable catch in years of abundance. Overcapacity is the cause of fierce competition both for fish and raw material for processing. It also encourages under-reporting and illegal fishing (notably within the five-mile zone reserved for artisanal fishing and conservation), and the use of fish species reserved for human consumption, like mackerel and horse mackerel, for fishmeal.

Catching such large quantities of anchoveta deprives other fish species of commercial importance, and guano-producing birds and marine mammals of their main food source. Patricia Majluf, Director of the CSA and 2005 winner of the Whitley Gold award for her conservation work, points out that such a large extraction of biomass affects the resilience of the ecosystem (its ability to withstand stress and to recuperate), in which the anchovy stocks represent an important cushion.

A recent study on fresh-fish landings from the artisanal fishing sector in Peru, commissioned by the International Collective in Support of Fishworkers (ICSF), highlights a related issue: the homogenization of the fishery ecosystem, and the implications of this for the livelihood and food security of the coastal populations.

The report draws attention to two main trends. Firstly, statistics have been manipulated to show that fresh-fish landings have kept pace with population growth. If these manipulations are discounted, fresh-fish landings show a decline of 40 per cent over the seven-year period 1998-2004. But in the last decade, the number of artisanal fishermen landing fresh fish has almost doubled, from between 30,000 and 50,000 in 1996 to between 80,000 and 100,000 today. A 1996 census recorded 6,200 artisanal fishing vessels; another, carried out in 2005, showed the number to have increased to 9,090.

Official statistics show that in 2004 around 40 per cent of the fresh-fish catch, some 150,000 tonnes, originated from "other" (that is, unknown) ports, while catches from known ports had reduced from around 250,000 tonnes in 1997 to 200,000 tonnes in 2004. The report claims that a large proportion of the fish from unknown ports is, in fact, imported. It also points out that in 2004, around 25 per cent of the catch comprised one species the giant squid, locally known as '*pota*'.

From insignificant levels in 1998, today *pota* forms a major part of the artisanal (and industrial) fish catch, but due to its low unit value and technical processing problems, fishermen's incomes have reduced. *Pota* has almost entirely replaced hake in fish landings, a fish that has been subject to intense fishing pressure and which is highly dependent on anchoveta as a source of food.

Majluf contends that "although while there is no conclusive evidence that we are overexploiting the anchoveta, it is certain that we are overexploiting the ecosystem. But that does not mean that we should stop our industry. Rather, what we need is an industry that is managed from a wider perspective. We have long known that overfishing of anchoveta causes the demise of other species. But when you ask IMARPE (Peru's Marine Institute) about this, they reply that they have studied each species, but separately. They don't make the ecosystem connections".

Meanwhile, unlike other industries, no effective environmental regulations are applied to the fishmeal processing industry. No maximum allowable limits are applied to the discharge of effluents, solid, liquid or gas, from fishmeal plants.

Premier city

Nelly Luna Amancio writing in Peru's *El Comercio*, describes the seabed around Chimbote, Peru's premier fishmeal city, as a dead zone covered with sediments over 1-m deep, and the air as a toxic mixture of sulphurous gases and vapours. There are 24 fishmeal plants that discharge liquid waste in Chimbote, but only seven are authorized to do so by the

Directorate-General for Environmental Health (DIGESA).

Processing such large quantities of fish into fishmeal also raises important questions about equity and social justice. Alongside resource richness and private accumulation of wealth, over half the Peruvian population—some 15 mn people—live in conditions of critical poverty, unable to meet their basic needs for food, health, education, clothing or shelter. Meanwhile, according to the United Nations Educational, Scientific and Cultural Organization (UNESCO), one in four under-five Peruvian child suffers from malnutrition.

According to Gastón Acurio, a Peruvian chef of world renown and one of the co-organizers of the Anchovy Week campaign, if 10 per cent of Peru's fishmeal catch was channelled into massive, targeted nutritional campaigns, Peru's malnutrition levels could be reduced by half. Therefore, in a sense, the current model of fishing in Peru robs millions of Peruvians of their right to a healthy diet.

But, as Marcos Kisner explains, "Nobody is proposing that 8 mn tonnes of anchovy should end up as food, and neither will it replace sea bass *cebiche*. Rather, what we need is a national policy that assures the possibility for, and access to, healthy nutrition for children.... Another reason for scepticism is that no one wants to replace white-fish fillets with anchovy. Just as some children may reject milk or other food that they don't like, and mothers must force them to consume these because they are indispensable for their nutrition, the same goes for anchovy."

"Anchovy should be made available to the public at a low price in various forms." He continues. "Mothers have the responsibility for getting their children used to it. Moreover, by encouraging an anchovy-eating habit, we are creating conditions for the healthy development of our children. It is this segment of the market—children and pregnant mothers —for whom the resource should be prioritized. Those who can, and those already of adult age, can go on eating other fish, and perhaps from there, they may develop a taste for anchovy. Records show that prior to the Spanish conquest, catching, drying and trading anchoveta for human consumption was well organized, and that the Incas used to organize regular transport of anchovy to the high plains for distribution to the local population.

Peru's recently elected government has declared war on malnutrition, part of which includes the promotion of mass consumption of anchovy. Under Supreme Decree 002-2007, the National Food Assistance programme of the Ministry for Women's Affairs and Social Development is now required to allocate not less than 8 per cent of its budget to the purchase of products based on anchoveta and *pota*. The Ministry of Production and the Institute for Fisheries Technology are to work alongside the Defence, Interior, Health, Employment and Women's Affairs Ministries to develop programmes for the production and supply of anchoveta-based products. These are to be distributed through various Ministries, to provide food for police and military personnel, as well as for poorer sections of Peruvian society.

Peru also recently signed an agreement with Japan, through the Japanese International Co-operation Agency (JICA), for the "Responsible Fisheries Development of Anchoveta for Direct Human Consumption". In addition to government food-aid programmes, the private sector is also to be closely involved in this initiative, catching, processing and commercializing anchoveta for direct human consumption.

The five-year programme envisages the use of improved anchoveta handling and storage on board artisanal fishing vessels, and the use of low-cost and hygienic processing methods, with technical assistance from Japan.

Good business

But commercializing anchovy products for direct human consumption could also make good business sense both nationally and internationally. Canned anchovy from Peru is gaining ground in many foreign markets, notably in Africa, where there is a high demand for low-cost products with a high nutritional value.

According to Alfonso Miranda Eyzaguirre, Peru's Vice Minister for Fisheries, in 2000, practically no anchovy was landed for human consumption. In 2006, more than 50,000 tonnes were landed for direct human consumption. The value of canned anchovy exports from Peru reached US$847 mn in 2005, with the main destinations being Colombia (US$202,800), Italy (US$190,900), Angola (US$174,400) and Zaire (US$81,700).

The Anchovy Week campaign demonstrated that, with imaginative preparation, professional marketing and promotional campaigns, anchoveta could also become a luxury food in Peru, as popular with the yuppie set as Pisco Sour. During Anchovy Week, fresh anchovy was selling in Lima's supermarkets for US$0.5-1 per kg, and stocks were quickly sold out. In all, around 18,000 people tasted anchovies during the Anchovy Week in the 30 participating restaurants. Some earned over US$500 per day from the anchovy dishes sold during the week. Of 600 people surveyed in these restaurants, 95 per cent liked them and would eat them again.

But redirecting Peru's fishing fleet to catching anchovy and other fish for direct human consumption, and establishing the infrastructure and economic support necessary to enable wider consumption of fish, faces many challenges. First and foremost is the problem of how to restructure and rationalize the fishmeal sector.

Currently, the overcapacity debate in Peru is focusing on how to reduce fleet capacity. Options under discussion include the application of an individual quota system (as proposed by the industrial fishing organization, SNP), installing refrigerated fish-holds (to reduce vessel capacity by between a half and a third, also improving the quality of the end product), and vessel buyback and conversion schemes (to fish for mackerel and horse mackerel for human consumption).

But perhaps the biggest problem, as highlighted by Kisner, is that Peru's fisheries "are submerged in waters of political indecision. The absence of long-term policies with an ecosystems approach leading to a technically based structural reform of the sector, directed by decisionmakers with the capacity to provide leadership and capable of resisting the temptations that come with power, is what has brought the sector to the sorry state it finds itself in today."

All this makes Peru's anchoveta fishery for fishmeal look more like an albatross than a golden goose.

This article, by Brian O'Riordan (briano@scarlet.be), Secretary, ICSF Belgium Office, is based on various sources, including Oannes (http://www.oannes.org.pe/), Patricia Majluf (http://www.conam.gob.pe/documentos/Analisis_ambiental/CEA%20Per%C3%BA%20-%20Evaluaci%C3%B3n%20Ambiental%20del%20Sector%20Pesquero.pdf), Marcos Kisner Bueno: (http://pescasostenible.blogspot.com/) and Pesca y seguridad alimentaria (http://www.cooperaccion.org.pe/publicaciones2.php?id_publicacion=0087)

Fishworker organizations

A change of guard

The new leadership of Peru's main fishers' organization aims to improve the productive and commercial capacity of the artisanal sector

Viva FIUPAP! Long Live FIUPAP" shouts Victor Solis, Chairman of the Electoral Committee. "VIVAAA!"

The shouts echo off the shiny walls of the auditorium. Tired faces, after an almost sleepless night, light up to cheer their organization, the Federación de Unificación e Integración de los Pescadores Artesanales del Perú (FIUPAP), which has just completed its Sixth Congress in Huampani, a holiday resort some 30 km from Lima.

"Viva FIUPAP!" repeats Ramón Agama, the new Secretary General. And the cry is taken up by Pedro Cornejo, his electoral adversary, Claudio Nizama, the outgoing Secretary, the 109 delegates and dozens of observers from the *caleta*s.

With the federation's programme already unanimously approved, it only remained to decide who is to occupy the driving seat during this new phase of the organization. In a highly civilized atmosphere of mutual respect, the fishermen placed their votes for the final decision of the day.

Without any doubt, the demand in which everyone is united is the defence of the five-mile zone as a reserve for the protection of flora and fauna and for the exclusive use of artisanal fishing.

The delegates present at the FIUPAP Congress rejected, without any hesitation, the entire set of rules that had recently attempted to alter this legally consecrated right, and did not hold back in condemning a small group of organizations from the south of the country, who had agreed to the industrial fleet accessing a 37-km corridor bordering the frontier with Chile. Some of them had already sanctioned the leaders who signed up to this agreement.

In Peru, there seems to be a general consensus on respecting the five-mile zone. At least by word of mouth, government and industry representatives agree on the exclusive rights for artisanal fishing in this zone. The debate has centred on Peru's southern coastal strip, where the bathymetry shows a much steeper falloff than in the north, and, most importantly, the anchovy, the target species of the fishmeal fleet, is found much closer to the coast in the south in winter.

The anchovy—a pelagic species that is very abundant in Peru's rich waters—can support annual catches of more than six mn tonnes, except when the El Niño phenomenon dilutes the cold Peruvian Current (also known as the Humboldt Current) and nutrient upwellings are reduced to a minimum. Scientists recognize the presence of two stocks, one north and the other south of parallel 12 degree (more or less level with the capital, Lima). The latter is a stock shared with Chile, and accounts for about 15 per cent of Peru's annual anchovy catches. However, it is the cause of passionate disputes.

The problem is that the industry's processing schedules are established on the basis of catches made during short trips to areas off the coast near to the fish plants. In the south, during autumn, the anchovy occurs in large volumes far from the coast during its northward migration from Chilean waters.

Industrial sector

But in winter, when it moves in the opposite direction, it comes very close to the coast. Thus, the industrial sector, prevented from accessing the resource

due to the pressure of the artisanal sector, accuses its leaders of "working for the Chileans".

Government representatives argue that the five-mile zone should be strictly respected, but for "geopolitical reasons", the industrial fleet should be allowed to catch anchovy in this zone in winter. "It is only 37 km long and there are hardly any artisanal fishermen," they insist.

But the artisanal fishermen fear that if they accept this exception, the "windows of penetration" will be transformed into a heaven for the industry and a hell for them, with growing pressure to extend the "exception".

The artisanal fleet (some 6,000 vessels) is not allowed to catch fish for fishmeal, although many vessels in the sector—the so-called 'Vikings'—do it illegally. They are *bolichito*s (wooden purse-seiners) that are on the more capital-intensive extreme of what qualifies as artisanal fishing.

Most of the vessels in the Viking fleet, which number more than 600, are already over 30 gross registered tonnes (GRT), the demarcation limit between the artisanal and industrial sectors. It is a highly dynamic and mobile sector, and most of all, difficult to manage. Frequently avoiding the use of satellite monitoring systems and catching fish that ends up in the fishmeal plants, it provides yet another battlefront for the artisanal fishermen.

The greater part of the 700,000 tonnes of fish that is caught in Peru for human consumption is provided by the artisanal fishermen. Jack mackerel (*jurel*) forms part of the average diet for coastal Peruvian families.

However, for several years, the star product of the Peruvian artisanal fishery has been the giant squid, or *pota* (*Dossidicus gigas*), which, in size and weight, is larger than a man, reaching such sizes in 14 to 18 months, and dying after spawning. Fishermen catch it mainly by hand jigging, gutting it on board their small boats, and selling it as tubes with skin on at the quayside. Catches are large, amounting to 75,000 tonnes a year, but the prices obtained are miserable.

Export business

"The quayside prices they pay us are 12 *centime*s (around US$0.04) per kilo," said a fishermen's representative from the north during the FIUPAP Congress. But semi-processed squid products, like frozen open, skin-on, squid mantles, fetch around US$ 0.60 per kilo on the international market. This is a business that is mainly undertaken by fish buyers and exporters. Artisanal fishermen's organizations have not yet managed to develop the negotiating capacity to get a

fairer price for their semi-processed landings.

The vast diversity of demersal and pelagic resources caught by artisanal fishermen (some 200-odd species) means that there are several issues that face the sector. However, as in the case of the squid, the problems of income distribution, related mainly to the scarcity of some resources and the low price of others, are common to nearly every *caleta* and inland fishery. Despite the fact that the Peruvian State invests relatively large sums in aiding the sector, with support from international development bodies such as AECI (the Spanish Agency for International Co-operation), these investments still follow the logic of the buyers more than the sellers, assuring a concentration of supply and quality standards, but not distributional equity.

These are not the only problems of a commercial nature. At the FIUPAP Congress concerns were also raised about products coming into Peru from Chile to replace the reduced landings from the artisanal sector in the domestic market.

For Peru's artisanal fishermen, the United Nations Convention on the Law of the Seas (UNCLOS) is almost a swear word. They are firmly convinced that if Peru adheres to this international convention, it will lose sovereignty over its 200 miles and an "UNCLOS Committee" (which does not really exist) could decide to let foreign fleets enter this zone, thereby affecting their resources.

What is certain is that the Peruvian Constitution has established 200 miles as the country's territorial sea (or *mar de grau*), and that if the country ratifies UNCLOS, they will have to accept that the territorial sea will be reduced to 12 miles, and the remainder will become part of the exclusive economic zone (EEZ). For Peruvian artisanal fishermen, "the defence of the 200 miles for Peru" is as non-negotiable as the defence of the five miles for their sector. And up to now, all reasoned arguments put forward to convince them that there is no danger of foreign fleets freely entering if Peru were to sign up to UNCLOS have proved ineffective.

The FIUPAP Congress ratified this position, recent demonstrations in the south of the country supported this decision, and the new Secretary Ramón Agama, firmly maintains this traditional attitude of the sector.

Emotional goodbye

The emotional and respectful goodbye to the veteran leader Claudio Nizama opened the way to a new generation of leadership. Ramón Agama, representing Sechura fishermen, is a man in his 40s, of a serene aspect, who showed surprise

when his colleagues elected him General Secretary.

He seems like a man with no personal ambitions, and thanked his supporters in simple words. "Artisanal fishing is undergoing definite changes," he affirmed, "Technological progress is absolutely vital, because fishery resources are becoming scarcer due to overfishing by the industrial fleet and the catch of juveniles, which is hardly controlled."

Ramón Agama's main worries include the need for permanent communication with the mass base of his organization, through regional visits and increasing use of email. The new General Secretary believes in working to improve the productive and commercial capacity of the artisanal fishing sector. But he is not abandoning the mother of all battles: the closing of the "windows of penetration" or the "perforations" in the exclusive artisanal zone. That will continue to be one of the main lines of work for FIUPAP. "The windows of penetration are now on standby, and that is a big worry for all of us," says Agama. "The windows of penetration could serve as a legal instrument that might be used to open up other parts of the coast, using the same arguments as applied in the south. Meanwhile, our bases are alert to any ingress of industrial vessels inside the five miles, and we, as a federation, are also on the alert to ensure that this is not repeated in other parts of the country."

FIUPAP's new General Secretary is explicit: "That law should be eliminated, keeping it in suspense is a hidden danger for Peruvian artisanal fishing activities."

This report, by Ernesto Godelman (godelman@cedepesca.org.ar), President of CeDePesca, who attended the FIUPAP Congress, was translated by Brian O'Riordan (briano@tiscali.be)

Industrial fisheries

On the verge of collapse

The Peruvian fishing industry is in serious financial crisis, as corporate earnings dwindle

Industrial fishing in Peru, which is primarily export-oriented, is undermining the sustainability of fish stocks, mainly due to uncontrolled fishing to supply the fishmeal industry. Since virtually all species are used indiscriminately in fishmeal production, industrial fishing adversely affects marine biodiversity.

It also disadvantages artisanal fishers, an important social sector that suffers from significant levels of poverty. The vast majority of fishers in Peru are artisanal and the sector produces greater spin-off through employment opportunities than industrial fishing.

The Peruvian fishing industry is in serious financial crisis, with its economic sustainability undermined as corporate earnings dwindle, leading to reductions in tax revenues. The unsustainability of industrial fishing is illustrated by the fact that while ports in the northern Piura region have traditionally provided the greatest quantity of fresh fish in Peru, catches have dwindled.

Statistics show that landings from "other ports" have now replaced them. The fish from "other ports" is, in fact, of Chilean origin. Its inclusion in the official data has tended to hide the depletion of Peruvian stocks by industrial fishing and the consequent effects on artisanal fisheries and fish consumption, which would otherwise have been very evident.

In 2004, fish ranked as Peru's second most important source of export earnings, bringing in US$1,382 mn, an increase of 35 per cent on the previous year's earnings. The earnings come mainly from fishmeal and oil. The collapse of the industrial fisheries in Peru would severely affect the economies of coastal cities. It would also have negative impacts on the national economy, given that fishing is such a key element of the economy.

In extractive activities where resource ownership is determined at the moment of extraction (fishing, forestry and livestock grazing, among others), the market fails to recognize the true value of collective resources and, as a consequence, inefficiently allocates such resources. For example, the market does not consider the economic and social value of intact forests for local communities. It focuses, instead, on the value of commercial forestry activity. This bias results in excessive capital investment in the extractive sector, increasing the risk of overexploitation.

This is precisely what has happened in the Peruvian fishing industry. Following the El Niño of 1998, the overcapitalized fish industry crashed and banks were forced to intervene and bail out the industry. Evidently, the regulation of fishing activity is essential. Without controls, fish extraction would depend solely on population size and fishing efficiency.

There are two basic types of fisheries regulations:

- biological regulations, whose objective is to avoid the destruction of the fish population that is subject to exploitation; and
- economic regulations, whose objective is to dampen the race to fish existing stocks and to avoid excessive investment in the sector —two factors that place fish stock stability at risk.

Diverse instruments

Biological regulations make use of diverse instruments. The use of such instruments

is described below, providing an overview of fisheries management in Peru in recent years.

Jorge Csirke, Director of the Marine Resource Service at the Food and Agriculture Organization of the United Nations (FAO), has published a study on anchovy fishing that includes an economic model for profit generation in the long term, according to the quality of fisheries regulations. The study reveals that economic returns are directly proportionate to the effectiveness of fisheries regulations.

Many actors involved in Peruvian fisheries describe it as poorly controlled. Most fishers indiscriminately harvest fish, regardless of the species, to service the fishmeal industry. Just recently, a law was adopted that requires the suspension of fishing activity when coastal resources are present in industrial catches. It is hoped that the law will be enforced.

Also of concern is the capture of hake for freezing. This demersal species is primarily found in the north, off the coast of Piura. It was predominantly hake catches that fuelled the expansion of frozen-fish production in recent years. The species is once again in crisis due to overfishing.

Access to a particular fishery is regulated through licences. In 1991, Peru adopted the *bodega* licence system, under which a global catch limit for each species was imposed on the fishing fleet. A new licence cannot be issued to a particular boat until an existing licence, with the same capture volume, is cancelled, thereby maintaining the global limit. Multiple strategies have been adopted to circumvent this system, including the use of licences for horse mackerel (and other 'underexploited' species) to fish anchovy or sardines, which are found closer to the shore. In the case of sardines, this practice continued until the species went into decline.

Shortly before the El Niño of 1998, a fishing census was undertaken. It revealed the presence of a significant number of vessels without licences or that possessed a greater fishing capacity than that declared to the authorities under the *bodega* system. Despite the importance of these findings, nothing has been done to address the problem to date, more than six years after it was recognized.

The installation of refrigerated holds in fishing vessels represents an opportunity to reduce the catch capacity of vessels as it limits the space available for fish storage. Refrigeration also facilitates the delivery of better-quality fish and leads to less unemployment than would have occurred with a reduction in the fish fleet.

Recent debate in Peru has centred around the Viking fleet. This fleet of small purse-seiners has been increasing its fishing activity, which often takes place within the 5-mile artisanal fishing zone. The fleet fishes species used for fishmeal production, which has adverse impacts on coastal resources.

Since the adoption in 1992 of the 5-mile zone reserved for artisanal fishing, a number of conflicts have occurred in Peru. The situation was exacerbated in 1998 when the impacts of El Niño adversely affected the coastal species that are fished by artisanal fishers. A good example is Peruvian silverside (*pejerrey*), a small smelt-like fish widely eaten locally, which is now captured off the central coast for fishmeal production.

A bitter debate has been raging on the effectiveness of the satellite control system for fisheries management, and a programme for the monitoring, control and surveillance (MCS) of fishing and landings was recently approved. It is hoped that the programme will be effectively implemented. In the case of hake, a system is used that restricts access to certain fishing areas (north or south of particular lines of latitude), according to vessel type.

Minimum catch size

Ministerial Resolution No. 209-2001-PE, adopted in June 2001, establishes minimum catch sizes for individual fish and minimum mesh size for nets. Net mesh size is used to influence which fish are captured. The smaller the openings, the greater the chances of catching increasingly smaller fish. The most widely used net is the 'anchovy' net. It has the smallest openings, at half an inch. During

the 1980s, sardines were frequently caught using the anchovy net, whose openings are an inch smaller than those of the sardine net.

Since the 1990s, licences for horse mackerel include the use of a net with a 1.5-inch mesh (the 'sardine' net). For the capture of horse mackerel and mackerel by trawlers, the minimum net opening size is 3 inches, which is much larger than that used to capture these species with purse-seine nets.

With respect to minimum fish size, the abovementioned Ministerial Resolution establishes a limit of 12 cm (4.7 inches) for sardine and 26 cm (10.2 inches) for anchovy. Only 10 per cent of the catch volume can be composed of fish that are smaller than these limits. For horse mackerel and mackerel, the minimum size requirements are 31 cm (12.2 inches) and 32 cm (12.6 inches), respectively. As much as 30 per cent of the catch volume can be composed of fish that fail to conform with these minimum limits (that is, are smaller), representing one of the highest levels of tolerance to non-compliance.

In October 2001, Ministerial Resolution 349-2001-PE, which concerns anchovies, lifted minimum size requirements and net opening regulations for horse mackerel and mackerel. The rationale for such a move was that marine biological conditions permitted the capture of juveniles. It was explained that the annulment would be maintained until such time as conditions no longer supported it. However, the conditions were never identified or qualified.

In January 2004, complaints were made that as much as 80 per cent of the horse mackerel catch in Chimbote comprised juveniles. The government response was that such catches are inevitable when fishing for mackerel.

However, mackerel fishing is not undertaken in Peru with purse-seine boats. The Peruvian government further claims that juvenile capture will not adversely affect the stock.

There is a serious problem in Peru regarding access to fisheries information. Reports from the Production Ministry (formerly the Fisheries Ministry) are incomplete and out-of-date.

Data about fresh fish catches have practically ceased to be divulged. Despite the paucity of data, fishermen confirm that catches of mackerel and, in particular, horse mackerel, contain juvenile fractions that exceed permissible levels.

Small specimens

The same thing has happened with hake. A minimum-size requirement exists but, in practice, catches include higher percentages of small specimens than they

should. Various legal provisions that govern fishing activity are not put into practice.

Horse mackerel is a highly migratory species that has a significant area of distribution in the Pacific. This means that it is difficult to estimate the biomass of this species and to quantify and control catches. The Peruvian government has categorized this species as underexploited, and a North Korean vessel has received a three-month licence to fish horse mackerel. The vessel has the capacity to process 15 tonnes of horse mackerel per hour and has a 2,000-tonne storage capacity. The Peruvian government receives a paltry sum in compensation: US$10 per tonne of fish registered with the vessel.

Bans or closed seasons (usually for three days) are established during the reproduction stages of the fish (spring and summer), when the fraction of juveniles in the catch exceeds the percentage permitted or if the global capture quota has been reached. During a ban in 2002, exploratory fishing and provisional fishing programmes of short duration were permitted, resulting in the capture of 3 mn tonnes of fish.

The efficiency of existing MCS activities, including a satellite monitoring system and catch-landing inspections, has been questioned at different times. While it is true that a fisheries administration system cannot be based exclusively on controls and sanctions, it is also evident that a system that grants impunity for multiple breaches of rules is not effective. It is the perception of the vast majority of actors involved in Peru's fisheries that the latter is the principal characteristic of MCS mechanisms in the sector.

In Peru, as in other marine ecosystems, the long-term marine biological cycles include alternating periods of predominance between the anchovy and sardine species. There are also long-term patterns that include alternating, decade-long periods of cold climate (La Vieja) and warm climate (El Viejo). During these periods, both El Niño and La Niña, which are of shorter duration, can occur. Cold conditions favour anchovy (and other pelagic species), facilitating both larger catches and catches that contain juveniles. Finally, it is necessary to evaluate claims made in recent years regarding the behaviour of hake and decisions to regulate its capture, as well as the dimension of the recent crisis in this fishery.

Financial crisis

The El Niño of 1998 generated a major financial crisis in the overextended (and indebted) fishing industry in Peru. The situation was also influenced by the Asian financial crisis, which caused fishmeal

prices to crash. As a consequence, industry creditors (mainly, banks) seized administrative and financial control of many fishing corporations.

According to the Biomass Protection Fund (the commission formed by the Minister of Fisheries), fisheries debt rose on 31 May 1999 to US$1.885 billion. According to Asbanc registries, the debt was at US$1.3 bn in March 2001. In March 2003, the former president of the National Fishing Society announced that the debt had fallen to less than US$1 bn.

Although precise information is not available, it is believed that this debt reduction has been accomplished not by paying back, but rather, through the sale of equipment, and that some debt has been converted into equity for the creditor banks.

An important issue concerns the adverse impacts of the fishing industry on artisanal fishing activity. Given the scarcity of information available, it is difficult to quantify these phenomena. Our understanding is primarily based on empirical evidence regarding reduced catches from fishermen along the entire coast.

Fish imports (fresh and frozen) from Chile have been present in Peru for various years and have grown significantly in recent years. The demand for inexpensive fish (Chilean, relative to others) has been growing. The influx of Chilean fish makes the reductions in Peruvian catches less visible in fish markets.

The species that has most increased in terms of fresh landings is horse mackerel, the principal Chilean import (although other species also enter which are widely seen in Lima supermarkets and neighbourhood markets). The increase in horse mackerel is largely responsible for the important rise in catches.

Other empirical evidence involves the Peruvian silverside. Prior to the El Niño of 1998, the species was prominent along the central coast of the country. Peruvian silverside was widely eaten in coastal communities and its processing (gutting) generated many jobs. Since the El Niño, Peruvian silverside landings have supposedly more than doubled. However, its scarcity along the central coast is all too apparent. Despite local scarcity, the silverside is used to prepare the most abundant, inexpensive *cebiche* in Lima. Clearly, the Peruvian catch is being augmented with fish caught in Chile.

Tightening control over extractive fisheries would imply the exclusive use of anchovy for fishmeal production, and would require a restructuring of the MCS systems. Clearly, political will is also required for the effective governance of the resource and to ensure that short-term benefits are not determinative. If industrial fishing activity were better controlled (through enforcement of species and geographical limits, among other measures), the artisanal fishing conditions would improve.

This article is by Juan Carlos Sueiro (jcsueiro@cooperaccion.org.pe) of the Coastal Consortium for Sustainable Development

Five-mile zone

The Holy Grail

This article examines the background to the changes now being proposed for the status of the artisanal fishing zone in Peru

In several Latin American countries, the complementary objectives of securing artisanal fishing rights and conserving marine resources are enshrined in law. Thus 'artisanal fishing zones' have come to be recognized as special kinds of marine reserves, where small-scale fishing is allowed to take place without interference from larger-scale activities. Intensive, non-selective and destructive fishing activities (often referred to as 'industrial fishing', and geared to the production of fishmeal) are banned from these close-to-shore zones. The recognition of reserved artisanal fishing zones has, in many cases, come after long and hard-won (and ongoing) struggles, particularly in the two neighbouring Southern Cone countries of Chile and Peru. Here 'exclusive artisanal zones' have been established within a boundary of five nautical miles from the shoreline.

Despite these advances, artisanal fishing zones are subject to continuing incursions, both legal and illegal, by industrial and large-scale fishing operations. Clashes are also increasingly prevalent between artisanal fishing communities and aquaculture enterprises. Again, aquaculture enterprises may operate both legally (through being granted concessions) or illegally. In some Latin American countries, aquaculture enterprises have been set up illegally following violent (often armed) seizure of land and the intimidation of local communities through killings and torture.

In addition, it is an unfortunate fact of life that some government functionaries are not impartial actors in the decision- and law-making processes. In many countries, the investment sector (for intensive aquaculture and industrial fisheries) often carries more political clout than small-scale fisheries. Worse still, high-ranking government officials may also be the captains of those very industries seeking to gain access to conservation areas reserved for artisanal fishing.

In Chile, Ecoceanos News of 15 October 2004 reports that allegations of 'illegal enrichment' have resulted in a Special Parliamentary Commission being set up to investigate the 'black market' in aquaculture concessions. Aquaculture concessions are allocated free of charge, and with no time limit set. The only requirement is the payment of a nominal annual charge of between 60,000 and 120,000 pesos (approximately US$100-200). The owner is then free to lease or sell these freely acquired concessions. Ecoceanos reports that in some regions such concessions may sell for as much as US$1 mn.

In August 2001, the Chilean Fisheries Subsecretary, Daniel Albaran, resigned amid allegations of corruption and professional misconduct. Albarran was, at the same time, the chairman of several aquaculture enterprises and Fisheries Subsecretary. In his public function, he was responsible for approving large numbers of aquaculture concessions. In business, he had an interest in how concessions were allocated. He may well come under the scrutiny of the Parliamentary Commission.

Aquaculture concessions

Likewise, in Peru, the handing out of aquaculture concessions in traditional fishing areas, in both the coastal areas and inland waters, has been strongly criticized. There have been fierce conflicts between artisanal fishermen and aquaculture enterprises over issues of

access rights in several fishing communities along the coast—Chimbote, Samanco, Casma, Callao, Pisco and Ilo.

Given a situation of increasing insecurity, and faced with growing threats to their livelihood rights from competing interests, artisanal fishworkers from Chile and Peru have recently committed themselves to establishing an International Commission in Defence of the Five-Mile Zone. The commission was established earlier this year during the Second Bi-National Peru-Chile Artisanal Fishermen's Meeting that took place in the northern Chilean city of Arica, from 1-2 July 2004. Then, in September 2004, in the Port of Ilo, Peru, the commission organized an International Forum on Artisanal Fishing to widen the network and to articulate more clearly the demands of artisanal fishworkers. In parallel, non-governmental organizations in the Southern Cone region, from Chile, Argentina and Uruguay, met in July 2004 to set up a Southern Cone Coalition to promote sustainable fisheries and social equity in the region.

In 1992, an area was legally reserved for artisanal fishing in the near-shore waters of Peru through Supreme Decree D.S. 017-92. This established the zone adjacent to the coast: "comprising the area between zero and five nautical miles, as a conservation zone for the flora and fauna that exist there". "Carrying out fishing activities for direct or indirect human consumption with purse seines, and with other methods, gear and fishing devices that modify the biological conditions of the marine environment" is banned. The decree was passed due to "the serious interference of industrial fishing fleets and fleets fishing for direct human consumption in zones declared as the exclusive reserve for the operation of artisanal fishing vessels." It recognizes the importance of this zone for "upwelling and the breeding of the principal fishery resources that sustain the fishery for direct human consumption", and the need to "establish measures conducive for its protection".

In 1995, another Supreme Decree modified some of these conditions, and clarified that the ban on purse-seining refers only to industrial fishing, and not to artisanal fishing. It also clarified that the 0-5 nautical mile zone is reserved for artisanal fishing and, as such, that artisanal purse-seines may be used in the zone, so long as they comply with the criteria set by the Ministry of Fisheries.

Fierce conflicts

But the permission granted to artisanal purse-seining activities in the five-mile zone has led to fierce conflicts in the northern region of Tumbes. Thus, in August 2004, the Peruvian Ministry of

Production was forced to call in the navy to establish control measures on the activities of the so-called *vikingos chicos* (little vikings) and *bolichitos* (mini-purse-seines) in the sea around Tumbes.

The 1995 modification also makes the ban conditional on the technical opinion of Peru's Marine Institute (IMARPE). And here lies the bone of contention for artisanal fishermen in the south of the country, notably those from the port town of Ilo. In February 2001, IMARPE published a technical report, titled *The Problematic of the Five Miles in the South of Peru and Technical Alternatives for its Management*. The report observes that, in the south of the country, the distribution and concentration of the main fishery resources are localized in the zone 10 miles from the coast. This is due to climatic and oceanographic factors, and the presence of a very narrow continental shelf. In this southern region, the shelf width averages five nautical miles, but ranges from a maximum of 13 nautical miles to less than two (compared to 70 nautical miles in the northern region around Chimbote).

IMARPE notes that the concentration of fishery resources becomes more pronounced in summer (between December and March), especially in the five-mile zone. Its report provides an overview of oceanographic conditions in the southern region, and describes the spawning behaviour of the Peruvian anchovy. Known locally as *anchoveta* (*Engraulis ringens*), it is the main species targeted by industrial fishing activities supplying the fishmeal processors. The report then goes on to describe the activities of both the industrial and artisanal fishery in the south of the country.

In Peru, some 700 marine species are legally classified according to whether they are destined for direct human consumption (some 150 species) or for industrial purposes (2-3 main species, including anchovy/ anchoveta—*Engraulis ringens* and *Anchoa nasus*—and sardine). In fact, it has recently become national government policy to mobilize supplies of fish (scad, locally called *jurel*, and mackerel, *caballa*) to address the problems of widespread malnutrition amongst the low-income segments of the Peruvian population. This has been enshrined in law through Supreme Decree D.S. 021-2004, which establishes special conditions for the catch of industrial fishmeal vessels to be used for human consumption. But FIUPAP is highly critical of this, pointing out that the industrial sector targeting these resources is already overcapacity. Rather, priority should be given to developing the artisanal sector and providing market support to ensure that fishermen obtain a fair price and low-income consumers an affordable food.

IMARPE's 2001 report documents the significant increase in fishmeal processing capacity since 1997 in the south of the country, and the resulting increase in fishing effort for anchovy, particularly in the summer. In the period 1990-95, the industrial fleet operating out of the port of Ilo remained more or less constant, reaching a maximum of 85 vessels in 1992. By 2000, vessel numbers had increased to 165, with a peak of activity in the summer months.

In the period 1991-92, more than 60 per cent of the southern industrial fish catch (for fishmeal) was taken within five miles of the coast. During the summer months between 1993 and 1997, this rose to 80 per cent. The report also notes that, in most years, anchovy represents more than 80 per cent of the industrial catch. It refers to an additional 10 species caught by the industrial fleet classified as species for human consumption, but claims that industrial fishing activities have had little impact on the mainstay species of the artisanal sector.

In a subsequent report on artisanal fishing in the zone 16˚S - 18˚20'S, IMARPE states that over the period 1996-2002, 65 per cent of the artisanal fishing fleet's activities were carried out in the 0-1.5 mile zone, and 99.5 per cent within the 2.5 mile zone. These observations have been hotly contested by the artisanal sector. They claim that part of the sector has been forced to retreat inshore to avoid interference from the industrial sector.

New sector

Also, in the last few years, a new deep-sea sector has developed, and artisanal

fishing boats range as far out as 150 miles to catch *perico* (*Coryphaena spp)* and sharks (*Tiburon diamante* and *Tiburon azul*).

The IMARPE study only looked at activities in the five-mile zone, and not outside it. As such, it provides an incomplete picture. Also, it only looks at interference between sectors, and not into sustainability issues. The Ilo fishermen, therefore, contest the validity of the report and its use for policy decision making.

The IMARPE report states that "due to the greater concentration of fishery resources in the coastal zone in the summer months, the application of a seasonal exception is justified in this period, that would allow for less interference with artisanal fishing.

As there is a much smaller artisanal fleet South of 18˚S (that is, up to the Chilean border), free fishing should be allowed in this area during this period." The report goes on: "One measure that could be applied is that when industrial fishing vessels fish inside the five-mile zone and catch fish classified as being for human consumption, these could be given to the artisanal fishermen," with the caveat that "so long as catch controls are improved for the by-catch of fish for direct human consumption. This would also require improving the port infrastructure (the artisanal fishing quays) and establishing marketing channels."

For the artisanal fishermen, the conclusions and recommendations provide stark prospects. According to IMARPE, the applicability of the five-mile zone law in the south of the country is not in line with the seasonal oceanographic variations and changes in species abundance.

They, therefore, recommend that "during the summer, there should be a seasonal exception to the five-mile law". This would involve allowing the industrial fleet to fish to within three miles of the coast in a belt of about 120 miles (16˚S to 17˚59'S). From 18˚S to the Chilean border, industrial vessels would be allowed to fish freely right up to the coast. "In all cases, by-catch of species for human consumption should be handed over to the artisanal fishing community."

In December 2003, these recommendations found their way into Peruvian fisheries law. Supreme Decree No 037-2003 calls for a special fisheries regime to be established for anchovy in the southern region, from 16˚S to Peru's border with Chile. It proposes that access be allowed to larger-scale purse-seiners to specified areas (so-called 'penetration windows') within the artisanal five-mile zone.

The law also establishes that a special, non-Statal, financing mechanism (FONDEMPASUR) be set up for the development and modernization of the artisanal fishing sector in the southern region. This is to be financed by a levy placed on each metric tonne of fish landed by licensed industrial fishing operations.

The law also specifies that all fish caught other than anchovy should be handed over to the authorities at the nearest artisanal fish landing quay, or to the most representative organization of artisanal fishermen. Permission is also given to the owners of artisanal fishing vessels to catch anchovy, and, under exceptional circumstances, sell it for human consumption.

In effect, the industrial sector is required to set up a compensation fund in exchange for being given these 'windows of penetration', and is being ordered to do the artisanal fishermen's work of catching fish for human consumption.

This decree is more or less exactly what the industrial fishing sector had been lobbying for. It is strongly backed by the southern fishmeal producers organization, APROSUR, which claims that in 2003, due to the lack of nationwide access to the five-mile zone, some US$ 95 mn worth of foreign exchange from potential fishmeal exports was lost to the nation, and further, that in the southern region, potential US$ 17.33 mn and 4,000 jobs were lost due to fishmeal plant closures. They say that the IMARPE report completely vindicates their claims.

Coastal fishing

"The (artisanal zone) decree applies to the whole coast without taking into account the difference in the nature of the coastline in the South and the North. While in

Chimbote, the shelf extends to 70 miles, in Ilo, it hardly reaches 3.5 miles. This means that the (southern) industrial fishing has to be predominantly coastal," they say.

They claim that reserving the five-mile zone for artisanal fishing makes their industry less competitive than Chile's. "The anchovy that is not caught by the Peruvian fleet is caught by the Chilean industrial vessels," they say. APROSUR and the National Society of Fishing Vessel Owners (SONAPE) have been actively organizing demonstrations and other lobbying efforts to raise public awareness and influence the political processes in their favour. The artisanal fishermen of Ilo have strongly challenged both the IMARPE findings and the claims of the industrial fishing sector. They accuse the Minister of Production, Javier Reátegui Roselló, of being both judge and jury, given his personal interests in the fishmeal industry. In their view, allowing 'windows of penetration' for the industrial fishery in the south is tantamount to ruining the fishery.

According to them, the anchovy and other fishery resources of the south represent a natural resource bank. It is of major importance as a feeding and spawning area, which is disrupted and harmfully transformed by industrial fishing activities. They claim that "measures like making exceptions to closed seasons in the south or making penetration windows in the border area for the industrial fishery are irrational, and undermine the sustainability of the fishery by not guaranteeing any resource or income for tomorrow."

They report that there are around 1,500 organized artisanal fishermen based around the port of Ilo. The main organization is the Sindicato nico de Pescadores Civiles del Puerto de Ilo Artesanales-Buzos (SUPABCPI), which is a member of the national artisanal fishermen's federation, FIUPAP. They claim that there are a similar number of unorganized fishermen in the region as well.

Artisanal fishing activities around Ilo, which are all aimed at producing food for human consumption, are diverse: mini-purse-seines (*bolichito*), gill-nets, high-seas fishing, launch (*pintero*) fishing, line fishing, shellfish gathering, and diving using both compressors and aqualung. Over the last 10 years, these activities have undergone considerable change. For example, there are very few launches (*pintero*) and gill-nets (*cortinero*s) today. The artisanal fishers claim that the root cause of these changes is the impact of industrial fishing.

Localized overfishing

On the one hand, the inshore sector has been increasingly pushed toward the shore to find areas inaccessible to

Final Statement of the Ilo Forum

The first International Forum on Artisanal Fishing convened by the International Defence Committee of the Five-Mile Zone, meeting from 29 to 30 September 2004 in Ilo, Peru, declares that:

The conservation of marine biodiversity and the protection of fishery resources are fundamental in assuring a supply of indispensable food for humanity, as well as in assuring the livelihoods of the communities that depend on fishing.

The coastal zone within five nautical miles is pre-requisite to the conservation of resources, providing an area for spawning, growing and nutrient upwelling, and, for these reasons, it should neither be subject to intensive fishing activities nor used as a dump for the industrial wastes that destroy it.

For these reasons, industrial fishing activities should be excluded from this zone, which should be used exclusively for artisanal fishing with selective and non-destructive fishing gear.

Under no circumstances should industrial fishing be allowed in this zone through 'windows of penetration'.

In order to ensure its own sustainability, the industrial fishing sector should try to overcome its dependence on fishing for fishmeal, and target a greater variety of species for producing value-added products, following the principles of responsible fisheries and with greater benefits for the fishing communities.

In order to ensure the sustainable management of fishery resources and the marine environment, as well as the full participation of fishermen in decisions that affect them, we demand that the FAO Code of Conduct for Responsible Fisheries be turned into an International Treaty with the force of law.

The application of individual transferable quota systems fragments and divides artisanal fishing communities, depriving them of their rights and transforming them into a low-cost workforce for the industrial sector, due to which we reject their implementation.

In the case of Peru, we demand the lifting of Decree 037 that establishes 'windows of penetration' and the aspects of the fisheries law that allow these kinds of rules; in the case of Chile, we demand the lifting of the regime of 'windows of penetration' in the north of the country and an end to the quota system; in Mexico, we demand that Rule 002 that prohibits trawling in the five-mile zone be respected; and with regard to Argentina, Uruguay and Brazil, we express our concerns and reject the development of an anchovy fishery for fishmeal, which threatens the ecosystems of the region.

We call for the Second Forum of the International Commission for the Defence of the Five-Mile Zone to be implemented on the 29 and 30 September 2005 in Sinaloa, Mexico.

Also, and on the invitation of the Chilean delegation, we have decided to meet again during 20-22 November in Valparaiso, Chile, where the Congress of the National Confederation of Artisanal Fishermen will be held.

industrial fishing vessels. This has resulted in localized overfishing and a particular demise of the shellfish resources.

In response, closed seasons have been established, although no seasonal bans on the sale of closed-season species have been applied. This has tended to encourage illegal fishing. Traditional fishing areas have also been designated as areas for aquaculture concessions, putting further pressure on fishermen and resources in the increasingly restricted areas where they can fish.

On the other hand, an offshore artisanal fishing sector has developed in the last few years. Due to interference from the industrial sector, artisanal fishermen have been extending their range of operations to as far out as 150 miles, according to Ilo fishermen. But conditions are very harsh, with fishermen spending more than two weeks away from their families, and working in extremely dangerous and exposed conditions. Not only are there significant investment costs to be made in navigation equipment and fishing gear, but, with dramatically increasing fuel prices, this fishery is also becoming an

economic struggle, particularly as fishing trips may clock up distances of 700 miles.

Since its introduction, the December 2003 Supreme Decree has been hamstrung by the extreme polarization of the situation. In January 2004, the Ilo fishermen initiated a 'Peruvian Five-Mile Zone Defence Committee', supported by fishermen from Arequipa, Ilo and Tacna. This was followed up by a number of strikes in the south, aimed at disrupting fishing and related activities.

These local activities took on national significance when, at the end of March 2004, FIUPAP called for an indefinite national artisanal fishermen's strike starting on 5 April. This was scheduled to coincide with the start of the Holy Week, a time when many Peruvian families traditionally eat fish. Subsequently, FIUPAP asked the Food and Agriculture Organization of the United Nations (FAO) to intervene formally in the process, claiming that article 6.18 of the FAO Code of Conduct for Responsible Fisheries supported their claims for a five-mile zone, and was a just cause for complaint.

On 1 April 2004, the Ministry of Production suspended the implementation of the new access regime for three months. At the same time, an Enquiry Commission was established to evaluate the proposed new fisheries regime, and to report within 75 days. This 'temporary suspension' has since been renewed twice—on 1 July for 90 days, and then, most recently, on 4 October 2004 for a further 90 days, up to January 2005. The most recent suspension came four days after the first International Forum on Artisanal Fishing, and was considered a victory.

But although a battle may have been won, the 'windows of penetration' law still poses a very clear and present danger. It is only a matter of time—three short months before the current suspension expires. In the meantime, the government and industrial sectors are gathering information to support their case to lift the five-mile zone restrictions in the south. Nevertheless, the artisanal fishermen of Peru continue to protest, to organize themselves in readiness for the next onslaught, and to widen their support base in defence of their sacrosanct five-mile zone—a zone that is fast becoming the Holy Grail of artisanal fishermen throughout Latin America, and a banner under which they are uniting to defend their rights. They will need all the strength and support they can muster if they are to prevail in the unequal power struggle with the mighty industrial fisheries lobby, who have influential friends in high places.

This article has been compiled by Brian O'Riordan (briano@tiscali.be), based on correspondence with various organizations, and using news items and official documents available on the Internet

Climate

Waiting for El Niño!

Not all fisherfolk are petrified by the arrival of the El Niño phenomenon, as reports from Peru indicate

The El Niño phenomenon of 1997-98 wreaked havoc in Peru. Torrential rams in several regions washed away roads, houses and existing infrastructure. The fishery sector was especially affected as fish production suffered dramatic declines. This was the story in most parts of Peru, as was highlighted in the last issue of SAMUDRA Report.

On a recent trip to the port of Tambo de Mora in Central Peru, however, one got a different picture after speaking to a group of women fishworkers there. Tambo de Mora is one of the few areas that actually benefited during the El Niño occurrence. In normal times, the main species caught here are *raya* (rayfish) and *pejerrey* (Peruvian silverside). In fact, this is one of the most important ports in Peru for rayfish. But rayfish does not have much of a market. In Lima, the main fish market in Peru, the demand for this species is insignificant. The fish, in salted and dried form, finds a limited market primarily in the inland and mountain regions of the country. So even though production is good, the income from the fishery is low—except during periods of El Niño!

During El Niño periods, this little port gets completely transformed, with the appearance of commercially valuable species, such as shrimp *(langostina).* In 1998, Tambo de Mora recorded a shrimp production of over 90 tonnes (see Table I). A similar phenomenon was observed during the El Niño of 1983. The El Niño of 1983 was a bit different in that, at that time, the shrimps had a reddish hue. During the recent El Niño the shrimps were whiter and bigger in size, but fewer in number. The price obtained was much higher—US$4 to $7 per kg, compared to about US$ I per kg during the El Niño of 1983.

Other commercially important species, such as lobster, also make an appearance, though in fewer numbers. However, fishworkers do not have the skills to harvest lobster, nor are they aware of how it should be consumed—They sell only what they catch incidentally.

The first appearance of shrimp in Tambo de Mora in 1998 was followed by a period of hectic activity. Fishermen rushed to equip themselves with trawls. There were others who were attracted by the lure of quick profits. They purchased new gear, motors and small boats capable of trawling in inshore waters, applied for licences and joined the scramble.

Those who joined the fishery were not only local fishermen. Also involved were workers on industrial vessels, workers in fish processing and fishmeal plants, government employees, workers in textile plants, busowners... They came from communities in the north, from places like Chancay, Huacho, Supe and Pucusana. The industrial sector, though not fishing directly, bought artisanal vessels to join in on the shrimp rush.

The boats worked seven days a week. Local fishermen worked alongside those from elsewhere, and there were no visible signs of conflict. Around 40 new vessels were estimated to have joined the fishery. Refrigerated trucks from Lima appeared on the port to carry away the shrimp.

Timing changes

Local fishermen changed the time they went out to sea, so as to be able to supply the trucks waiting to take the catch to Lima—instead of leaving at night and returning early morning, they left early morning to return by afternoon. Much money was made during the all-too-brief six-month shrimp boom.

Landings of Fish for Human Consumption
at the Port of Tambo de Mora (live weight in tonnes)

Species	1996	1997	1998
Ayanque	2.13		4.57
Babosa			0.27
Barbon			0.43
Bobo	82.97	24.81	24.85
Bonito	0.69		
Coco (coc croaker)			8.24
Chauchilla		8.97	28.21
Guitarra	0.98	4.33	3.65
Lamgostino (shrimp)			92.68
Lenguado (sole)			0.43
Lisa (striped mullet)			0.26
Loma (lorna drum)	4.09		1.38
Mojarilla			0.19
Pampano	0.43	0.40	22.85
Pejerrey (Peruvian silverside)	14.77		
Raya (ray)	83.60	10.34	17.75
Sierra			5.79
Tembladera	3.58	1.72	8.06
Tollo (humpback smoothhound)	3.49		1.66
TOTAL	204.82	50.57	221.26

Source : Regional Department of Fisheries, Pisco, Peru

Things reverted to normal in the early months of 1999. The shrimp disappeared, and once again rayfish became the principal catch. There refrigerated trucks were no longer to beseen. Those who had purchased boats and motors, are now looking for money to buy nets other than trawl-nets, which are of no use anymore.

A similar story can be heard a little further south of Tambo de Mora, in the Laguna Grande area, located inside the famous natural reserve of Paracas. Even during normal years the lagoon is a rich area for sedentary, shellfish species. But during periods of the El Niño, scallop production goes up manifold. In fact, scallop production during normal years is only 10 to 20 per cent of the production during the El Niño period (see Table 2).

These spurts in production also pose unique management problems, given the sedentary nature of the species, and lead to several conflicts since, at such times, there is an inflow of people from other areas, both from the south and north, where the fishery has been devastated by the impact of the El Niño. They come to join the scallop fishery in large numbers, to tide over the difficult period back home.

The previous El Niño of 1983, for instance, had seen a big increase in scallop

Landings of Fish for Human Consumption
At the Port of Laguna Grand (live wieght in tonnes)

	1996	1997	1998
Fish			
Cabinza	0.9		
Cabrilla (Peruvian rock seabass)			17.5
Cojinova (pulm ruff)		26.5	3.3
Corvina		154.9	
Caballa (mackerel)	0.3		
Chauchila			10.0
Jurel (southern jack mackerel)		44.3	20.0
Shellfish			
Almeja (carpet shell)		141.9	
Choro (colga mussel)	1,579.9	1.2	
Chanque (abalone)			
Caracol (chocolate rock shell)	70.1	0.4	
Calmar			
Conhca de Abanico (scallop)	232.5	188.3	
Erizo (sea urchin)	90.6	30.6	
Lapa	0.4	6.0	
Mejillones	2.8	108.3	
Crustaceans			
Cangrejo	116.4		43.9
Jaiva	68.0	69.2	2.1
Total	2,180.7	771.6	2,061.9

production that lasted for a three-year period. The pressure on the fishery increased too, due to the influx of people from other areas. This led to massive overfishing. Production of scallop then declined to a point where the fishery had to be closed down completely for a year.

However, despite the closure, a couple of enterprises with known political connections continued to purchase and process scallop illegally. Local fishers decided to protest against these illegal activities. They also decided to demand lifting the ban on scallop extraction. To force the authorities to heed their demands, the *syndicatos* (unions) and local associations of fishworkers went on strike, blocking traffic on the roads.

Subsequently, the local associations decided to observe some basic rules to regulate scallop extraction. Rules defining the maximum amount that could be caught by each vessel, minimum size of scallop, etc. were adopted. Local people formed associations. Some of them were able to obtain 'special concessions' from the Ministry of Fisheries to establish their rights to fertile areas in the lagoon. Others established informal rights over such areas.

However, with the El Niño came once again the massive influx of fishers and divers from the south and north. Almost 100 families from the south settled down in Laguna Grande, since there was no fish in their waters. Many more fishers came, but they returned to their communities after a few months. The ones who stayed back plan to continue in Laguna since they fear it may take another couple of years for the fish to recover in southern waters.

Situation changed

Many of these people had come even during the previous El Niño. However, this time they found the situation had changed. Local associations had delineated areas of the lagoon and refused to allow access to these areas to the new entrants. This gave rise to many conflicts. The locals even tried sending away the new entrants, resorting to threats and even violence. It has not been easy for the new entrants to stay on and eke out their living.

As during the previous El Niño, all systems of regulations broke down with the massive entry of outsiders into the fishery. However, this time the *syndicate* and the associations are determined to prevent a repeat of the previous collapse. The *syndicate* has had several discussions with the authorities and they are planning to enter into an arrangement with the Ministry of Fisheries and the captain of the port for better enforcement of regulations. Under this arrangement, the *syndicate* will provide part of the resources for better enforcement.

In the meantime, much money has been made during the scallop boom. Processing plants have been working non-stop, through the night. For people in the neighbouring communities, this has meant employment opportunities; it is a common sight to see women and men lined up outside processing plants late in the night, seeking to work the night shift. Exporters are raking in big profits.

Hardly surprising, then, that a few small coastal communities in Peru are waiting for the next El Niño!

This report has been compiled by Chandrika Sharma, Programme Associate of ICSF and Luz Pisua of Instituto Huayuna, Lima, Peru

El Niño and La Niña

Blowing hot and cold

The terrible climatic twins—El Niño and La Niña—have periodically wreaked havoc on the Peruvian fishery

There is perhaps no other global phenomenon that has such a devastating local impact as El Niño, or ENSO (El Niño Southern Oscillation), as it is now increasingly known. The Southern Oscillation refers to the swings in atmospheric temperature and pressure between the Indian Ocean and the Eastern Pacific. After an El Niño, the system reverts back to 'normal', but, in the process, may overshoot. This brings abnormally cold waters off the coast of South America, and abnormally warm waters off Australia, Indonesia and the Philippines.

Such extreme changes have a pronounced impact on evaporation, which, in turn, changes where tropical storms occur, and this, in turn affects wind patterns more widely. El Niño suppresses tropical revolving storms (hurricanes and cyclones), while La Niña enhances them.

The 1997-98 ENSO has probably been the strongest of the century, and its impact over the last 18 months has been particularly severe. It has been blamed for drought and famine in Papua New Guinea and China; floods and land slides in Peru and Ecuador; parching in Indonesia and Australia; torrential rains in East Africa; and in flaming forest fires in Mexico and Florida.

Its impact in Indonesia became a factor in the overthrow of President Suharto, who was unable to deal with the combined impacts of economic, political and climatic crises. It has disrupted weather patterns and ocean currents worldwide, bringing death and destruction to hundreds of communities around the globe. Following in its footsteps, its chilling twin sister, La Niña, is currently being blamed for a debilitating drought in Chile, floods in China and Bangladesh, and exceptionally strong hurricanes in the Atlantic.

According to popular folklore, it was Peruvian and Chilean fishermen in the 16th century who first coined the name 'El Niño'. They noticed that in some years, around Christmas time, the coastal waters became warmer, heralding the arrival of the Christ Child or El Niño in Spanish.

It is now known that the warming effects of El Niño extend far beyond the coastal waters off South America. This year's El Niño warmed waters stretching a quarter of the way round the world, from the coasts of Ecuador, Peru and Chile to a point North of Fiji.

While El Niño refers to a warming of the waters south of the equator off South America, La Niña refers to a cooling of these waters. La Niña is the 'saw' of El Niño's 'see': the flip side of the coin, or the volte-face of the Southern Oscillation.

As a rule, the trade winds in the tropical Pacific blow from east to west: from the west coast of South America to the eastern seaboard of Indonesia and adjacent areas. They set up a current which pushes warm surface waters away from South America towards South-east Asia.

Counter-current

An area of warm water is thus built up on the western edge of the Pacific (off Indonesia, Philippines and Australia), while a weak equatorial counter-current flowing from west to east helps to keep this in balance. The warm waters that accumulate in the south-west Pacific pump heat and moisture into the atmosphere, producing the monsoon rains which fall so prolifically in the South-east Asian region.

In El Niño years, the trade winds weaken, and the equatorial counter-current strengthens. Unrestrained by the trade winds, the warm waters built up on the western edge of the Pacific flow back towards South America, warming the coastal waters there.

This causes a dramatic change in local weather conditions, producing monsoon-like storms and heavy rains. In the Southeast Asian region, weather patterns are also disrupted. The cooling of the sea waters results in less moisture being pumped into the atmosphere. This causes a failure of the monsoon rains, bringing drought and famine to many areas.

In coastal Peru, floods may wash away roads, bridges and even entire villages, causing significant loss of life, limb and property. The Peru (or Humboldt) current is disrupted, and upwelling patterns off the coast of South America change.

As a result, fish stocks migrate south and into deeper waters, fish catches plummet and fish-eating birds die in thousands. Many believe that in 1972-73 the combined effects of overfishing and El Niño led to the collapse of the anchovy fishery. It subsequently took about 20 years for fish catches to reach pre-1970 levels. In theory, a strong counter-oscillation, or a Niña, should *enhance upwelling* and stimulate the fishery production cycle. So the years after 1998-99—and failing another strong El Niño—could provide bumper harvests for the Latin American fishmeal industry.

Peru, the country which gave El Niño its name, is perhaps the most affected by this traumatic oscillation. According to the Peruvian National Weather and Hydrographic Service (SENAMHI) records, Peru has experienced El Niño phenomena in the following years: 1918, 1925-26, 1929, 1932, 1939, 1940, 1943, 1951, 1953, 1956-57, 1965, 1972-73, 1982-83, 1987, 1991-93 and 1997-98, Intensities are defined as 'weak', 'moderate', 'strong', and 'exceptional'.

Its arrival in Peru is heralded by an increase in sea and air temperatures in the coastal belt, torrential rain storms and flooding on the north coast, a lack of rain in the southern hills, a greater frequency of landslides on the western slopes of the Andes between 1000 m and 2800 m, and an increase in the flow rates of rivers entering the Pacific.

According to SENAMHI, the 1997-98 El Niño first appeared 40 miles off the southern coast of Peru, between Atico and Tacna in January 1997, through an inward movement of subtropical oceanic waters.

Temperature rise

These waters, moving in a northerly direction, increased the sea surface temperatures 20ºC above average. From

El Niño: Opportunities and Threats

The perico or dorado (*Coryphaena* spp) is one species that has become particularly important during recent El Niños. A voracious predator with excellent white flesh and growing up to 1.5 m long, it prefers tropical waters with a minimum temperature of 24ºC. It is widely dispersed throughout the surface equatorial waters of the tropical Pacific ocean, stretching some 6,000 miles (or 10,000 km) from the Gulf of Guayaquil (between Colombia and Ecuador) to the Tahitian islands.

Ever since its creation in 1970, the Ministry of Fisheries has kept records of the fresh-fish landings in each port. Its statistics for perico over the last 28 years show that it is usually caught only in the summer months, with catches of a relatively small size, averaging 35 tonnes per year. However, during times of El Niño, there is a marked difference. Thus during the exceptional El Niño which began in 1982 and ended in 1984, in just four months in 1983, recorded landings of perico reached 3,271 tonnes. In 1987, 3,718 tonnes were recorded. In 1992, 3,992 tonnes and in 1995, 6,598 tonnes. In January 1998, the Ministry of Fisheries recorded more than 2,340 tonnes passing through the wholesale fish markets in Lima. Estimated sales in February were around 4,300 tonnes, bringing the total for these tow months to almost 7,000 tonnes. Taking into account the operational practices of the artisanal fishing sector, it is likely that, overall, more than 12,000 tonnes of perico were landed in the first two months of 1998.

The perico, like shark, sail fish, marlin and other tuna-like species, is generally found more than 25 nautical miles off the coast, in the zone between Pacasmayo in the north and Mollendo in the sout. Vessels which fish these species belong to the artisanal deep-sea longline fishery. Fishing trips last at least eight days, and vessels must have n insulated fish-hold capable of carrying ice up to a third of their total carrying capacity.

In recent years, only a few specialized vessels have been able to profit from this fishery. In fact, the last census, undertaken in 1995, records that only 200 of a total of 6,258 artisanal vessels belonged to the high-seas longline fishery. Since May 1997 the perico fishery has grown steadily. Due to the continued presence of tropical and subtropical waters, perico has occurred along the length of the coast, and because it has been found within 10 miles of the coast, it has not required

March to July, tropical oceanic waters continued to flow in; causing sea temperature rises of 60ºC in the north, 50ºC in the central coastal area, and between 30ºC and 40ºC in the south. From August to September, the warm waters remained at the surface, maintaining a high temperature along the north and central coasts, which declined towards the south.

These climatic changes put the scientific institutions on full alert. They began to devote all their attention to recording them, and predicting whether they really heralded an El Niño, and, if so, what its intensity would be.

Subsequently, many predictions were made, but it is now widely agreed that the 1997-98 El Niño was one of the most severe this century. It was possibly even more severe than the exceptional 1982-83 El Niño, which is reported to have killed 300 people and left 1.15 million destitute in Peru alone.

The most devastating impacts of the current El Niño were recorded between December 1997 and March 1998. Some provisional figures put the death toll at around 300, with more than 16,000 injured, and with some 400 people missing. About 390,000 people have been left destitute, more than 13,100 homes wrecked, and 67,000 damaged. About 63,400 hectares of crops have been destroyed, and some 255,000 km of roads washed away. These figures do not include such indirect impacts as economic and production losses (from industry, agriculture, fishing, etc), and the impact on services (water, sewage, health, education, markets and transport). Peruvian President Alberto Fujimori has estimated that US$800 million worth of damage has been done to his country. Others put the figure closer to US$1.8 billion.

Hard hit

The Peruvian fisheries sector, more than any other sector, has been hit hard by El

fishing trips longer than one week. With prices paid rarely dropping below US$1 per kg, there have been some powerful incentives for the artisanal fleet to convert to high-seas longline fishing. A boat of three tonnes, fishing no longer than three days at a time, can catch 2,000 kg of perico, providing gross earnings of 5,000 new soles (about US$1,700-2000). This fetches an income of about 1,500 new soles US$500-700) for each owner-operator. Around 1,000 boats, some 20 percent of the fleet, have each invested at least US$300 in equipping themselves with longlines and installing fish-holds, and headed out to sea.

However, on 15 January 1998, the Peruvian government enacted Ministerial Resolution 020-98-PE. This law allows the fleet of around 615 industrial purse-seines, which usually fish for sardine and anchovy during El Niño, to catch perico, bonito, marlin, sailfish and other species associated with this opportunistic fishery. Allowing the industrial fleet access to these resources completely undermines the management plans which have been developed for the fishery in recent months. It also conflicts with the main purpose of the new regulations which have been developed for the industrial fleet (Supreme Decree 008-97-PE, introduced in October 1997). After operating for more than two decades without effective regulations, specific restrictions are now applied to the fleet. These place limits on hold and catch size, and restrict fishing licences to designated fish species.

Under the new law, and with a relatively small investment in a set of longlines and plastic iceboxes, large numbers of industrial vessels will now compete with small vessels with an average hold size of two tonnes.

The main objection to granting the industrial fleet access to this fishery is that, in the longer term, it can not support vessels which consume as much as 40 gallons of diesel per hour. Given the opportunistic nature of the fishery, and given the small shoals that these fish swim in, it will not be worthwhile for these boats to use longlines. They will, therefore, resort to using their purse-seines, and it will take only a few boats to greatly increase landings, causing prices to crash. The market, which, in February, had daily landings of 165 tonnes, will then be flooded. This will jeopardize the future of the newly converted artisanal fleet.

The introduction of this new law is a grave mistake. It will undermine the ability of artisanal fishermen to reply their loans and to meet their contractual obligations with FONDEPES, and the private banks. It must be withdrawn promptly.

Niño. Storms at sea disrupt fishing, while, on land, marketing and other services collapse, and access roads are destroyed.

Another striking effect of the El Niño phenomenon is the dramatic change in the fish species that become available. As a rule, all the usual species disappear, and are replaced by others more usually associated with tropical and subtropical waters.

The impact of these changes on the fisheries sector are clearly shown in the table overleaf, which compares the catches made in January 1997 with those made in January 1998.

In recent years, fisheries have been making an increasingly important contribution to the economy of Peru, representing about 3 per cent of GNP.

In 1995, Peru's fish catch was the second largest in the world next to China. However, catches of most of the commercially important species have been severely reduced in recent months. According to one report, Peru's fish catch in the first half of the year totalled 1.23 million tonnes, more than 75 per cent down over the same period in 1997.

The fishmeal industry has been particularly hard hit. The resultant slump in production has contributed to a global scarcity which has sent prices of both raw material and processed fish rocketing. Worldwide, in 1998, catches of anchovies and jack mackerel destined for fishmeal production are expected to fall by 10 million tonnes—about 10 per cent of the global fish catch—due to the effects of El Niño. As a result of this, world fishmeal production for 1998 is projected to be two million tonnes less than in 1996-4.5 million tonnes, against 6.5 million tonnes.

Dramatic decline

As can be seen from the table, there has been a dramatic decline in catches of fish destined for indirect human consumption

Fish Catches in Peru
('000 tonnes)

	January 1997	January 1998	Decline (%)
1. Direct human consumption	84.6	44.7	-47.2
Canned fish	27.5	9.3	-66.2
Frozen fish	26.8	12.2	-54.5
Cured fish	4.2	2.4	-42.9
Fresh Fish	26.1	20.8	-20.3
2. Indirect human consumption (fishmeal)	913.4	30.4	-96.7
Anchovy	784.1	0.3	-100.0
Other species	129.3	30.1	-76.7
3. Total (1+2)	998.0	75.1	-92.5

(Source: Ministry of Fisheries)

(fishmeal), with January anchovy landings reduced substantially. Due to warmer sea temperatures and changes in upwelling, this species, together with the sardine, migrated in search of colder and upwelling waters, moving from north to south and into deep water.

According to Ministry of Fisheries (MoF) reports, landings during the first quarter of this year totalled 281,000 tonnes. Compared to the same period in 1997, this represents a fall of 82.7 per cent. This is mainly due to a reduction in anchovy and sardine catches.

The MoF set precautionary quotas on anchovy of two million tonnes for the period November 1997 to February 1998, although the fleet reportedly landed only 600,000 tonnes. The MoF predicts that in 1998 fishmeal exports should be around 1.4 million tonnes, a reduction of 30 per cent over 1997.

As far as landings of fish for direct human consumption are concerned, in the first quarter of this year, MoF recorded 130,200 tonnes, 50.6 per cent less than catches in the same period last year. Overall, the value of fish exports over the period January-March 1998 dropped by 75 per cent, from US$429.5 million in 1997 to US$107 million in 1998: In January this year, processing plants in the canning industry were paralysed when production was cut by 66.2 per cent, due to the scarcity of sardine, horse mackerel and mackerel. Similarly, at the beginning of the year, production in the frozen fish industry was cut by 54.5 per cent. This was due to a major reduction in the landings of its main species, hake, due to the dispersion of fish shoals.

The artisanal fishery is a strategically important sector in Peru. It catches a large part of the fish destined for human consumption, and provides 80 per cent of the fish eaten nationally. It also makes a significant contribution to export earnings.

It consists of a fleet of 6,258 vessels, which provide 50,000 jobs. It supports 450,000 people, most of whom live in conditions of considerable poverty. The sector and the communities it supports have been particularly hard hit by the impact of El Niño.

Northern region

The northern region is traditionally where most of the artisanal catch is taken, and it is also here that 51 per cent of Peru's artisanal fishermen are based. Rough seas, torrential rains and the dispersion of the shoals of hake have not only made fishing operations difficult, but even when there was fish to sell, market access was impossible due to the destruction of roads and bridges.

Although some new species appeared, few people were able to take advantage of this because they did not have the right fishing gears. Also, artisanal fish landing centres were damaged by the force of the sea. In addition, due to torrential rains and electrical storms, and the severe flooding they caused, many homes were wrecked.

Although many of the traditional species like *pejerrey*, *cojinova*, etc. almost completely disappeared, some other species have appeared. One of these species is the *perico* or *dorado (Coryphena* sp.), and for some fishermen who modified their boats and adopted different fishing methods, this has proved a boon.

Perico catches have increased by over 200 per cent since last year, and this has partially helped to make up for the loss of income from other species. The best landings were recorded in January and March 1998, but because most boats were not prepared for high-seas fishing, there were few who could take advantage of this.

Catches of several other species have also greatly increased, compared to 1997. For example, catches of mackerel and octopus increased by 498.5 per cent and 234 per cent respectively.

Also, the warm waters of El Niño have favoured several high-value fish species (destined mainly for export markets), including prawn, lobster and other varieties of shellfish, notably scallops. In the central area, the in-migration of prawns has been of particular significance.

Overall, a social crisis has arisen in the sector due to lower earnings from reduced catches of traditional species, and due to the loss of possessions, such as houses.

Many artisanal fishermen have fallen behind in repaying the loans they took to improve their boats and fishing gears, and to purchase refrigerated trucks to market their catches directly.

Debts are mounting due to interest rates and other charges, and are becoming difficult to repay. Agents threatening to seize their equipment are now appearing in many of the fishing communities.

Despite this, no state of emergency has been declared for the fisheries sector. Government support to the affected artisanal fishing communities has been limited mainly to the provision of food parcels.

But what most artisanal fishermen urgently need is that their loans be refinanced. In this way, they will be able both to meet their obligations to the loan companies, and to purchase new fishing gear to take advantage of high-value species like prawns, which are now found in abundance.

These problems, and many others, were the main focus of the IVth National Congress of Peruvian Artisanal Fishermen, organized in Callao between 28 April and 2 May 1998. As a result of this meeting, the Federation for Integrating and Uniting Peruvian Artisanal Fishermen (FIUPAP) initiated discussions with the authorities, requesting them to provide adequate and appropriate measures, such as the reconstruction and strengthening of the harbour infrastructure and rebuilding the main access roads.

There are several important lessons to be learnt from the 1997-98 El Niño. First of all, there is a need to greatly improve the accuracy of scientific forecasting techniques, and to establish effective early warning systems.

Secondly, there is a need for institutes of science and technology, universities, businesses, and local and national organizations to work together with the government in a more co-ordinated way, and to establish jointly an effective civil defence system. Thirdly, the reconstruction of damaged infrastructure networks needs to take into account that El Niño is a regular occurrence, forming part of the natural scheme of things.

Fresh evaluation

Now that climatic conditions are beginning to normalize, it is necessary to evaluate what has happened generally at a national level, and specifically in the fisheries sector. Of particular relevance to

the artisanal fisheries sector would be the design and provision of in-depth training and technical support services to enable the fishermen to adapt to changes and to learn how to live with nature.

This article was compiled by Brian O'Riordan from a number of sources. These include material prepared by Luz Pisua in Peru: articles in FIUPAP's El Mundo de la Pesca Artesanal, No. 4, which focuses on the impact of El Niño, ITT Peru; Fishing News International and The Sacramento Bee, November 1997

Peruvian fisheries

Women can fish too

The role of women in Peru's artisanal fishing sector is often obscured by machismo and bureaucracy

The Lima-based Huayuna Institute has initiated a study to increase the understanding of the role of women in fisheries. This article describes some of the researchers' initial findings after visiting some *caletas* (fishing communities) in southern Peru. It provides a preliminary snapshot and commentary on the situation in the areas where the work is being developed.

Peru abounds with natural resource wealth. With a coastline of approximately 3000 kin, it has one of the most productive fisheries in the world.

In 1994, the combined recorded landings of fish and shellfish amounted to 11,533,611 tonnes. In 1995, Peru recorded the second largest national fish landings worldwide, after China. However, as much as 90 per cent of the catch is composed of anchovy and sardine, destined for reduction to fishmeal.

The 1997-98 El Niño—the worst this century—had a major impact on Peru. The fisheries sector was particularly hard hit. With the main species declining or disappearing from the catches, the sector was beset by serious social problems.

Peru's population reached 24 million in 1997, half of whom were women. This means that there are 12 million women dispersed between the rural and urban sectors.

The most recent survey, in 1996, by the Peruvian Marine Institute, IMARPE, put the numbers of artisanal fishermen in the country at between 35,000 and 50,000 (including both owners and crew members) in marine fisheries and at 15,000 in riverine and inland fisheries. It is noteworthy that there are no statistics on the women who work in the different segments of the artisanal fisheries sector. Historically, women have fulfilled a key role in the development of the sector, mainly in the processing and marketing of fish. However, in recent years, women are increasingly to be found in those areas more traditionally associated with men, such as fish capture and going to sea on boats.

There are many *caletas* distributed along the coast. In the south, the study focused on Pucusana, Tambo de Mora, San Andres and San Juan de Marcona. But it is in the north that the fishing population is concentrated-Tijmhes, Piura and Lambayeque account for 51 per cent of the total population, and it is here that the highest fish landings are recorded. It is also important to note that fishing activities are much more developed in the north, and, as a consequence, so is the work of women in their respective communities.

Pucusana is a fishing *caleta* about 70 km south of Lima. Although widely known as a tourist resort, tourism provides no advantages to the fishermen and their families who live there. Wealthy tourists push up the cost of living, and compared to other *caletas*, fishing families here receive hardly any social security benefits.

In Pucusana, there are women who do nothing else but clean fish in the artisanal landing centre. However, about 10 years ago, some women started going out fishing with their husbands, and many fishermen's wives and daughters have started fishing from an early age.

Worrying sight

On arrival at the local landing centre, we were greeted by a most worrying sight, which reflects what is happening along the entire Peruvian coastline. In the

aftermath of El Niño, most of the important fish species have not yet recovered to their historic levels and, because of this, most boats lie idle. Fishermen have to wait for the few boats to arrive, to help unload the catches or clean out the fish-holds. We also saw fishermen's wives competing for the same work as their husbands.

Maria, who married an artisanal fisherman after studying at the university, told us her story. They came to Pucusana eight years ago, and, for the last seven, she has worked alongside her husband to help raise their six children. Due to the difficult economic situation and the need to increase their family income, she decided to look for work. Of all the options open to her, she chose to go fishing with her husband. This has effectively doubled her workload.

Along with taking care of both the children and the household, she has to do the same jobs and work the same long hours as her husband—making nets, cleaning fish-holds, repairing boats, slicing up sharks, etc. She has to get up at 3 am. or 4 am., and does not get home until very late. Also, each day she goes fishing, she has to avoid being caught and fined for not having a fishing licence.

Although the men are totally convinced of the need for their wives to go out fishing with them, women still face considerable difficulties in starting to work catching fish. The difficult economic situation and the problems which afflict that section of the population (alcoholism and drug addiction) make it difficult to find fit and reliable crew. All this makes fishermen keen to have their wives help them with their fishing activities.

Despite this, women still have to face up to the strong machismo widespread among artisanal fishermen. Women brave enough to venture out fishing or to do the work normally done by men are told: "This is men's work, go home and look after your children and do the cooking."

Initially, women find it very hard to enter into fishing. However, after they have been fishing for some time and have earned the respect of their fellows, they gradually gain acceptance and become considered as one of them.

In the past, the maritime authorities would not even consider giving women a licence to fish. Today, they say that they will certainly give licences to any woman who asks for one. Despite this, not one of the women working in fishing today in the *caleta* of Pucusana has a licence.

Women barred

Several years ago, in the *caleta* of Tambo Mora, women had tried to go out fishing with their husbands as part of the crew.

However, the local maritime authorities put a stop to this, and, in some cases, imposed fines on boatowners who had allowed their wives to go out fishing without a proper licence.

A fishing licence would allow women to join professional and social organizations of fishworkers, giving them the right to vote and speak. It would also enable them to gain access to training and formal education, which would enable them to carry out their activities more efficiently.

In the *caleta* of Tambo de Mora, 200 km south of Lima, there are many families who have been engaged for some time in processing saltfish. Fish curing is mainly carried out by fishermen's wives. It started many years ago when, at the end of the day, after the fish sales were over, there was always a large quantity left unsold. As there were no facilities for storing fish, it would spoil. It was, therefore, decided to start preserving fish by curing.

Fish processed by families in this way was used for their own consumption. The methods of washing, salting and sun-drying have been passed down through several generations. Over time, the technique has been improved, so much so that today it is not only the leftover fish that is processed and marketed, but also the fish freshly caught by the men in the family. This activity, which started as a way of conserving fish for family consumption, has gradually increased as women found new markets, which, in turn, has led to an increasing demand.

In this *caleta*, and in the others that were visited, marketing is actively carried out by a large proportion of fishermen's wives. It represents a significant activity for them. Women await the arrival of their husbands on the jetties, ready to start selling fresh fish straightaway. They also go to the local market to look for traders willing to buy from them. It is not only fishermen's wives who engage in this activity, but also their mothers and daughters. They also generate income from other activities, such as selling handicrafts, operating small shops and restaurants, etc. Employment in the processing plants found in various *caletas* also provides women with an opportunity to earn a small salary (even if they are paid an unfair wage) and contribute to improving their family income.

In the artisanal fishing sector, the work of women in the processing and marketing segments is widely recognized. However, as far as fishing is concerned, women are still highly restricted, equally by the machismo which exists amongst their fellow fishers as by the maritime authorities who will not provide them with licences to fish.

With time and perseverance, the women can overcome this traditional machismo. But, in the short term, the issue of granting licences to women to fish alongside their husbands must be sorted out. Their right to work in any activity in the artisanal fishing sector should be respected.

This article was written by Luz Pisua and Alicia Leonardo of The Lima-based Instituto Huayuna, and was translated into English by Brian O'Riordan of ITDG, UK

Internet workshop

Net worth

An Internet and e-mail workshop held by ICSF in Lima, Peru, between 27 and 29 May 1997, generated tremendous enthusiasm

The Workshop on Electronic Communication and Internet was held in Lima, Peru, from 27 to 29 May 1997 at the Catholic University of Lima. About 20 participants from FIUPAP, Peru; CONAPACH and FETRINECH, Chile; FENACOPEC, Ecuador; Sindicato de Obreros Maritimos Unificados, Argentina; and Instituto Terramar and Centro Josue de Castro, Brazil, took part in the workshop.

James Smith was the co-ordinator of the workshop, and Satish Babu from the South Indian Federation of Fishermen Societies, India, was the principal resource person.

The original idea for conducting the workshop arose at ICSF's Cebu conference in June 1994 and came from the Latin *American fish workers' organizations. The* idea fitted in with ICSF's communications programme and aimed to:

- set up a bulletin board service (BBS) to improve communications between fishworkers' organizations and NGOs;
- facilitate discussion forums (on fisheries agreements, fishing technologies, fisheries legislation, fleet movements, status of stocks, struggles of fishworkers, reports on workshops and consultations, organizational strategies, regional networks, etc.);
- provide information on ICSF programmes and on fishworkers' organizations in the South (in English, French and Spanish); and
- set up a central repository of information on fisheries and fishworkers' issues.

The objectives of the Lima workshop were to:

- familiarize fishworkers' organizations and supporting NGOs in Latin America with the basic electronic communications technologies required for promoting better information access and worldwide exchanges;
- launch a networking operation using electronic communication in order to facilitate interaction between fishworkers' organizations and NGOs, and to help the latter participate more fully in ICSF programmes; and
- help ICSF familiarize itself with current fisheries issues in Latin *America.*

The workshop was held in collaboration with the Huayuna Institute which, among other things, works with the artisanal fishermen at the community level in Pisco, Peru. Their co-operation was invaluable in the success of the workshop. Hernan Peralta presented a paper on the scope of networking among the Latin American fishworker organizations, and Sebastian Mathew made a presentation on NGOs and the FAO's Code of Conduct for Responsible Fisheries.

More networking

The workshop identified three main areas for greater networking at the regional level: degradation of the coastal environment, including the destructive impact of sea lions on artisanal fishing, incursion of foreign fishing fleets into the EEZs, and aspects of safety at sea. At the end of the workshop, a committee, comprising Sammy Nafez from Centro Josue de Castro, Brazil, Manuel Milla from

FIUPAP, Peru, Pedro Avendano from CONAPACH, Chile, Guillermo Risco from FETRINECH and Geraldo Salazar from FENACOPEC, Ecuador, was formed to discuss follow-up programmes under the co-ordination of James Smith.

On the first day of the workshop, a meeting was held to discuss the areas of networking in Latin America. The discussion was begun by the Secretary General of FIUPAP. He spoke about the membership structure of FIUPAP which comprises marine, riverine and lake fishers. The absence of any social security system in Peru for fishermen was mentioned. Pollution of the coastal waters and destruction of nets and fish by sea lions are major issues of concern, according to the Secretary General. The organization is concerned about the introduction of a permit system and wants open-access regimes for artisanal fishermen. It is further concerned about marketing problems and is interested in using the services of professionals like engineers and economists. It is also lobbying the government for hospitals and schools in fishing communities.

Guillermo Risco of FETRINECH, Chile, wanted fishers to be trained in resource management. He cautioned against the deepening of social inequality in Chile which, in some cases, has led to a loss of faith in the union movement. When democracy came to Chile, fishers expected a lot from the union movement, and disillusionment with the unions has now set in. The main problem in Chilean waters is the lack of an effective monitoring, control and surveillance mechanism to prevent indiscriminate fishing by foreign vessels. Internet networking can contribute to a greater dialogue between the artisanal and industrial unions, which could further contribute to greater solidarity between them.

The conditions of work of industrial fishworkers has worsened in the recent past, said Risco. Fishermen are expected to put in 18 hours of work a day. Although the retirement age in fisheries is 65, there is no single crew member in Chile who is above 50. In most cases, the crew member is burnt out by 40 or 45. Risco lamented the fact that everything is focused mainly on issues of production. He said fishers have to do something together to defend their national heritage and, towards this end, he said, it is important to exchange experiences. In this context, he found the idea of e-mail networking quite useful.

The conditions in Peruvian industrial fisheries have deteriorated in the 1990s, said Hernan Peralta. Wages have been cut by 25 per cent and industrial fishers are now demoralised. Compared to the Peruvian fishworkers in the industrial sector, the Chileans have much better conditions of work because of better legislation, said Peralta.

Humberto Mella from CONAPACH was concerned that fishers no longer necessarily have a say in fisheries policies in Chile. The decisions are made in big fish importing countries like Japan. Globalization has complicated matters and, therefore, it is necessary to have the involvement of professionals to run fishers' organizations. Fishers can not manage things by themselves anymore. Mella, however, wanted mutual understanding between fishers' organizations and professionals.

Mella sympathized with the Peruvian fishworkers and mentioned the threat Chileans face from sea lions. He wanted technical studies to document the damages caused by sea lions to artisanal fisheries.

Although expressing his happiness at the invitation extended to industrial fishers from Chile to this workshop, Mella did not agree that their conditions are all that bad, as made out by Risco. In Chile, the industrial fishers are entitled to pensions and they also participate in artisanal fisheries on retirement. While the artisanal fishers fish for survival, the industrial fishers fish for money, he said. He was not for any collaborative arrangement between the artisanal and industrial fishers.

Regional arrangements

He believed regional arrangements for artisanal fishers could work. He was keen on having an association of artisanal fishers at the Latin American level. He wanted to guarantee the future of fishers and warned that time is running out. He

was critical about the government and said that its interest in the sector is limited by what it can get in return.

Mella touched upon the five-mile limit issue in Chile, which is a bone of contention between the artisanal and industrial fishers (industrial fishers are putting pressure on the government to permit them to fish within five miles from the coastline). He thinks the government policy basically benefits the industrial sector.

Given a chance, he feared, industrial fishers can overexploit all marine resources. The government, he said, should take a look at what is happening beyond five miles and keep industrial fisheries away from the shore. The distribution of marine resources, in any case, is unequal and favours only the industrial sector, he concluded,

Freddy Villon of FENACOPEC expressed surprise that the minimum size of the Chilean artisanal fleet is 50 GRT. In Ecuador, he said, artisanal vessels are 6 m in length, with or without OBMs. Currently, the artisanal fishing zone is four miles beyond the one-mile ecological zone from the shoreline.

The main struggle of artisanal fishers is to get it extended to eight miles. They are expecting to get a positive response from the government this year. Villon also supported the need for training of fishers in resource management.

In reply to Villon, Mella said large vessels are used mainly in waters south of Valparaiso, Chile, and they are used mainly because the sea conditions are very rough, whereas, in areas north of Valparaiso, the sea is not that rough and the average size of boats is less than 10 m in length. The frequency of accidents is very high in the Chilean artisanal fisheries (on the whole, there are 16,000 vessels in the artisanal sector in Chile), and about 100 deaths occur each year, mainly involving smaller boats.

Jorge Suarez of the Sindicato de Obreros Maritmos Unificados, Argentina was critical of the government and spoke about the Argentinean system where the workers deal directly with the *patronis* (owners of fishing units). He said there is not much artisanal fishing in Argentina.

The workers are well looked after in Argentina, according to Suarez. They are also paid during off-seasons and are entitled to holidays. He said a regional organization will be of greater benefit if the intention is to function as a Latin American block. To a query on the impact of European Union fisheries agreement with Argentina, he replied that while the workers were opposed to the agreement, the *patronis* were in favour of signing it. The workers feel differently now, since foreign fishing has not adversely affected them.

As apparent at the evaluation meeting, the participants were positive about the outcome of the workshop and saw it as the beginning of professionalizing organizational management. They think the use of e-mail and the Internet would give them greater access to information which they consider will be useful to exert international pressure on fisheries issues. However, they felt that the duration of the workshop was too short.

In the discussion on the Code of Conduct for Responsible Fisheries, the Latin American fishers' organizations seemed to understand the importance of policymaking and the significance of influencing such processes. It was observed that FAO-NGO collaboration was necessary to reinforce national commitments to various international processes.

The Chilean fishworker organizations felt that the implementation of the provisions of the United Nations Agreement on Straddling Fish Stocks and Highly Migratory Fish Stocks will be useful to prevent foreign fishing in their waters by the Koreans, Chinese and the Japanese. However, they do not see any enthusiasm on the part of their governments to ratify the Agreement.

Guidelines

The Code, they felt, could provide guidelines to national governments to prepare legislation. Fishers were keen to know why the Code was voluntary and how many countries participated in the development of the Code. There were

apprehensions about the absence of political will to implement fishing legislation.

They wanted to know if there are mechanisms to ensure greater compliance with legislation. It was ironic, one participant said that Japan has reasonably good legislation to protect its national waters, while their own vessels are illegally fishing in the EEZs of other countries. It was further observed that several countries have double standards when it comes to fisheries. The fishermen were also concerned that sufficient emphasis is not given to collection of data and timely publication of fisheries statistics.

The fishers' organizations observed that they should put pressure on their national governments to adopt the Code. They considered the Code to be of greater benefit to the fishworkers. They also wanted pressure to be exerted on the Latin American governments. The Latin American States, they said, are sensitive about their international image and if there is sufficient pressure from outside, the national governments will adopt the Code and ratify the UN Straddling Stocks Agreement. They wanted ICSF to persuade FAO to be more vigilant about the follow-up to the Code, and to influence national governments to ratify the UN Straddling Stocks Agreement.

The government policies have not changed a bit, said one participant, citing the Peruvian example. The government has abandoned its fleet restructuring programmes and is apparently encouraging new and more powerful boats. The vessels that were removed under the programme are even illegally fishing in Peruvian waters. Liberal economic policies are influencing the decisions of the governments, said a fisherman.

Environmental regulations

Some participants also drew attention to the problems posed by environmental regulations in relation to sea lions, turtles and dolphins. They demanded some realistic application of these regulations, taking into consideration their life and livelihood interests.

This report was written by Satish Babu of the South Indian Federation of Fishermen Societies (SIFFS) India

Conservation

The roar of the sea lion

When nature conservation efforts grow irrational, the results can be disastrous, as shown by the case of the sea lions off Peru

According to FAO, there are 116 species of marine mammals in the world. Of these, 60 are found in the South East Pacific (Ecuador, Chile, Peru). It is commonly recognized here that the pinnipeda compete with fish for resources. The pinnipeda in Peru comprise the southern fur seal *(Arctocephalus australis)* and the southern sea lion *(Otaria byronia)*. The latter, because of their great numbers, pose a huge problem for the artisanal fisheries.

In Peru, this is a particularly significant problem and, since 1970, when the Ministry of Fisheries was created, it has received greater government attention. Yet, 27 years after the creation of the Ministry, only three multisectoral official commissions have been constituted to tackle the problems created for fishermen by the sea lion.

Since 1991, Peru's artisanal fishworkers have been represented by the Federation for the Integration and Unification of the Artisanal Fishworkers of Peru (FIUPAP). The Federation is very actively involved in developing and promoting the artisanal sector, It has a representative in the seven-member official commission (with the National Director of Artisanal Fishery as chairman) constituted to determine "actions to diminish the interference of the southern sea lion in the artisanal fishery."

According to the census by FIUPAP and IMARPE (Instituto del Mar del Peru) in 1995-96, there are 6,258 artisanal fishing vessels, of which 2,500 have an average capacity of 2.5 gross registered tonnage (GRT), using drift-nets to fish for species like Peruvian silverside, eastern Pacific bonito, lorna drum, cabinza grunt and palm ruff. Peru's artisanal sector includes vessels up to 30 GRT.

The total population of Peru's artisanal fishworkers, including those in the coastal and continental areas, is 45,000. Of this, 40 per cent fish without vessels,

A comparison of the figures for the number of artisanal fishing craft and southern sea lions justifies the call to regulate the growth of the southern sea lion population through a rational cull.

Year	Artisanal Vessels	Sea Lions
1971	4,700	30,054
1981	5,171	49,185
1990	5,960	103,562
1997	6,258	195,000

IMARPE recommended the harvest of 2,800 and 4,500 sea lions in 1984 and 1992 respectively, based on the principles of a Plan of Global Action for Marine Mammals developed between 1978 and 1983. During a meeting of experts in Costa Rica in 1995, the Peruvian delegation, represented by IMARPE, recommended legislation for a programme to control the population of southern sea lions and also to curtail their interaction with the fisheries through means that do not negatively affect their population.

Environmental groups

However, these recommendations have not been applied in Peru, mainly due to pressures exerted by national environmental groups which resist any action to control the population of southern sea lions. Worse, these groups do not furnish alternative solutions for this problem.

Granted that these days the trade-environment nexus is an important and controversial subject internationally. Yet, in the application of unilateral

measures under the pretext of environmental protection, there seem to be forces working against the commercial interests of Peru. The access of its artisanal fishery products to the markets of developed countries would be affected.

The southern sea lion does not figure in international conservation agreements because its survival is not in danger. On the other hand, the negative economic impact on the incomes of the fishworkers and communities of Peru is not taken into account, nor is the significant contribution of artisanal fishery to global nutrition security.

A preliminary study by FIUPAP has estimated the annual damage caused by the southern sea lion to the artisanal fleet at US$64 million. FIUPAP is now evaluating the economic impact on other techniques of fishing, so as to assess the larger economic consequences.

Although Peru's artisanal fishery receives support from FONDEPES (National Fund for Fisheries Development), there is very little investment in credit programmes for equipment, vessels or diversification of the fishery. In 1995 and 1996, these investments amounted to only US$3 million and US$6 million respectively.

Considering that fishing is the second most important economic activity after mining, the negative impact of the sea lions on the incomes of Peruvian fishermen is considerable. Artisanal fishworkers are those principally concerned with maintaining an adequate ecological equilibrium in marine areas. The survival of these communities depends on the availability of marine resources. While we recognize the rights of marine mammals to live in the sea, we must not forget to maintain some sort of equilibrium.

In Peru, however, no such equilibrium is sight. The situation appears set for a struggle for survival, in which the greatest damage would be precisely to the environment. In such a scenario, the blame should not be hurled at artisanal fishworkers but at the mercenaries of the conservation movement, who misunderstand the relationship between conservation and development.

This article written by Manuel Milla, an artisanal fisherman from FIUPAP (Federation de Integracion y Unificion de los Pescadores Artesanales del Peru), has bean translated by Luz Pisua of Instituto Huayuna, Lima, Peru