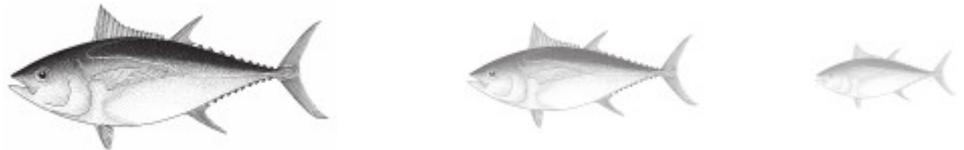


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Editorial



“There will be virtually nothing left to fish from the seas by the middle of the century if current trends continue” began a recent BBC article. The popular press often draws attention to alarming reports on over-exploitation of fish stocks and the loss of marine biodiversity. There is no doubt that increasing competition for declining fishery resources, leading to illegal fishing and other undesirable economic and social consequences are all serious issues, but none will come as a surprise to Pacific Islanders, where governments and others are addressing them (pp.10-11).

Much less publicity has been given to alternative ways of sustainably utilizing marine resources. Aquaculture – the farming of fish and other living marine species instead of their capture from the sea -- has been growing steadily in economic importance for decades. Figures from the FAO show that global aquaculture production is now close to matching that from ocean fisheries and it predicts that aquaculture may become vital for food security and economic growth in the near future (p.3). This is good news for the Pacific region, where significant commercial ventures have already proven successful and plans for expansion of aquaculture in the future are being made (pp.4-7).

Regretfully, this is the last issue of the newsletter I will edit. Like several colleagues (p.2), the time has come for me to move on. It has been an enormous pleasure and privilege to serve as the PIMRIS Coordinator over the past few years and I thank all of the PIMRIS staff and participants for their contributions to the network over this time. I wish you all every success in the future. Fa’afetai tele lava, moce and au revoir,

Chris Nelson

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The GIFT strain of Nile tilapia, popular for aquaculture



Directory

PIMRIS is a cooperative network of fisheries and marine resources libraries and information centres in the Pacific. Participants include ministerial libraries and the regional agencies listed below. For additional information contact the Coordination Unit or a specific agency.

Pacific Regional Environmental Programme (SPREP)

Satui Bentin
*Information Resource Centre
Manager and PEIN Coordinator*
satuib@sprep.org.ws
www.sprep.org.ws

Secretariat of the Pacific Community (SPC) / Secrétariat général de la Communauté du Pacifique

Jean-Paul Gaudechoux
*Fisheries Information Adviser
/Conseiller en information halieutique*
JeanPaulG@spc.int

&

Eleanor Kleiber
Librarian / Bibliothécaire
EleanorK@spc.int
www.spc.int

South Pacific Applied Geoscience Commission (SOPAC)

Dorene Naidu
Library Services Officer
Dorene@sopac.org
www.sopac.org

South Pacific Forum Fisheries Agency (FFA)

Eddie Marahare
Information Officer
Eddie.Marahare@ffa.int
www.ffa.int

University of the South Pacific (USP), PIMRIS Coordination Unit

Chris Nelson
Librarian/PIMRIS Coordinator
with
Frances Chute & Asenaca Valemei
Library Assistants
pimris@usp.ac.fj
www.usp.ac.fj/library/pimris.htm

New Faces, New Places



Satui Bentin, Manager of the IRC (Information Resource Centre) and Coordinator of the Pacific Environmental Information Network based at SPREP, will complete her work in these roles in December after a long and productive association at that agency. Farewell, Satui...

...and welcome, **Peter Murgatroyd**, who will take up these responsibilities in January. He has been the Law Librarian at the Emalus Campus of USP in Vanuatu for many years, managing services to staff and students and developing access to electronic law resources. Originally from New Zealand, Peter holds a Bachelor of Social Work from Massey University.



Ben Hall departed from the Forum Fisheries Agency in mid-October. His replacement, **Eddie Marahare**, began work in September. Eddie had previously worked at the Solomon Islands National Library since 1989. He has a Diploma in Library and Information Studies from the University of Papua New Guinea.

Back at the Coordination Unit, the PIMRIS staff also farewell **Susana Macanawai**, with whom we have shared office space in the Lower Campus Library for the past two years. Susana will be taking up a new position in the Main Library when the former IJALS collection is integrated into the law materials there.

As usual at this time of year, we thank the library work placement students for their help with various tasks, such as boxing duplicates for dispatch to the PIMRIS participants. In 2006 they were **Suman Krishna** (left) and **Motea Silatolu** (right).



We also gratefully acknowledge the assistance of **Shirlee Devi**, Graduate Trainee, during her October work placement at the PIMRIS Coordination Unit.

Aquaculture Vital to Meet Rising World Demand: FAO

Nearly half of the fish consumed as food worldwide are raised on fish farms rather than caught in the wild, revealed the latest *State of World Aquaculture* report presented to delegates at the biennial meeting of the FAO Sub-Committee on Aquaculture in New Delhi, in September.

While in 1980 just 9 percent of the fish consumed by human beings came from aquaculture, today 43 percent does, the report shows. That's 45.5 million tonnes of farmed fish, worth US\$63 billion, eaten each year. (Currently, freshwater and marine capture fisheries produce 95 million tonnes annually, of which 60 million tonnes is destined for human consumption). Globally, consumer demand for fish continues to climb, especially in affluent, developed nations which in 2004 imported 33 million tonnes of fish worth over US\$61 billion -- 81% of all fish imports that year, in value terms. But levels of captures of fish in the wild have remained roughly stable since the mid-1980s, hovering around 90-93 million tonnes annually. There is little chance of any significant increases in catches beyond these levels, FAO says.

The agency's most recent global assessment of wild marine fish stocks found that out of the nearly 600 species groups it monitors, 52 percent are fully exploited while 25 percent are either over-exploited (17%), depleted (7%) or recovering from depletion (1%). Twenty percent are moderately exploited, with just three percent ranked as underexploited.

"Catches in the wild are still high, but they have levelled off, probably for good," explains Rohana Subasinghe of FAO's Fisheries Department and Secretary of the Sub-Committee on Aquaculture. This levelling off, coupled with a growing world population and increasing per capita demand for fish, spells trouble. FAO's report estimates that an additional 40 million tonnes of aquatic food will be required by 2030 -- just to maintain current levels of consumption. The only option for meeting future demand for fish, Subasinghe argues, is by farming them. "Aquaculture could cover the gap between supply and demand, but there are also many forces which could pull production in the opposite direction, making it difficult for the industry to grow substantially enough to meet demand in the decades to come," the report notes.

Aquaculture has been experiencing a boom since the mid-1980s, sustaining a growth rate of around 8% per year. Today it continues to expand in most world regions. FAO is concerned that momentum could taper off if governments and development agencies don't adjust their policies to respond to emerging challenges that threaten to dampen the sector's future growth. One serious bottleneck, says FAO, is the lack of investment capital for producers in the developing world. Another is a shortage of land and freshwater for use in aquaculture. Rising energy costs also pose a problem, and environmental impacts and questions of product safety continue to require attention.

The agency's report also points to doubts regarding future supplies of fishmeal and oil, used to feed carnivorous cultured species, such as salmon, grouper and sea bream. Since 1985, world production of fishmeal and fish oil -- manufactured using fish which are caught in large volumes but which are not consumed by humans -- has stabilized at 6 to 7 million tonnes and 1 million tonnes, respectively. While the vast bulk of fishmeal is used for livestock feed, chiefly by the poultry sector, aquaculture now accounts for 35 percent of the world's fishmeal consumption. Competition with terrestrial livestock for a limited resource will intensify, with ramifications for both price and availability.

"We need to start planning now for handling these challenges, because aquaculture is crucial to the fight against global hunger," Ichiro Nomura, FAO Assistant Director-General for Fisheries, says. "It offers a source of food that is rich in protein, essential fatty acids and vitamins and minerals. And it offers a way to boost development by providing jobs, improving people's incomes, and increasing returns on natural resource use. We must ensure that the sector continues to expand, sustainably, to provide more people with food and income, especially in areas like sub-Saharan Africa and Asia, where hunger and poverty prevail."

(Source: FAO press release, <http://www.fao.org/newsroom/en/news/2006/1000383/index.html>)

A Quiet Achiever: Aquaculture in the Pacific

Ben Ponia

*Aquaculture Adviser
Secretariat of the Pacific Community*

The Pacific has its own unique brand of aquaculture, one tailored to its needs and quietly assisting the economy and wellbeing of its people. It may come as a surprise to know that it is among the region's most valuable fisheries exports, ranging between US\$130 and US\$180 million per annum. As well as its monetary value, the social capital of aquaculture in the Pacific is immense.

Aquaculture is the world's fastest-growing food production sector, currently accounting for a third of all fish production; the remainder is provided by wild fisheries. By 2020 this trend is expected to be reversed, with 70 per cent of the world's fish needs produced through aquaculture.

Aquaculture is anything to do with farming in fresh water or marine water (the term *mariculture* specifically refers to farming in seawater). A handful of key commodities – black pearls, prawns, seaweed and freshwater fish – demonstrate its appropriateness and significance to the region.

Current value and future wealth

By the late 1990s, cultured black pearls had become the flagship of eastern Polynesia and its most valuable export. In 1999 French Polynesian pearl exports topped US\$164 million and in 2000 exports from the Cook Islands were US\$9 million. Subsequently, both countries experienced a slump. In French Polynesia this was due to an oversupply of poor-quality pearls, and in the Cook Islands it was from a pearl disease. The former is now consolidating after a campaign to control quality, while the latter is still struggling to recover from the disease.



Justin Hunter in Savusavu, Fiji Islands, with some beautiful examples of valuable Pacific black pearls.

Pearl farms are being established in many other countries, notably Fiji Islands, where Justin Hunter from J. Hunter Pearls Ltd reports that “steady progress is being made”.

High quality and care for the environment

Prawn farming is a commercial success story in New Caledonia. Succulent white penaeid prawns were introduced from Mexico several decades ago and now command a top market niche in Japan and France. They are the country’s most valuable agricultural export commodity at US\$22 million, and with new farms under construction, current production is expected to double to 4000 tonnes by 2007.

The industry is renowned for its very high environmental standards. Mangroves have not been cleared to make way for prawn ponds; instead, the mangrove belt has been retained to absorb nutrient outflows.



Above: Prawn farming in New Caledonia is conducted to high environmental standards. **Below:** Seaweed farming is an important local business for the people of Solomon Islands

Benefits for rural communities

Kappaphycus seaweed (trade name cottonii) produces a starchy gel, carrageenan, that is used primarily in the food industry. Although easy to farm and requiring little capital input, the main drawback to seaweed is that the distant markets and limited transport links mean freight costs make it only marginally profitable for local middlemen.



A report commissioned by the Australian Centre for International Agricultural Research and the SPC concluded that the Pacific should concentrate on raising the level of production. This will increase bargaining power for freight access to markets. Seaweed processing plants could also allow the export of value-added semi-refined chips, 25 percent of the original weight and much cheaper to freight.

The Solomon Islands is experiencing exponential growth in production. Exports (to France) went from four tonnes in 2002 to 320 tonnes in 2005. Villages such as Vaghena used to rely on diving for sea cucumber, but with stocks overfished and a moratorium on harvesting coming into force, seaweed could be the main source of people’s cash income, essential not only for their basic daily needs but also school fees, church donations and other social obligations. Expansion is underway to places such as North Malaita, Reef Islands and the low-lying atoll of Ontong Java. The country could eventually be exporting up to 4000 tonnes per year. *Kappaphycus* is also being farmed in Kiribati and Fiji.

Securing local food sources

In Fiji the GIFT strain of Nile tilapia (not to be confused with Mozambique tilapia, which is considered a pest) is a popular freshwater fish. At Driti Village, in the interior of Vanua Levu, a women's group raises tilapia for village consumption and modest commercial sales. This alleviates the burden on the men, who must earn wages from seasonal labor in the Labasa sugarcane fields. Elsewhere in Fiji, Laisani Baleinacagi from Navua in Viti Levu says he would like to showcase tilapia farming as a "positive way forward of utilizing unused rice paddies".

It is estimated that there are 11,000 fish-pond farmers in Papua New Guinea. GIFT tilapia and carp are being farmed in the lowlands, while in the mountainous highlands it is rainbow trout. In the Fly River the huge copper mine Ok Tedi Mining Ltd is investing in fish farming of barramundi and other indigenous species to support food security and livelihood development in the Western Province.

Where to now?

As with any emerging production sector, there is a host of challenges to be addressed. These include:

- Responsible environmental safeguards should be in place. For example, a robust biosecurity programme is required to support the proper introduction of new genetic material.
- Profitability is a key bottom line. Many past failures have been attributed to poor market research, and future efforts must be supported by proper economic and financial analysis.
- Expansion of fish and shrimp production will depend on developing cost-effective feeds, based to the greatest degree possible on local ingredients.
- Aquaculture may assist in replenishing commercially overfished stocks and providing alternative livelihoods for those affected by such overfishing. The sea cucumber is one such fishery, and pioneering experiments are being conducted in New Caledonia to artificially breed and restock juveniles.
- The Pacific should be mindful that it sits at the doorstep of Asia, which is a powerhouse and low-cost producer. A graphic example is China, which in just a few years has switched to culturing *Penaeus vannamei* prawns and flooded the world market with hundreds of thousands of tonnes, driving farm prices down to a low of US\$1.50 per kilogram.
- Where practical, efforts should be made to encourage the domestication of local species rather than introduce exotic species. Farming should also integrate traditional practices. In Vanuatu and Wallis and Futuna these concepts are being trialed, with the local freshwater shrimp *Macrobrachium lar* being cultured alongside *dalo* (taro) in swamp beds.

This article acknowledges Dr M.V. Gupta, a pioneering aquaculturist from India and a friend of the Pacific who was awarded the prestigious US\$250,000 World Food Prize for 2005 for his role in improving the food sources and livelihoods of the world's poor people through the development of small-pond aquaculture.

(This is an updated version of an article first published in SPC's *Fisheries Newsletter*, no.115 (Oct.-Dec. 2005)

Internet resources useful for further information on Aquaculture in the Pacific include:

FIGIS Aquaculture page	http://www.fao.org/figis/servlet/static?dom=root&xml=index.xml
NACA	http://www.enaca.org/
NOAA Aquaculture Program	http://www.nmfs.noaa.gov/mediacenter/aquaculture/
PRAISE	http://praise.manoa.hawaii.edu/index.php
SPC Aquaculture Portal	http://www.spc.int/aquaculture/site/home/index.asp

NOAA Aquaculture Program Plan Released

The US National Oceanic and Atmospheric Administration (NOAA) released a draft 10-year plan for its Aquaculture Program in mid-November. Through adoption of this plan, NOAA seeks to:

- establish an improved system for regulating and monitoring U.S. marine aquaculture
- develop new seafood farming technology,
- improve public education about aquaculture, and
- influence development and adoption of global sustainable aquaculture practices and standards



NOAA developed the plan at the request of the Department of Commerce's marine fisheries advisory committee, made up of a diverse cross-section of public representatives. It identifies the program's goals and strategies, budget and staffing requirements, and potential outcomes, benefits and challenges through 2017.

"A strong marine aquaculture industry will benefit America's coastal communities with new jobs and revenues, and secure the availability of our nation's future seafood supply," said Bill Hogarth, director of NOAA Fisheries Service. "This plan provides a promising roadmap for how we will

achieve our ambitious goal of increasing sustainable U.S. production of farmed seafood and meet the stock enhancement needs of the nation's commercial and recreational fisheries over the next 10 years, while providing environmental and other safeguards to protect wild stocks and marine ecosystems."

The United States imports almost 70 percent of its seafood, 40 percent of which is farmed. Hogarth said the United States wants more control over the safety, security and environmental standards under which seafood is raised. The U.S. aquaculture industry, made up primarily of freshwater species such as catfish and tilapia, produces a fraction of global fish production. With a robust and sustainable seafood farming industry, the nation could reduce its \$8 billion seafood trade deficit by relying less on imports and increasing seafood exports. Aquaculture also has the potential to substantially increase employment and business opportunities in U.S. coastal communities.

The Ocean Action Plan called for advancing offshore aquaculture while ensuring they operate in an environmentally sustainable manner. The NOAA Aquaculture Program is focused on supporting farming of all types of marine species, for commercial food production, non-food uses, and hatcheries that will stock fish farms and enhance wild fish populations. In June 2005, the Department of Commerce forwarded legislation to Congress that would grant the Secretary of Commerce new authority to issue permits for aquaculture in federal waters. As Congress considers passage of the bill, implementation of this plan will ensure that NOAA's Aquaculture Program is well-positioned to take on the additional responsibility.

The draft plan was available for the public to review until November 30. It will now be finalized and implemented in January. 2007 is NOAA's bicentennial year. Starting with the establishment of the U.S. Coast and Geodetic Survey in 1807 by Thomas Jefferson much of America's scientific heritage is rooted in NOAA. The agency is dedicated to enhancing economic security and national safety through the prediction and research of weather and climate-related events and information service delivery for transportation, and by providing environmental stewardship of the nation's coastal and marine resources. Through the emerging Global Earth Observation System of Systems (GEOSS), NOAA is working with its federal partners, more than 60 countries and the European Commission to develop a global monitoring network that is as integrated as the planet it observes, predicts and protects.

(Source: NOAA press release, <http://www.noaanews.noaa.gov/stories2006/s2740.htm>)

Final Research Cruise for *Koyo Maru*

Dilpreet Kaur

CRISP Project Coordinator, School of Marine Studies

Four staff and seven students from the Schools of Marine Studies and Geography of the University of the South Pacific had the opportunity to participate in the Japanese deep-sea oceanographic research expedition aboard the *Koyo Maru*, October 28-November 1. The *Koyo Maru*, which means “ocean development ship” in Japanese, is operated by the National Fisheries University of Japan. The vessel was built in 1978 in Shimonoseki; it is 81.4 m long and has operated in the Pacific, Indian and the Atlantic Oceans. Its main activity is oceanographic fisheries research.

During the 5 day expedition students and staff of USP, assisted by the 45 crew and 38 cadets of the *Koyo Maru*, carried out plankton tows, larval fish tows, water quality measurements and phytoplankton studies. They experienced deep sea fishing and charted a seamount south of Kadavu, in the Koro Sea. Scientists from the National Fisheries University and Saga University of Japan were also part of this expedition. Since Fiji doesn't have its own deep sea research vessel, it was an exceptional opportunity for the USP staff and students to participate in a research cruise, and to experience and appreciate Japanese culture as well.

This research expedition was the eighth in a series, part of a continuing collaborative programme between the National Fisheries University and the School of Marine Studies. The *Koyo Maru's* prior research expeditions, since 1996, have included cruises in waters between Beqa and Kadavu, off the Yasawas and to a seamount south of Kadavu. The research topics for the 2006 expedition were:



- Investigation of larval fish distribution on Suva Reef and near Kadavu
- Zooplankton tows (analysis of larval fish gut content to determine feeding habits)
- Bottom fishing and development of a chart of the seamount south of Kadavu
- Diurnal (day/night) distributions of zooplankton and phytoplankton
- Water quality investigations, especially distribution of chlorophyll with depth

The results of the cruise will be used by staff and students of the School of Marine Studies for various publications.

Before the cruise, the crew and cadets of the *Koyo Maru* visited SMS for a tour of the campus. A farewell dinner was also held for them before they left for New Caledonia to conduct a similar cruise of one week.

This was the last research expedition for the *Koyo Maru* as it will be retired and replaced with a new, smaller vessel. SMS anticipates that the new vessel will visit Fiji again and that the research collaboration between the University of the South Pacific and the National Fisheries University will continue in the future.

USP Marine Studies staff and students sorting out samples from plankton tows collected during the research cruise.

Pumice Mystery Solved by German Yacht Crew



The source of vast quantities of pumice that have been accumulating on beaches in Fiji over the past few months was identified by the skipper and crew of a yacht sailing out of Vava'u in Tonga in mid-August.

Above: Fishing boats apparently floating on rock in the harbour adjacent to the School of Marine Studies, USP Laucala Campus, Fiji [photo credit: Johnson Seeto]

Below: The vast pumice raft near Vava'u, Tonga; and **bottom:** The new volcano [photos: Fredrick Fransson]

Frederik Fransson and his crew aboard the *Maiken* reported coming across a vast “sea of stone” a day after leaving Neiafu. The astonished crew was several hundred metres into the raft of tightly packed pumice, when the cooling system of their engine became blocked by the floating rock and they had to come about to clean it out. After anchoring for the night they explored the area the following morning and located an active volcano near Home Reef. They sailed close enough to photograph four distinct peaks surrounding a central, steaming crater and also saw occasional bursts of lava and ash.



The *Matangi Tonga* newspaper had earlier reported eyewitness sightings of the volcano by the crew of several fishing vessels sailing between the islands of Kao in the Ha'apai Group and Late in the Vava'u Group. The volcano may not last long; past islands have been quickly eroded by wave action.

Previous pumice rafts originating in Tongan waters have drifted towards Fiji, 350 km to the west south west of the area, in 1979 and 1984. These were eventually attributed to submarine eruptions in the vicinity of Metis Shoal and Home Reef.



Sources: The web log of the *Maiken*, <http://yacht-maiken.blogspot.com/2006/08/stone-sea-and-volcano.html> and reports in *Matangi Tonga Online*, 6 & 8 November.

Other News from the Region

International meeting fails to resolve bottom trawling debate

On November 6, fishing nations from around the world met in Hobart, Tasmania, to resume negotiations on a new regional fisheries management organization to cover the South Pacific Ocean and Tasman Sea. But the meeting failed to reach agreement on the contentious issue of bottom trawling, a practice that is blamed for destroying underwater ecosystems.

Earlier, an international coalition of more than 60 environmental groups had called on New Zealand to pull its bottom trawl fishing fleet out of the international waters of the South Pacific to protect deep-sea life and environmental organisations have criticized the failure of the meeting to resolve this issue. The open letter to New Zealand Prime Minister Helen Clark, from the Deep Sea Conservation Coalition (DSCC) urged the government to withdraw licenses from New Zealand-flagged bottom trawlers that fish in international waters for orange roughy and other deep-sea species. An interim ban would remain until conservation and management measures were established to protect vulnerable deep-sea life. The authors argued this would demonstrate leadership and New Zealand's commitment to protect deep-sea life.

"New Zealand is responsible for 90% of the high seas bottom trawling in the South Pacific," DSCC policy advisor Matthew Gianni said. "Helen Clark has just announced she wants New Zealand aiming to be 'the first country which is truly sustainable'. Ending New Zealand's part in the destruction of deep sea life in international waters would be a logical next step."

WWF's high seas advisor Alistair Graham said it also presents a big problem for New Zealand's western neighbour. "Australia has a huge interest in making sure there is economic and social stability in the region and given the importance of fisheries resources these have to be managed at a very precautionary level to make sure they are stable and secure and sustainable for the longer term." The organisation warns of ecological disaster after the failure of negotiations.

(Source: PACNEWS: 30 October and *Radio Australia*, 10 November via PACNEWS: 13 November)

Pirate vessel found in Suva Harbour

Discovery of a fishing vessel black-listed by the Inter-American Tropical Tuna Commission (IATCC) in Suva in October has highlighted concerns over illegal, unregulated and unreported fishing in the region.

The *Mahkoia Abadi* entered Suva Harbour under a Taiwanese flag but changed to an Indonesian flag when it berthed. A Greenpeace activist, on port watch duty, photographed the ship and, upon closer inspection, realised it was actually a known pirate fishing vessel, the *Wen Teng No.688*. Four days later, he noticed crew members painting a different name on the ship. Renaming, using false names, changing their flag state and switching areas are all common tactics used by pirate fishing vessels to confuse authorities. The vessel was detained by Fiji port authorities.



To add to this drama, a second suspect fishing vessel, belonging to the same company, but not registered with the Fisheries Forum Agency, was docked next to the *Wen Teng*. The authorities were notified and this vessel was also detained. Unregistered ships will sometimes fish anyway, transferring their catch to a registered ship, or a refrigerator ship, to avoid regulators.

Illegal, unregulated and unreported fishing is rampant in the Pacific. Inspectors from the Federated States of Micronesia and Kiribati and Greenpeace boarded vessels a few weeks ago that were consistently failing to report through their vessel monitoring systems. Some had probably been trans-shipping at sea, making it impossible to monitor or regulate the size of their catch. Greenpeace campaigner, Lagi Toribau, stated, "Foreign fishing fleets take advantage of the Pacific's lack of resources in order to run amok. Kiribati has just one small patrol boat to cover over three million square miles. Pirate vessels are cheating Pacific Island people of income and food. Pirate fishing aggravates overfishing, which in the Pacific has put two tuna stocks, bigeye and yellowfin, in serious trouble. Unless drastic action is taken to reduce fishing effort, they could face commercial extinction within three years."

(Source: Greenpeace press release and PACNEWS, 23 October)

Ministers agree on regional fisheries partnership

Pacific Island countries endorsed in principle a draft Multilateral Fisheries Partnership Agreement (MFPA) to negotiate with the European Union as part of the region's Economic Partnership Agreement at a joint meeting of Pacific ACP Trade and Fisheries Ministers in Port Vila, Vanuatu, on November 13.

The draft MFPA text is very clear on what the Pacific ACP states (PACPS) want in return for giving the EU access to their fisheries resources, Hon. James Bule, Chairman of the Joint Meeting and Vanuatu's Minister of Trade, Tourism, Commerce and Industries said.

Endorsement of the legal text of the MFPA in principle is a clear indication by the PACPS that the region is serious about progressing its negotiation of an Economic Partnership Agreement with the EU before the closing deadline at the end of 2007, he said, adding that the proposed MFPA will not affect the bilateral fisheries agreements that three of the PACPS, namely Federated States of Micronesia, Kiribati and Solomon Islands, already have with the EU. In fact, the MFPA must deliver benefits over and above those contained in the bilateral fisheries agreements.

Ministers also want the Pacific Islands Forum Secretariat and the Forum Fisheries Agency to consult with regional stakeholders, especially the private sector, and propose how closer cooperation and integration of trade-related measures, fishing access arrangements and investment measures amongst the PACPS might improve the overall competitive advantage of the states in the international tuna trade, provide opportunities for higher access fees and improve local benefits.

"The sad reality is that we are only getting up to 5 percent of the value of tuna caught in our respective EEZs," Hon. Marcellino Pipite, the Vanuatu Minister of Agriculture, Quarantine, Forestry and Fisheries reminded participants at the opening of the meeting.

New Director General of the FFA, Dan Sua, had also spoken on the opening day of how the region had in the past successfully negotiated fisheries agreements with its Distant Water Fishing Partners including the USA and the Convention for the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Region. It was no surprise that negotiations with our fishing partners were particularly successful when we exercise to the fullest our regional solidarity, Mr Sua said.

The PACP Trade and Fisheries Officials and Ministers Meetings in Port Vila were attended by delegates from the Cook Islands, Federated States of Micronesia, Fiji, Kiribati, Nauru, Niue, Papua New Guinea, Republic of Marshall Islands, Samoa, Solomon Islands, Tonga, Tuvalu and Vanuatu.

(Source: Pacific Islands Forum Secretariat press releases, 13 and 14 November)

Korakorea raises alarm in Kiribati

Concern has been raised in Kiribati over a range of social and environmental problems connected with the fishing industry, states a report in a recent issue of *Pacific Magazine*, including underage prostitution.

"Korakorea" is the local word coined to describe I-Kiribati girls who went aboard Korean fishing vessels, but it now applies to girls servicing fishermen from any country. Many do so because of poverty at home and the chance to earn money, clothes and fish – despite the risks of contracting diseases including HIV-AIDS. According to the Tarawa General Hospital, the country has had 43 confirmed AIDS cases of which 26 have already died. "I'd say almost all the cases of AIDS here are related to the fishing industry" claims one of the nurses testing blood samples. "It is coming from both foreign fishermen and our own sailors."

Another unwelcome side effect of each docking by the foreign fishing vessels is the large amount of by-catch offloaded on to the local fish markets. Known as "korakorea fish", it sells cheaply, undercutting the price of locally caught fish and threatening the livelihood of many fishermen and their wives who sell each day's catch from coolers along the main road.

David Yee Ting, Kiribati's Permanent Secretary for Fisheries, is optimistic that these problems are coming under control. He states that the Police are enforcing the laws to stop girls from visiting the boats and adds: "As Pacific states come together through regional bodies like the FFA and the WCPFC I believe we will have more collective power to get a better deal on our fish resources".

(Source: Pacific Magazine, November 2006, <http://www.pacificislands.cc/issue/2006/11/01/fish-and-ships>)

New FAO Publications

Cephalopods of the World: an annotated and illustrated catalogue of cephalopod species known to date. Vol.1: Chambered Nautiluses and Sepioids (Nautilidae, Sepiidae, Sepiolidae, Sepiadariidae, Idiosepiidae and Spirulidae) / edited by P. Jereb & C. Roper (FAO Species Catalogue for Fisheries Purposes No. 4, Vol. 1). Rome, 2005, 294 pp. ISBN 92-5-105383-9 ISSN 1020-8682 TC/M/A0150/E.

This is the first volume of the entirely rewritten, revised and updated version of the original FAO Catalogue of Cephalopods of the World (1984). The present Volume is a multi-authored compilation that reviews the six named families, consisting of the 23 genera and 201 species known as at the date of completion of this volume. It provides accounts for all families and genera, as well as illustrated keys to all taxa. Information under each species account includes: valid modern systematic name and original citation of the species (or subspecies); main synonyms; English, French and Spanish FAO names for the species; illustrations of dorsal and ventral aspect of the whole animal (as necessary) and other distinguishing illustrations; field characteristics; diagnostic features; geographic and vertical distribution, including GIS map; size; habitat; biology; interest to fishery; local names when available; a remarks section (as necessary) and literature. The volume is fully indexed and also includes sections on terminology and measurements, an extensive glossary, an introduction with an updated review of the existing biological knowledge on cephalopods (including fisheries information and catch data for recent years) and a dedicated bibliography.

Review of the current state of world aquaculture insurance / Raymon van Anrooy, Philip Secretan, Yong Lou, Richard Roberts & Maroti Upare. Rome, 2006, 104 pp. (FAO Fisheries Technical Paper No. 493) ISBN 92-5-105532-7 ISSN 0429-9345 TC/M/A0583/E 107554

Risk management is increasingly gaining attention within the aquaculture sector, as reflected in the development and increasing implementation of better management practices, codes of conduct and codes of good practice, standard operational procedures, certification and traceability. Aquaculture insurance is one of the tools used in the management of risks in aquaculture. This publication provides an overview of the current status of aquaculture stock insurance in the world. Seven syntheses covering Asia, China, Europe, North America, Oceania, South America and sub-Saharan Africa show the specificities of the situation with regard to aquaculture stock insurance. The publication also presents a summary of these syntheses, together with conclusions and clear recommendations at various levels to increase the contribution of aquaculture stock insurance to the sustainable management and development of the aquaculture sector.

The State of world highly migratory, straddling and other high seas fishery resources and associated species / Jean-Jaques Maguire, Michael Sissenwine, Jorge Csirke, Richard Grainger & Serge Garcia. (FAO Fisheries Technical Paper No. 495) Rome, 2006, 96 pp. ISBN 92-5-105554-8 ISSN 0429-9345 TC/M/A0653/E 107632

This document describes highly migratory fish stocks, straddling fish stocks, and stocks of other high-seas fishery resources and the fisheries for them, including information on their state of exploitation. Fisheries for highly migratory species are important in all oceans and semi-enclosed seas, except for polar regions. Fisheries for straddling fish stocks are much more localized, primarily occurring in a few regions where continental shelves extend beyond the 200-mile exclusive economic zone (EEZ) while most fisheries for other high-seas fishery resources are deep-water fisheries. Formal assessments are lacking for most of the stocks examined. Nevertheless, the compilation of available assessments and FAO's analyses indicate that about 30 percent of the stocks of highly migratory tuna and tuna-like species, more than 50 percent of the highly migratory oceanic sharks and nearly two-thirds of the straddling stocks and the stocks of other high-seas fishery resources are overexploited or depleted.

Report of the FAO Expert Consultation on the Implementation of the FAO International Plan of Action for the Conservation and Management of Sharks. Rome, 6-8 December 2005 (FAO Fisheries Report No. 795) Rome, 2006, 32 pp. ISBN 92-5-105516-5 ISSN 0429-9337 TR/M/A0523/E

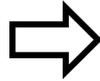
This Consultation reviewed available information and national, institutional and personal experiences in relation to factors governing the success of this programme. The constraints to programme implementation were reviewed and suggestions made as to how the efficacy and effectiveness of the programme could be improved. The view of the Consultation was that the IPOA- SHARKS was a beneficial endeavour and that efforts to improve its effectiveness should be strengthened.

Producing the Newsletter: a photo essay



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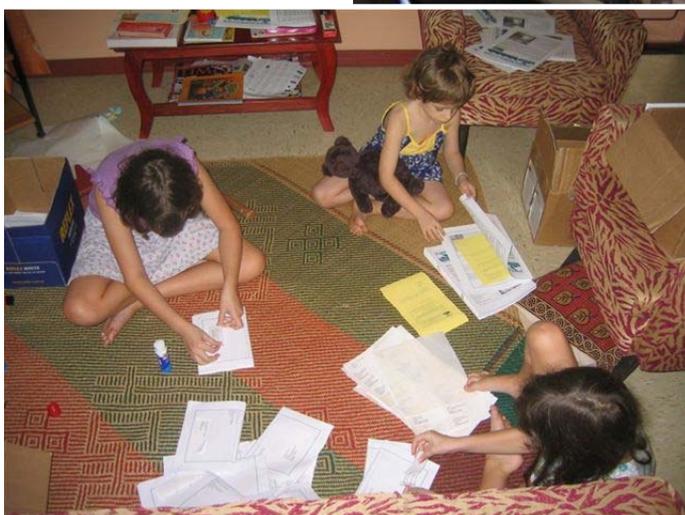


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Scholarship Announcement

The United States-South Pacific Scholarship Program, authorized by the Congress and funded by the Bureau of Educational and Cultural Affairs of the U.S. Department of State, is a competitive, merit-based scholarship program that provides opportunities for degree study at U.S. institutions of higher education. The scholarship program will include a summer internship in Washington, D.C. as well as a four to five week community service project in the student's home country.

Candidates from the following countries, who meet specific selection criteria, are eligible for the program: Cook Islands, Fiji, Kiribati, Niue, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu, and Vanuatu. Up to five scholarships will be available for studies to begin in August 2007. Individuals who have dual citizenship, one being that of the United States, *are not eligible*.

Eligible fields of Study: Standard liberal arts curriculum and other selected fields, with priority given to agriculture, business administration, economics, education, environmental studies, information technology & management, journalism, political science, public administration, and related fields. If a proposed field of study within the liberal arts is not among the priority fields, the applicant should give special attention to explaining how this course of study would support the goals of the program. Support is not available for professional degrees such as medicine (M.D.) or law (J.D.).

Selection: Selection will be made by a U.S.-based academic review committee that may include Pacific Islands and other specialists from the East-West Center, the University of Hawai'i, a representative of the Bureau and a Pacific Islands student representative.

Eligibility: Applicants must have completed the Sixth Form at the time of application. Individuals who have completed some undergraduate level courses but have not obtained the equivalent of a U.S. four-year bachelor's degree are also eligible.

Individuals who have completed a three-year baccalaureate program may apply for a one-year bridging program, which upon completion, allows for application to a master's degree program. Some master's programs may not require the bridging year, depending on prior study and academic performance during the first year. This program does not allow direct application and admission to a graduate degree program.

Because an objective of the program is to provide an educational exchange experience to those not previously afforded such an opportunity, preference will usually be given to candidates who have not had recent extensive experience in the U.S. Preference may also be given to candidates who have not had extensive opportunities for study at educational institutions outside the Pacific Islands region (i.e., outside the countries listed above.) Scholarship recipients must be able to meet the requirements of the Exchange Visitor (J-1) visa program.

An application packet may be obtained from American embassies or consulates located in Auckland, Wellington, Suva, Port Moresby and Majuro, Marshall Islands (for Kiribati). They are also available from various colleges, universities, high schools, businesses and government offices of all representative island nations. You may also request a packet directly from:

Award Services Office
East-West Center
1601 East-West Road
Honolulu, Hawaii 96848-1601
Telephone (808) 944-7735; Fax: (808) 944-7730
Email: ussp@eastwestcenter.org

All inquiries should reference 2006 United States - South Pacific Scholarship Program competition.
The application deadline is February 1, 2007 for awards beginning in early August 2007. Awards are expected to be announced on <http://pidp.eastwestcenter.org/pidp/Awards/spsaward1.htm> by April 1, 2007.

Marine Education Conference for Suva



Marine educators worldwide will gather January 15 to 19, 2007, in Suva, Fiji, to share resources and build a network aimed at ensuring the health of the Pacific Ocean and the communities who depend upon it. Web conferencing will allow educators who are unable to travel to Fiji to participate.

Marine educators - using the widest sense of the word - are invited to participate in this conference focused on the Pacific. The conference will be held at the University of the South Pacific, sponsored by USP, the Western Pacific Regional Fishery Management Council and the Ocean Foundation.

Be part of an international effort to change the public attitude towards the ocean and to actively protect this ecosystem that keeps our world healthy. If the ocean isn't healthy, people are in jeopardy. Our kids deserve to be given a healthy legacy.

Pressures from a rapidly growing world population are increasing at an exponential rate. From CO₂ concentrations that accelerate global climate change to global depletion of fishery stocks, the problems are unprecedented and will require innovative solutions.

A worldwide network of educators who focus on and are prepared to share knowledge and resources to solve these problems is essential.

The International Pacific Marine Educators Conference (IPMEC) is an outcome of the One Ocean Marine Forum (OOMF), held in July 2005 at Kahului, Maui, Hawaii. This initial international meeting was, in turn, the result of long time associations between members of the Marine Education Society of Australasia and the National Marine Educators Association (NMEA) in North America.

There have been many cross-cultural visits over recent years and these visits have exposed the challenges in both knowledge and resource sharing on the international scene. The 2005 Forum, which was the first formal international meeting of marine educators, was the next logical step in this process of exposing the challenges in knowledge and resource sharing. The upcoming Fiji conference will further that goal by piloting the Pacific Ocean.



For additional information visit:

IPMEC Conference website
Marine Education Society of Australasia Ltd.
National Marine Educators Association (US)
The Ocean Foundation
Western Pacific Regional Fishery Management Council
Virtual tour of the conference venue (USP)

<http://www.ipmec.info/>
<http://www.mesa.edu.au/inter/>
<http://www.marine-ed.org/>
<http://www.oceanfdn.org/>
<http://www.wpcouncil.org/>
<http://www.ipmec.info/album/index.html>

Conference Notices

2007

- Jan. 15-19 International Pacific Marine Educators Conference, Suva, Fiji
www.ipmec.info
- Feb. 26-Mar 2 Aquaculture 2007: Science for sustainable aquaculture (World Aquaculture Society conference), San Antonio, Texas
<http://www.was.org/meetings/ConferenceInfo.asp?MeetingCode=AQ2007>
- Apr. 16-20 International Coastal Symposium, ICS2007, Gold Coast, Queensland
<http://www.griffith.edu.au/school/eng/ics2007/>
- May 15-18 5th International Fisheries Observer Conference, Vancouver
<http://www.fisheriesobserverconference.com/>
- May 21-24 5th International Marine Bioinvasions Conference, Cambridge, Mass.
<http://web.mit.edu/seagrant/bioinvasion2007/index.html>
- Jun. 12-18 21st Pacific Science Congress, Okinawa, Japan
<http://www.psc21.net/>
- Jul. 7-11 11th International Coral Reef Symposium, Ft. Lauderdale, Florida
<http://www.nova.edu/ncri/11icrs/>

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