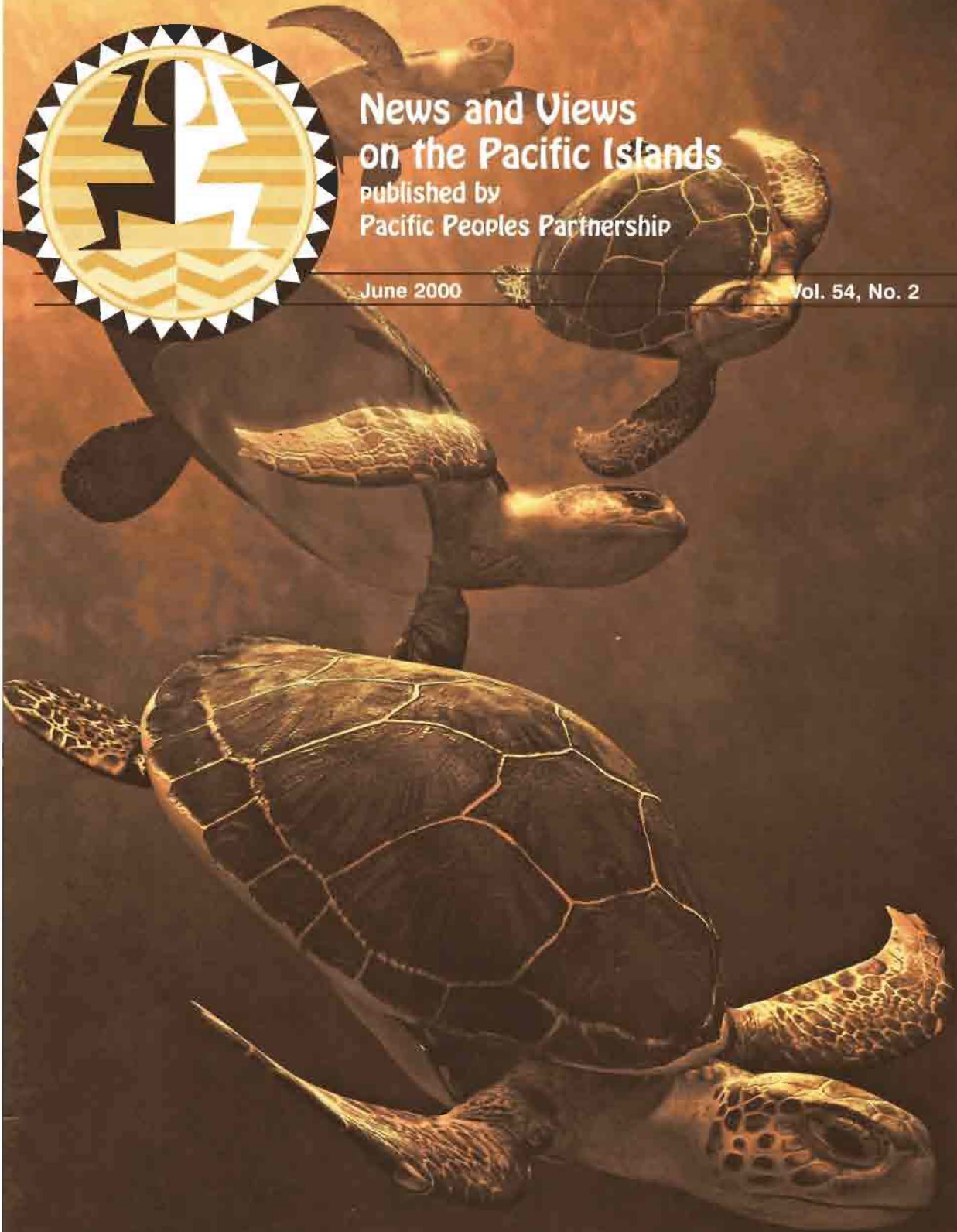




News and Views  
on the Pacific Islands  
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June 2000

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**Ocean Development,  
Management and  
Conservation**

**Tok Blonza Pasifik**

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### Front Cover Image:

Produced by Jason Pennington, a freelance 3d animator/compositor based in Nova Scotia, Canada.  
Email: geeves666@hotmail.com

### Back Cover Photos:

Clockwise from top left corner:

- 1. Reef life. *Photo by Matson*
- 2. Woman selling fish in Samoa. *Photo by Tony Chamberlain*
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- 4. Fishing in Solomon Islands. *Photo by C-SPOD*



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## ABOUT THE MAGAZINE

**Tok Blong Pasifik** is a phrase in Pidgin, a language used in parts of the Pacific. A rough equivalent would be "News from the Pacific". **Tok Blong Pasifik** (ISSN: 1196-8206) is published by the South Pacific Peoples Foundation of Canada (SPPF). Our aim is to promote awareness of development, social justice, environment and other issues of importance to Pacific Islanders. Through the magazine, we hope to provide readers with a window on the Pacific that will foster understanding and promote support for Pacific Island peoples. SPPF gratefully acknowledges support for this publication from the Canadian International Development Agency.

### For further information contact:

PPP, 1921 Fernwood Road, Victoria  
British Columbia, V8T 2Y6, Canada  
TEL: (250) 381-4131 FAX: (250) 388-5258  
E-mail: sppf@sppf.org  
Website: www.sppf.org

GUEST EDITOR: Randall Garrison

MAGAZINE COMMITTEE: Alison Gardner,  
Elaine Monds, Linda Pennells, Marianne Scott,  
Arlene Wells

### LAYOUT & PRINTING:

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## EDITORIAL POLICY

We welcome contributions to **Tok Blong Pasifik** and readers' comments. A priority is placed upon contributions from Pacific Islanders and others living in the Islands. As an issues focused magazine, **Tok Blong Pasifik** often includes material that is contentious. Views expressed are those of the contributors and do not necessarily reflect the views of SPPF or financial supporters of the magazine. We reserve the right to edit material.

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# Tok Tok

## Take the Plunge!

**I**t may seem odd for me to write this introduction to an issue of Tok Blong Pasifik focused on ocean resources and management. After all, I was born in the middle of North America, about as far from salt water as possible, and my marine expertise is strongest in the areas of suntanning and beach volleyball. Even after spending twenty years living on a North Pacific Island and working with PPP, my own view of the Pacific is still too often coloured by the dominant images of the Pacific as something immense, empty, and distant. And the farther one strays from Pacific shores the more dominant these images seem to be.

For the peoples of the Pacific these images are truly foreign. There is nothing remote, immense, or empty about the Pacific. The Pacific has always been a great highway connecting, not dividing Pacific Islanders. The geography may be vast, but it is intimately known to those indigenous to its shores. And of course for Pacific Islanders the ocean is not empty but filled with treasures, treasures not free for the taking but owned by the people who live there.

Yet this view of the Pacific as limitless, unpopulated and remote remains dominant outside the region. It offers an explanation, though not an excuse, for the decision of western military powers to conduct their experimental nuclear tests there beginning in the 1950s. Tests could be hidden in a remote part of the world, far out of sight of the world media. The objections of the small local populations were unlikely to be heard across the distance. The vastness of the ocean would contain any damage done from the tests. It was a great presumption on all counts and Pacific Islanders still live with the tragic environmental, health, and social impacts of nuclear testing.

In contrast, Pacific Islanders have always taken seriously their role as stewards of the Pacific. But the struggle to protect this heritage has become ever more challenging. Demand for resources and improvements in technology have pushed mineral exploration under the sea. Fishstocks are threatened by habitat destruction and over-fishing by outsiders. The search goes on for ways to build economies that will support island populations while preserving their cultural and political autonomy and still protecting the environment

As a tricoastal nation Canada obviously has experience to share in the area of marine resource management, even if not all of it is positive. The Canadian government has rightly identified marine resource management as a priority area for Canadian development assistance in the Pacific. Certainly Canada can help build local capacity in marine sciences and coastal management where we have developed technical expertise. Perhaps others can learn from our own disastrous experience at "managing" fish stocks and from our own sorry tales of habitat destruction.

Still we have to be careful not to lose sight of the ocean while studying the waters. Global warming remains a serious treat to the Pacific marine environment, not just a distant threat of submerging the low lying atolls but one with current impacts on coastal and reef environments. The recent decision to add the spent Japanese nuclear fuel refused entrance to Canada and the US to the stockpile of hazardous wastes at Johnston Atoll only heightens the threat to the entire ecosystem of the Pacific.

PPP is grateful to our partners in helping put together both materials and financial support for this issue. These include major contributions from one of our ongoing partners, CSPOD, as well as assistance from CIDA, LGL Limited, the Forum Fisheries Agency, the South Pacific Forum Secretariat, SPREP (South Pacific Regional Environment Program), and the University of the South Pacific.

In the end it seems difficult for outsiders to think about the Pacific Ocean without falling into cliches. Probably our most common image is now the Pacific appearing as the key feature of the blue planet seen from space. Indeed our views of the Pacific and outer space remain oddly similar - we take them both for granted. We distance ourselves from the specific impacts we humans are having, even as we admire their beauty. In this issue we invite readers to draw closer to the Pacific and take the plunge into an upclose view of Pacific resource management and ecology.

Randall Garrison  
Acting Executive Director  
Pacific Peoples' Partnership



## Canada's Commitment to Developing Nations in the Pacific Islands Region

As Canada's Minister for International Cooperation, I am delighted to have the opportunity to mark the occasion of this special issue of *Tok Blong Pasifik* on the marine development and conservation initiatives of Pacific Islanders which Canada is supporting.

Canada's relationship with the Pacific region has been a continuous one, stretching over three decades. Recently, Canada welcomed the addition of five new countries - Federated States of Micronesia, Palau and the Republic of Marshall Islands in 1997, Nauru and Niue in 1998 - to the list of those eligible to receive Canadian Official Development Assistance (ODA).

The Canada-South Pacific Ocean Development Programme is the largest Canadian development initiative in the Pacific Islands region. In operation since February 1988, this fourteen-year \$28.0 million Cdn programme's primary objective is to contribute to the sustainable development of selected regional institutions in the management and protection of the region's living marine resources. The Canadian International Development Agency (CIDA) is working in partnership with the Forum Secretariat, the Forum Fisheries Agency, the South Pacific Regional Environment Programme and the University of the South Pacific on the delivery of the programme.

The cornerstone of Canada's development assistance programme is to support sustainable development in order to reduce poverty and contribute to a more secure, equitable and prosperous world. We recognize that sound



Photo: CIDA

marine development is a key area of development for the Pacific Islands region and we are proud to be able to contribute to the efforts of all those involved with C-SPOD.

Other Canadian aid programmes focus on support for local initiatives and the work of non-governmental organizations (NGOs). Largest of these programmes is the Canada Fund (this year \$2.2 million Cdn), which supports projects at a community level in such areas as education, health and nutrition, access to potable water and sanitation. CIDA has established a programme with the UN Development Programme for the development of Pacific NGOs' capacity to plan, manage, implement and monitor projects. CIDA has also supported the Pacific programmes of Canadian NGOs like Pacific Peoples' Partnership and CUSO.

Over the coming years, we look forward to continue building our relationship with the Pacific Islands region as well as increasing our dialogue with Pacific countries and regional organizations.

Congratulations on the success of *Tok Blong Pasifik* magazine! I commend you for your continued efforts to raise awareness of development issues in the Pacific. I also extend congratulations to Pacific Peoples' Partnership on your 25th anniversary and wish you well for your next quarter century of work in support of Pacific Islanders.

Maria Minna, P.C., M.P.

# Sharing a Common Ocean and Common Concerns

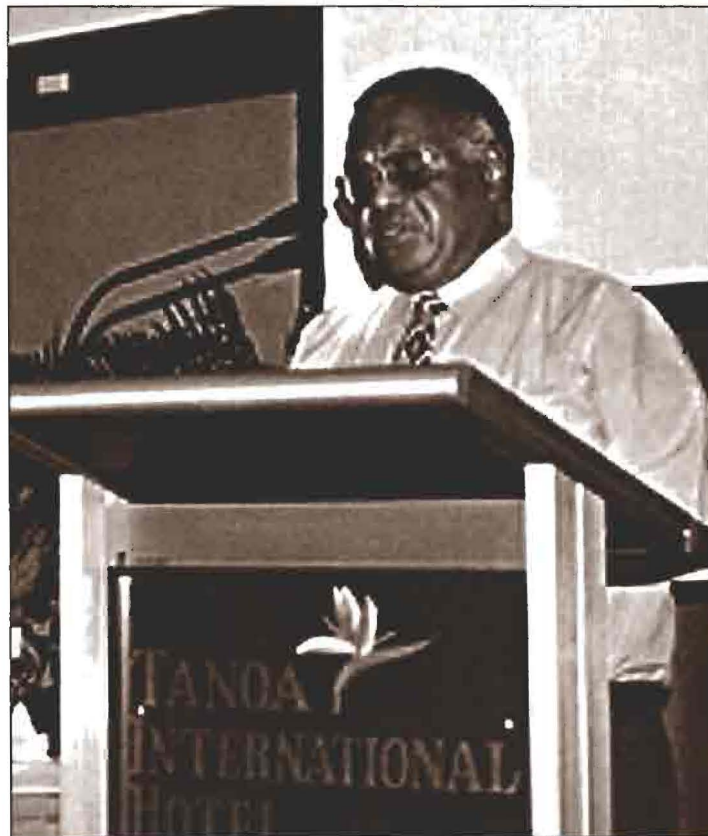


Photo: Forum Secretariat

I am very pleased to contribute introductory remarks to this special issue of the Pacific Peoples' Partnership's *Tok Blong Pasifik*, which focuses on the Canada-South Pacific Ocean Development Programme (C-SPOD) of which the Forum is the regional coordinating agency.

Canada has been a long time friend and supporter of the Forum Island Countries and regional institutions. Canada has contributed millions in funding to the region over the past 20 years through C-SPOD, CUSO, the Canada Fund and regional NGOs.

Of particular importance has been Canada's long term commitment to ocean development through almost 15 years of support to C-SPOD. This is very important to the continuing development of Pacific Island Countries, which are largely dependent on the ocean.

There are a number of critical issues of concern for Pacific Islanders related to the ocean including climate change, marine pollution, sustainable use of our marine resources, and obtaining a fair share of our bountiful offshore fisheries resources. The C-SPOD Programme is

addressing many of these issues.

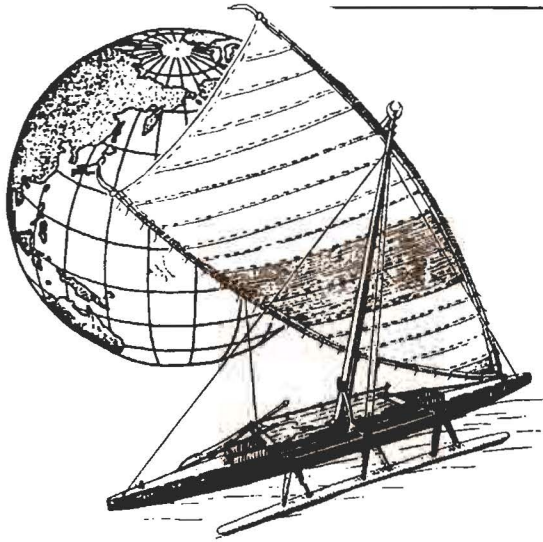
When I met last year with the Canadian Minister for Foreign Affairs we both agreed:

*"that Canada and the Pacific region share a common ocean and common concerns and we must be stewards of this ocean and take care of it"*

The Pacific Region has also appreciated the significant Canadian support for women's and gender issues in the Pacific. This support includes the posting of a gender issues adviser at the Forum Secretariat, support to the Secretariat of the Pacific Community (SPC) for projects in women in fisheries and support to projects such as Ecowoman and Wainimate (the Women's Association for Natural Medicinal Therapy).

The Forum Island Countries look forward to Canada continuing to play an important role in assisting us in our attempts at sustainable ocean development.

W Noel Levi, CBE  
Secretary General  
South Pacific Forum Secretariat



# PPP in action

## The 2000 Pacific Networking Conference

by David Webster

“For us in the Pacific, the Cold War is not over,” says Motarilavao Hilda Lini. “Even though Russia and America say it is over, for us it is not over.”

The director of the Nuclear Free and Independent Pacific (NFIP) movement’s secretariat means two things: Pacific Islanders are still dealing with the poisonous legacy of the nuclear fuel chain and nuclear testing, and a new threat to their homes is coming from the transportation and dumping of nuclear and toxic waste. But she has another message as well: action from around the whole Pacific can bring about change. The meeting she is speaking at is a networking session for activists from the whole region,

but it is also a celebration: twenty-five years after activists came up with a People’s Charter for a Nuclear Free and Independent Pacific, most of the region is now nuclear-free, and most of its people live in their own independent countries, rather than being colonial subjects of Britain, Australia, New Zealand and the United States.

The conference also marked the twenty-fifth anniversary of the Pacific People’s Partnership, a Victoria-based organization that seeks to build links between indigenous peoples in Canada and the Pacific islands. This year’s gathering, held under the theme of “Indigenous Wisdom: Stewardship of Culture, Environment, Resources,” had the largest participation yet by both islanders and Canadian First Nations.

“We come from many islands,” Lini said in her keynote opening the conference at a Tsartlip-run tribal school just outside Victoria. “If you look at the world map, you won’t see many of us, but we exist.” People from countries like her own small nation, Vanuatu, have been the victims of power games played by the powerful states of the Pacific Rim, she said.

“The Pacific is the most militarized region in the world,” Lini said, launching into an account of the nuclear fuel chain. Uranium was mined in the region (in Canada and Australia, mostly on indigenous lands), then incorporated into weapons by the United States, Russia and China as well as colonial powers Britain and France, then tested by the Americans and French on their Pacific Island colonies. But the chain went on: nuclear weapons were carried on ships and submarines that cruised the Pacific from bases in the region, and the deadly waste products were then dumped on Pacific Islands.

As Lini spoke she circulated a new action alert hot off the presses: a shipment of 220,000 pounds of PCB-contaminated military waste from



*Snuneymuxw Elder Ellen White addresses conference participants*

Photo: Troy Hunter

Japan that was turned away from both Vancouver and Seattle in March will now be sent to Johnston Atoll in the central Pacific, joining plutonium waste from 1960s nuclear tests and hundreds of drums of Vietnam-war era Agent Orange contaminants.

It's not just Johnston that has this problem. Many of the old American colonies and the islands still ruled by France were used as nuclear test sites starting with Bikini in the American-ruled Marshall Islands, which was hit in 1954 by the first hydrogen bomb explosion. Marita Edwin, director of Youth to Youth in Health, was there to share the story of the islanders.

"We are suffering a lot from the sixty-six bombs that were dropped on Marshall Islands," Edwin said through tears. "I am very sorry but when I think of these things I cry. We still have babies' bodies that are born looking like jellyfish and this is because of the bombs that were dropped on Marshall Islands. I have seen a lot of babies who died from cancer from this nuclear waste."

The Marshall Islands gained its independence only in 1986 under a compact of free association that guaranteed special rights in the strategic Northwest Pacific islands to the U.S. The compact also meant very limited ability to take action on the nuclear leftovers of American rule.

"Our previous government couldn't really help us, the people of the Marshall Islands, but we have a new government which is negotiating with the U.S. government to give more compensation to the people of the Marshall Islands," Edwin said. "And we're glad that our new government is helping the people of the Marshall Islands.... this is the first time that our government is doing something for the people of the Marshall Islands."

It's an illustration of the NFIP's insistence that "nuclear-free" is not possible without "independent," a point that was far from accepted when delegates including Canadian Alice Coppard thrashed out the original NFIP charter a quarter of a century ago. (Coppard, now in her nineties, still attends NFIP meetings.) As Hilda Lini insisted, "in the Pacific you cannot separate nuclear issues from colonialism."

The last country to give up above-ground testing was France, which carried out more than 200 tests until 1996 in one of its Pacific colonies which is still refuses to give up: French Polynesia, called Tahiti by the tourist brochures and Te Ao Maohi by its indigenous people.

Anti-nuclear activism brought Gabriel Tetiarahi to the pro-independence cause. Away in France studying for his doctorate in France, Tetiarahi saw for the first time photographs of Hiroshima and Nagasaki that were never seen in his own country, the only territory where the French government continues to enforce its State Secrets Law.

In Victoria, Tetiarahi departed from his planned talk to speak in his own language to a canoe carved by a local Tsartlip artist suspended in the meeting room. Like the First Nations of British Columbia, Tetiarahi said, his own ancestors travelled by canoe. As a child, his class was forced to board a military truck to view a nuclear test site. "I would have preferred to see a canoe."

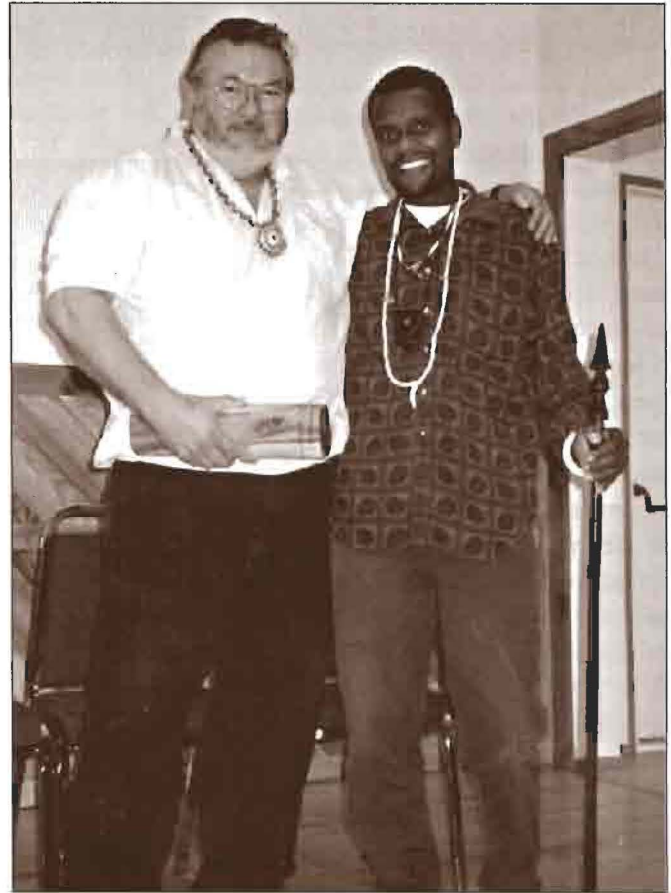


Photo: Raven August

*Chief Victor York of the Lower Nicola Band welcomes Chief Viraleo Boborenvanua of the Turaga Nation in Vanuatu during BC tour by Pacific visitor*

Years later, Tetiarahi had the chance to see just that when he boarded an outrigger carved by New Zealand Maori artist Te Aturangi Nepia Clamp, another speaker in Victoria. The outrigger retraced the ancient Polynesian journeys between New Zealand, Tahiti, Hawaii and Easter Island. And Tetiarahi used it as a metaphor for the entire NFIP movement: "When you are partners with Pacific peoples, you are on the same boat, you are on that boat. We are all on a double canoe, with words as our paddles."

*This article originally appeared in Catholic New Times.*



# The Pacific: An Ocean of Opportunity

By Dr. Kenneth T. MacKay

Looking at a map of the Pacific region, the large amount of blue sea stands out – a Sea of Islands – as Pacific Islanders call it. The ocean is intimately woven into the history, economy, culture, and beliefs of the peoples of the Pacific.

The Pacific Islands were settled using one of the most amazing feats of Open Ocean navigation in history. The first “canoe people,” using large ocean-going canoes and sophisticated navigational knowledge and skills, carried out return voyages of over a thousand miles 3,500 years ago. They traveled from their home islands to discover and colonize New Caledonia, Vanuatu, Fiji, and much of Polynesia. Subsequent travel during the first millennium lead to the settlement of Easter Island, Hawaii, and eventually New Zealand. Many of the boat building and navigation skills have since been lost, but there are still critical links to the sea for transportation, food, and livelihood.

The ocean is currently an area of economic opportunity for Pacific Island Countries (PICs). They are custodians of 33 million sq. km of ocean – comprising one-sixth of the Earth’s oceans. Much of this is contained within the countries’ 200-mile Economic Exclusivity Zones (EEZs). These zones are becoming increasingly important because they contain some of the richest tuna fishing areas in the world.

Recent annual tuna catches have been estimated by the Secretariat of the Pacific Community (SPC) to be 1.7 million tonnes, supplying 40 per cent of the world’s

tuna. Estimates place more than 1,000 fishing vessels in the Western and Central Pacific, many of them from distant water fishing nations such as Japan, Korea, Taiwan, China, and the United States. According to the South Pacific Forum Fisheries Agency (FFA), annual tuna catches are worth at least US\$1.7 billion, but

Pacific countries receive less than seven per cent of the earnings.

A few countries, such as Fiji and Samoa, have recently substantially increased their domestic-based tuna fishery. In Samoa, the newly developed longline fishery is worth US\$10 million per year and is yielding a significant proportion of the national GDP.

The ocean’s resources aren’t limited to the organisms in the water. There are additional resources of hydrocarbons, deep sea minerals, and potential pharmaceutical drugs being discovered

and studied by the South Pacific Applied Geoscience Commission (SOPAC), the University of the South Pacific, and other research and private sector organisations.

In small countries, such as Kiribati, the largest source of income is the money sent home by Kiribati men working on ocean-going vessels.

Coastal tourism is now the most important ocean-related activity throughout the Pacific. Ten million tourists flock to Polynesia, Micronesia, and Polynesia per year, contributing over \$1.5 billion to domestic earnings of PICs. In 1997, the South Pacific Tourism

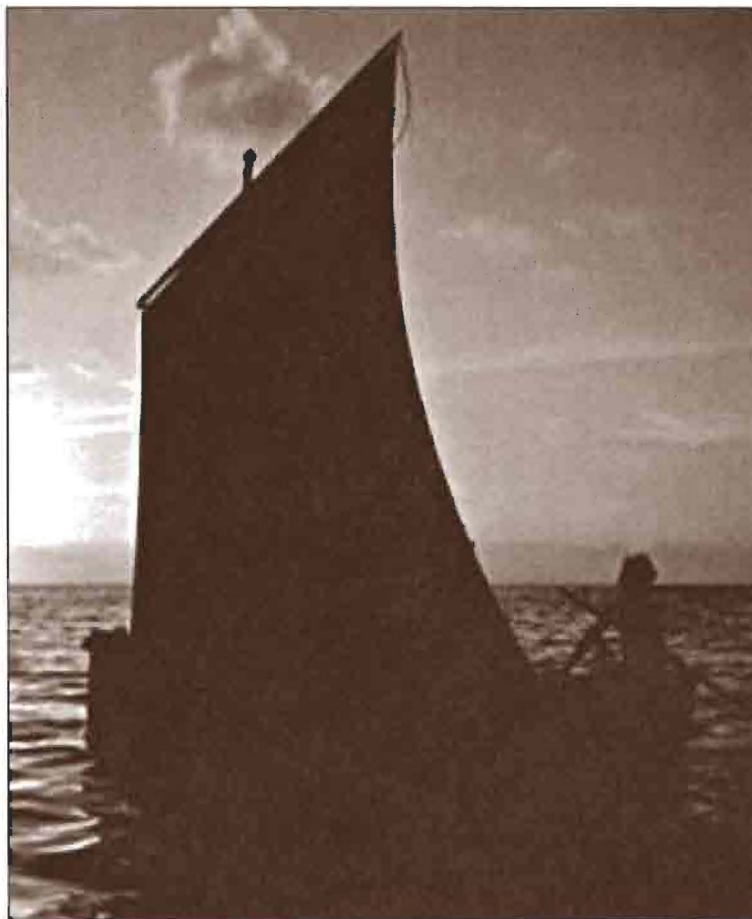


Photo: Matson



Organisation estimated tourism numbers in the region would grow seven per cent annually.

The sea may provide people with employment and sustenance, but it is also a force that can destroy homes and lives, and may perhaps one day even swallow whole countries. Pacific countries face problems of environmental and economic vulnerability. They are exposed to environmental disasters such as cyclones and tsunamis (tidal waves) that can devastate whole economies for years, while elevated sea temperatures because of global warming can kill even pristine coral reefs over large areas.

Photo: Matson



*Divers take in the sights on one of the Pacific's numerous coral reefs. A relatively pristine coastal environment helps draw an estimated 10 million tourists a year to the Pacific region.*

## The Fish Bearing Tree of Ngibtal: A Traditional Folk Tale from Palau

In the old days there was an island named Ngibtal near the village of Ngiwal, and on its shore an old woman lived alone. The old woman had a son named Mangidabrutkoel, but she never knew where he was or what he was doing for he used to travel to other villages.

The people of Ngibtal used to pass by the home of the old woman each day as they returned from the sea with their fish, but none of them ever offered her any of their catches, and though the woman was particularly fond of certain fish she was never able to eat them.

One day, after a particularly long absence, Mangidabrutkoel came home to visit his mother, and she took the chance of complaining to her son that when others had plenty to eat, she never had a fish for her pot. Mangidabrutkoel listened to his mother's complaint and, before setting out for his next trip, he went out into the yard of his mother's house.

Coming to a breadfruit tree growing by the water's edge, he chopped off one of its branches.

Where the branch had been cut off water immediately gushed from the tree, flowing spasmodically to the rhythm of the waves on the shore. With each surge a fish leaped out of the tree.

This tree became the envy of all the other people on the island.

"While we must go out to sea for our fish, the old woman can get all she wishes by sitting under her tree," they complained.

Finally, one night an envious old man stole over to the wonderful fish-bearing tree and chopped it down. The water that had before flowed forth intermittently now burst out in torrent and very soon the whole island was flooded.

To this day, the site of the island, with its stone pathways, platforms, etc., can be seen from the water's surface off the shore of Ngiwal.

*Source: Palauan Legends, No. 2, published by the Palau Community Action Agency, 1975.*

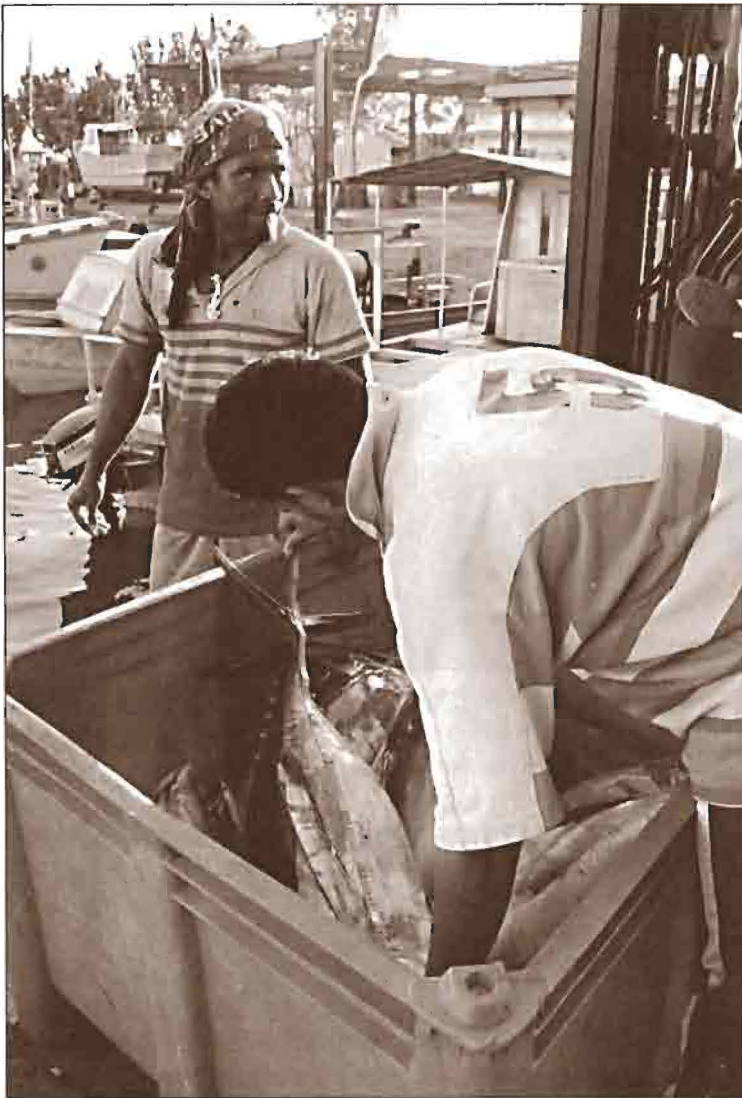


Photo: C-SPOD

*A Samoa fisheries officer measures a freshly caught tuna in Apia. Samoa's newly formed domestic long-line tuna fishery is contributing millions to the country's economy and creating new jobs.*

Increased human populations along narrow strips of coastal areas are also resulting in pollution of inshore waters, unregulated coastal development, and overfishing. These factors combined with global warming and sea level rise are threatening peoples' livelihoods. In some cases, even the survival of fragile island states is threatened.

Sea level rise is very real to atoll countries that may only be two to six metres above sea level. For example, the country of Tuvalu is setting in place contingency plans to move the whole country to higher, but uninhabited islands in neighbouring countries.

Climate change becomes real when ocean temperatures rise and coral dies leading to the loss of substantial tourism dollars, which is threatening Fiji this year and affected Palau in 1999. Because of their small size, limited economic options, distance from markets, weak transportation infrastructure, high transportation rates,

and limited availability of trained personnel and entrepreneurs, PICs are economically very vulnerable.

The challenge for PICs is to ensure they reap increased benefits from the ocean, but at the same time do so in a sustainable manner so that the next generation will still benefit from those resources. This is perhaps best illustrated by the folk tale from Palau below.

It is within this context, that the Canada-South Pacific Ocean Development (C-SPOD) Program has been designed to focus on the sustainable development of marine resources. This issue of Tok Blong Pasifik features stories on many of the projects supported by C-SPOD since it started in 1988.

Dr. Kenneth T. MacKay is the Field Program Coordinator of the Canada-South Pacific Ocean Development (C-SPOD) Program. He is based at the South Pacific Forum Secretariat in Suva, Fiji.



# Co-operation for Ocean Development and Conservation

## The Canada-South Pacific Ocean Development Program

*By William Cross & Jennifer Robinson*

**O**n the surface, Pacific Island countries and Canada have little in common.

Known more for its icy winter snowstorms and polar bears, Canada is seen as a bit of an odd entrant into the foreign donor scene in a developing region renowned for its sandy beaches and palm trees.

However, there is a common tie – the Pacific Ocean – and a similar history of depending on the sea for dinner on the table, employment, and a unique way of living.

During the past 12 years, Canada has undertaken to strengthen these common ties with the Pacific region through the Canada-South Pacific Ocean Development Program or C-SPOD, which is funded by the Government of Canada through the Canadian International Development Agency (CIDA). Now in its second phase, the \$28-million programme is slated to end in 2004.

“The world’s oceans play a crucial role in maintaining the health of the planet’s ecosystems and as a source of protein,” Pierre Pettigrew, former Canadian Minister of International Cooperation and La Francophonie, said in announcing the second phase in 1997.

“The ocean is the only means of subsistence for many people in the South Pacific region and must be maintained for future generations,” he said. “With the longest coastline in the world, Canada is in a unique position to share its experience in dealing with marine issues, resource management, and environmental protection.”

In a very modest way, Canada had been active in providing assistance to the South Pacific region since the

early 1970s, when CIDA contributed \$750,000 for a research vessel and marine science equipment for a tropical fisheries training project. Canada had also provided millions of dollars in support through the now defunct International Centre for Ocean Development (ICOD), as well as through the Canada Fund and CUSO.

Aside from the Pacific, Canada has supported regional ocean initiatives in the Caribbean, Southeast Asia, West Africa, and the Indian Ocean. The programmes address a wide range of ocean-related priorities, such as marine sciences and technology, the development of institutional capacity for fisheries and oceans management, protection of the marine environment, and strengthening of regional organizations.

The creation of C-SPOD and similar programmes are the result of the entry into force of the United Nations Convention on the Law of the Sea in 1982, and a major review of Canadian development assistance in 1986. The review recommended an expansion of assistance to the South Pacific region, with an emphasis on development and management of ocean resources.

In 1988, CIDA unveiled the \$14 million C-SPOD program run by ICOD. Projects were designed and implemented by the program’s regional partners, which included: the South Pacific Forum Fisheries Agency (FFA), South Pacific Forum Secretariat (ForSec), South Pacific Applied Geoscience Commission (SOPAC), South Pacific Commission (SPC), South Pacific Regional Environment Programme (SPREP), and the University of the South Pacific (USP). In addition, bilateral





Photo: Forum Secretariat

Canadian High Commissioner in Canberra Brian Schumacher (left) signs the aide memoire setting out the framework for the Canada-South Pacific Ocean Development (C-SPOD) Program in Majuro, Marshall Islands in 1996. Also signing are, from left to right, former Forum Secretary General Ieremia Tabai, USP Vice Chancellor Esekia Solufa, Victor Uberberu, director of the Forum Fisheries Agency, and Don Stewart, former deputy director of the South Pacific Regional Environment Programme.

arrangements with national governments helped set up a fishing cooperative in Gizo, Solomon Islands, and provided assistance to a small-scale fishery in Luganville, Vanuatu.

Between 1988 and 1995, Canada supported 64 regional and bilateral projects. The projects included updating national shipping and ports legislation and regulations; turtle conservation; surveillance and enforcement training for fisheries officers; the USP Marine Studies Programme; workshops on inshore fishing; and the identification and management of nearshore mineral resources in the South Pacific.

In 1992, the Canadian government disbanded ICOD, a Crown corporation based in Halifax, Nova Scotia, and CIDA took over the C-SPOD program. Following a period of interim management by a government agency, in 1993 an Atlantic Canada-based consortium, Canadian Ocean Resource Associates Inc. (CORA) won a bid to be the Canadian Executing Agency (CEA) for the remainder of the programme.

**LGL Limited**, environmental research associates, is a Canadian company formed in 1971 by pioneering Canadian environmental researchers. Offices are located across Canada in Sidney, British Columbia; King City, Ontario; St. John's, Newfoundland; and Whitehorse, Yukon, as well as in the United States, Russia, and Fiji.

LGL conducts research on behalf of clients in government, industry, First Nations, public interest groups, and others. Recently, LGL has expanded its client base internationally, with projects in Russia, Denmark, Africa, the Indian and Pacific Oceans, Caribbean, and Australia.

LGL maintains a full-time staff of about 50 professionals and offers expertise in many disciplines, including ecosystem research in terrestrial, aquatic, and marine habitats, environmental planning and assessment, industrial effects, and resource management. The company offers expertise in many field and laboratory methodologies, field logistics, management of subcontractors, data processing and analysis, information synthesis, and reporting. Recently, LGL has also become widely recognized for using Geographic Information Systems (GIS), remote sensing and image processing, and computer information systems.

Under the second phase of the C-SPOD program, which started in 1997, LGL Limited acts as the Canadian Coordinating and Facilitating Agency. LGL coordinates the programme, along with the Fiji-based South Pacific Forum Secretariat.

C-SPOD started its second phase in 1997, again worth \$14 million over seven years, following the signing of an Aide Memoire between Canada and its partners during a meeting of the South Pacific Forum held in Majuro, Marshall Islands, in 1996. Shortly after, a Canadian consulting firm, LGL Limited, environmental research associates, won a bid to be the Canadian Coordinating and Facilitating Agency. The Forum Secretariat coordinates the programme, along with

LGL Limited, environmental research associates.

Following a review of the programme, it was decided to reduce the number of C-SPOD partner organizations to four: FFA, ForSec, SPREP, and the USP.

The reworked programme focuses on sustainable development of the region's living marine resources. Central to the philosophy behind C-SPOD II is ownership of the programme and accountability for its results by the regional partner organisations (RPOs). Project proposals are prepared by the RPOs and are reviewed and approved in the region by consensus of the Programme Management Committee (PMC), whose members comprise of one representative from each of the four RPOs and CIDA. SOPAC and SPC attend the meetings as observers. ForSec also acts as the PMC Secretariat for the meetings.

The RPOs are accountable for achieving their projects' intended results, and for monitoring and reporting on progress towards those results. Annual PMC meetings are held to monitor progress and approve annual workplans. This is a unique approach to aid programme management in the Pacific; one that has been received well and is viewed as a 'test case' for decision-making in the region.

All projects implemented as part of C-SPOD II must meet a set of criteria that ensures compliance with the



regional strategy approved at the 1995 Summit of Forum Leaders, Canadian Official Development Assistance (ODA) priorities, and the intended area of technical focus of the programme, marine resource development. Projects must incorporate consideration of gender equity, environmental sustainability, and, where possible, linkages with the private sector.

To date, 14 projects worth more than \$8.6 million have been approved by CIDA and its Pacific partners. Turtle conservation, tuna management plans, ocean pollution control, marine ornamentals export, and Marine Studies Programme post-graduate scholarships are among some of the diverse projects.

William Cross is the Canada Program Coordinator of C-SPOD and the Vice President, International, of LGL Limited, environmental research associates, the Canadian Coordinating and Facilitating Agency of C-SPOD, Phase II.

*Jennifer Robinson is the Media Relations Assistant for the Canada-South Pacific Ocean Development (C-SPOD) Program. She is based at the South Pacific Forum Secretariat in Suva, Fiji.*



# Managing Tuna for Tomorrow in the Solomon Islands

By Jennifer Robinson

The once rich fishing grounds of the world have fallen on hard times as years of overfishing and mismanagement have taken their toll on once abundant fish stocks. In the last two decades, countries and fleets that ply the world's greatest fishing areas have felt the results of overfishing, including lower catches and reductions in quotas. In some cases, communities have suffered the shock of the complete collapse of valuable stocks that at one time were considered almost invincible.

Wise countries have taken heed of such danger signals and placed limitations on the numbers and types of fish caught, while others have ignored scientific data and the anecdotal evidence of fishermen and have allowed fishing to continue unabated. The result in some instances has been an ecological, social, and economic disaster. One need not look further than the world's former richest fisheries for cod on the Grand Banks off Newfoundland, Canada and herring in the North Sea as proof of the folly in believing in the inexhaustible bounty of the ocean.

The tuna fishery of the Central and Western Pacific is one of the few major fish resources in the world that has not yet been overfished, despite commercial fishing by Japanese, South Korean, and American vessels since the 1950s.

In 1978, following the declaration of the United Nations Convention on the Law of the Sea (UNCLOS), Pacific countries laid claim to some 30 million sq. km of the Pacific Ocean as part of the 200-mile Exclusive Economic Zones (EEZs) surrounding their shores. In the 1990s, estimates placed more than a thousand fishing vessels in the Pacific catching approximately one-third of the world's supply of tuna, worth an estimated

US\$1.7 billion. Pacific Island states are only receiving a small fraction of the returns from this fishery, an estimated US\$60 million in 1995.

With international recognition of the Pacific zones came the realization that Pacific countries needed to work together to properly manage the highly migratory fishery.

As the regional body assisting its member countries with the management and sustainable development of the offshore fishery, the Honiara-based Forum Fisheries Agency (FFA) has focused considerable efforts on assisting Pacific Island countries to receive the greatest possible social and economic benefits from their fishery resources. With

funding from the Canada-South Pacific Ocean Development (C-SPOD) Program, FFA is assisting countries in drawing up comprehensive management and development plans for their tuna fisheries.

In May 1998, the Solomon Islands became the first country to undertake the tuna management plan exercise.

Since its startup in the 1970s, the country's commercial tuna fishery has become the largest domestically-based tuna industry in the Western and Central Pacific. Within the country's 1.3 million sq. km EEZ, domestic catches have risen from 4,711 tonnes in 1971 to a record 94,129 tonnes in 1998, worth an estimated SI\$203 million (US\$40.6 million). Prior to the logging boom in the 1990s, tuna was the Solomons' largest export. With the collapse of log prices in 1997, tuna has once again become the number one commodity for sale abroad.



*Skipjack tuna awaiting processing in the Solomon Islands*

Photo: Tony Chamberlain

The tuna industry is seen as one of the Solomon Islands' few avenues for economic growth. "It's one of the main resources that we have," explains Albert Wata, under-secretary of Fisheries in the Solomon Islands. "At one time, in terms of bringing in foreign exchange it was 50 per cent. Now, it's 20 to 30 per cent of our foreign exchange earnings. It's one of our main employers and generates lots of economic activity."

In the early 1990s, the Solomon Islands issued excessive quotas for tuna. The breakdown in fisheries management led FFA to suggest major changes in the licensing and management of the tuna fishery. In 1997, a change in government resulted in new structural and economic reforms, including a reorganisation of the Fisheries Division, a new Fisheries Act, and drastically reduced quotas in line with catch levels.

"The reason we started in Solomon Islands first is that we have strong linkages with the fisheries authorities there and the government was committed to a reform process that fit in well with the tuna management plan process," explains Len Rodwell, FFA economic and marketing manager.

In June 1999, following a year of monthly meetings involving a large number of government, private industry, and non-governmental organisation stakeholders, the then Agriculture and Fisheries Minister Dr. Steven Aumanu signed the plan into effect.

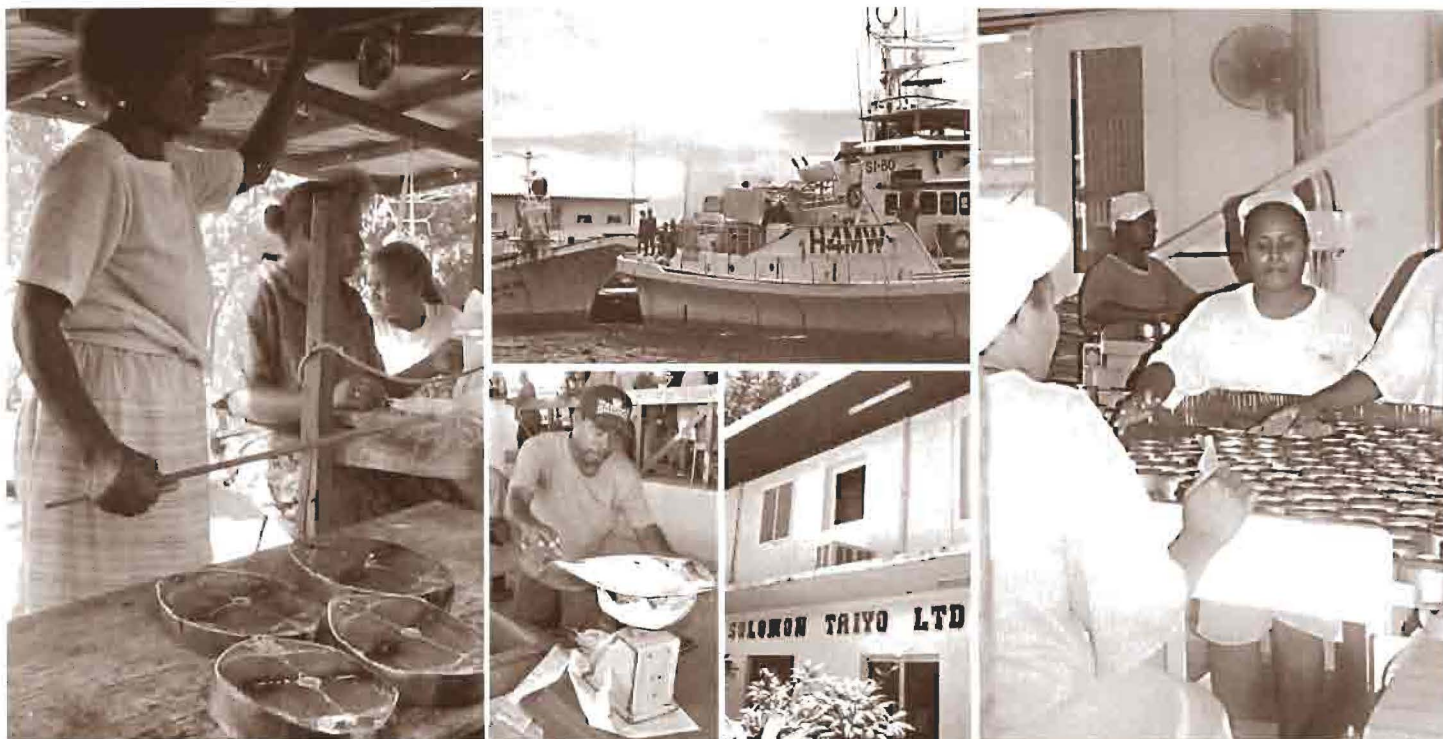
The plan limits licenses, regulates catches, calls for access agreements with foreign ships, restricts areas that can be fished, forbids transshipment at sea, and insists on the use of vessel monitoring systems (VMS) on most fishing vessels. The plan also recognizes the industry's negative impacts on women and children working in the sex trade and acknowledges the importance of respecting traditional fishing rights.

"The process has given us a helpful document on how to manage all the proceeds from the management and development of the tuna fishery," says Wata. "The major impact has been the controlling of the numbers of vessels licensed and the way these licenses have been processed and allocated to applicants."

FFA is also working on similar management strategies in Palau and Vanuatu using the Solomon Islands plan as a blueprint. With further funding from C-SPOD, plans will be developed in three more countries, with Fiji next in line. Tonga is also close to completing a similar plan.

"Prior to the Solomon Islands plan, only one country had a formal management plan in place - PNG," Rodwell says. "It's not just the success of the Solomons' plan that's leading to other countries wanting them, the plans have also created a general awareness in the region of the need for these plans."

*The harvesting, marketing, and processing of tuna in the Solomon Islands provides direct employment for 8.4 per cent of the country's 431,000 people*



*Photos: Tony Chamberlain, USP Marine Studies Programme and C-SPOD*

But, putting the Solomon Islands plan into action hasn't been easy. "Some of the vessels have gone elsewhere," says Wata. "But, those vessels were taking advantage of the conditions for vessels operating under joint venture arrangements. This has affected us in terms of income revenue from the licensing of vessels." The main stumbling block for vessels to comply with the plan has been the requirement of placing FFA VMS on board, he added.

In 1998, the Solomon Islands 'domestic' fleet consisted of 26 pole and line vessels, 40 single purse seiners, one group seining operation, and 40 longliners. The foreign fleet included 18 longliners, 31 pole and line, and about 35 US purse seiners fishing under a multilateral treaty. Currently, the majority of the boats plying the country's EEZ are local vessels and locally-based foreign longline vessels, with the number of foreign purse seiners "drastically reduced."

"The number of purse seiners is down in the last two years - it's now almost nil," Wata says. "They were mainly Korean and Japanese vessels. After the plan was adopted, we attempted to negotiate bilateral fishing agreements with these vessels, but no agreement was reached so they're no longer coming in." Poor fishing in the Solomons' EEZ in the late 1990s is also believed to have kept some vessels away.

Despite the decrease in foreign vessels and resulting revenue, he remains confident. "The plan was implemented around the middle of last year and I think that operators are coming around to try and operate in accordance with the requirements of the plan. I think it will pick up again."

Though the plan is seen as an important first step in sustainably managing the country's tuna stocks, there is disagreement on how deep an impact the plan has had.

"Frankly, we have to say very few things in the plan are being implemented," says Phil Roberts, managing director of National Fisheries Development Ltd. (NFD). "It was just put on the shelf with everything else. Government hasn't been very proactive."

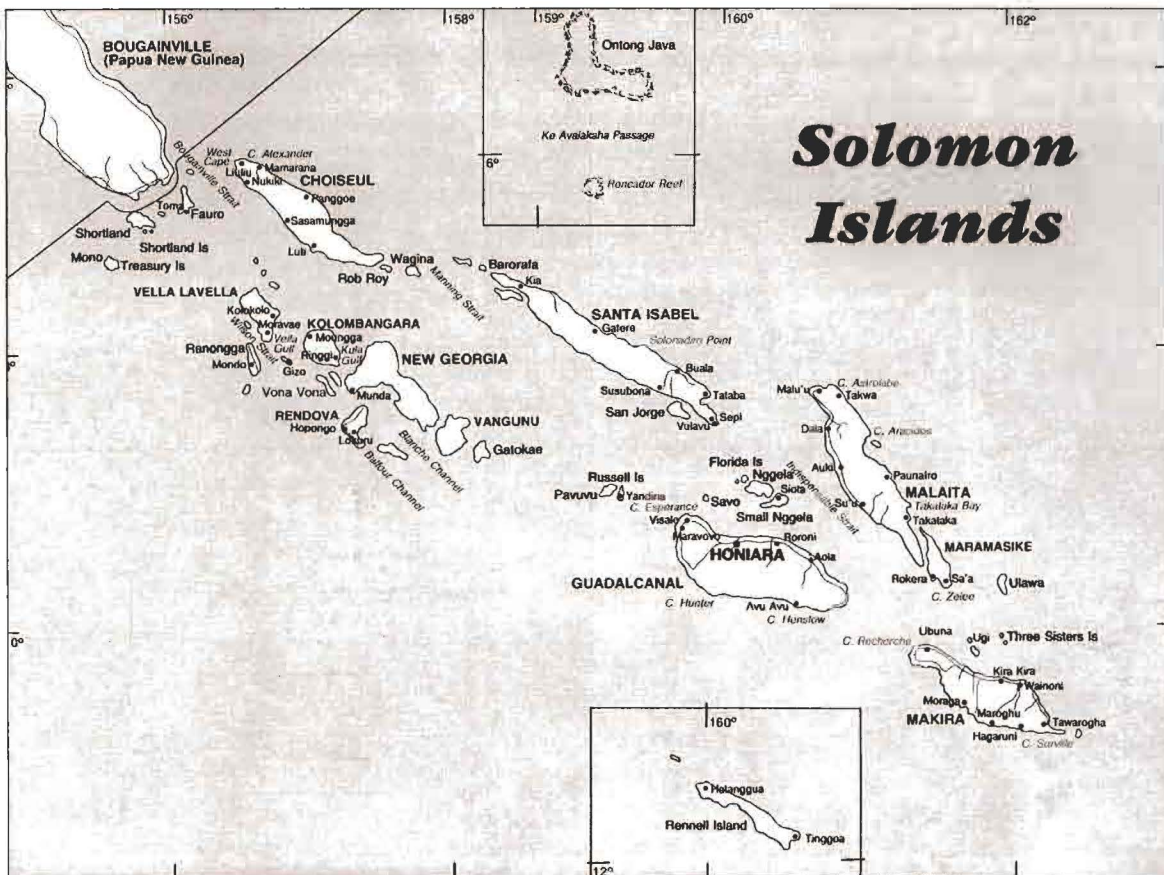
Wata disagrees. "We are working on the plan. Maybe it's not being done at the pace that some would like, but it is being implemented."

Employing an estimated 150 people, NFD - formerly owned by Canadian company BC Packers - operates several pole and line boats and purse seiners in the Solomons and freezes the catch for exporting to canneries. As a stakeholder in the industry, Roberts says NFD saw involvement in the tuna management plan as vital.

"In the past, the tuna fishery has been virtually unmanaged or managed in a very bad way," he explains.

"We saw a need for a plan to be put into place. The plan isn't perfect, but it's as good as we could have done."

A drop in worldwide tuna prices and a decrease in the number of boats fishing in the Western Pacific may also be contributing to difficulties in forcing fishing vessels to comply with the new rules. "A bumper year in the Eastern Pacific has lowered prices worldwide," Roberts says. "The problem at the moment is government is taxing





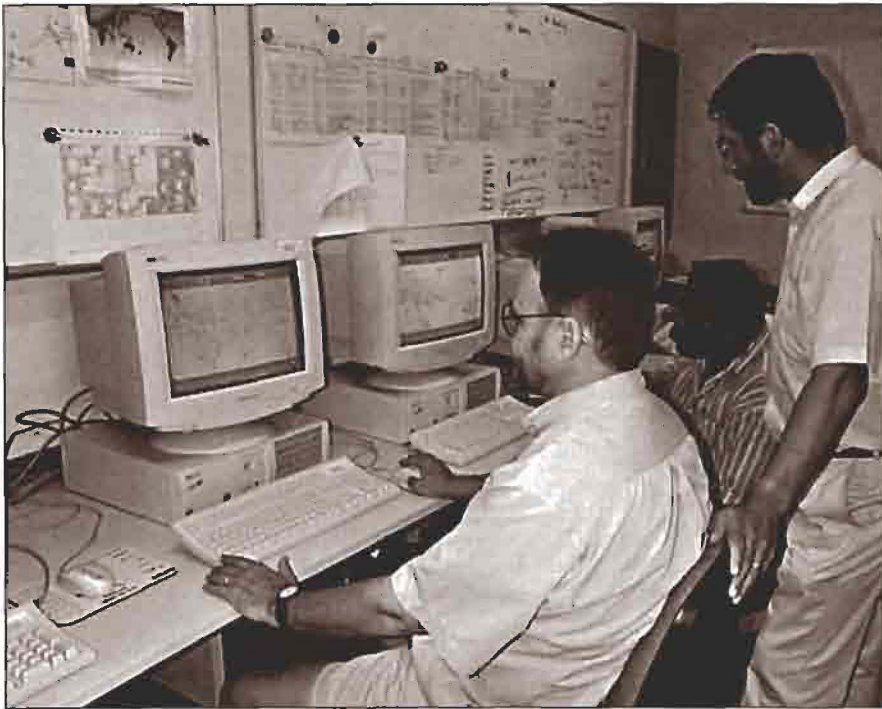


Photo: FFA

*Andrew Richards, FFA's manager of Monitoring, Control, and Surveillance (seated) shows the agency's VMS system to Ian Cartwright, FFA deputy director (standing), and Albert Carlot, VMS officer (seated on right)*

industry very heavily at a time when fish prices are at absolutely rock bottom. It just isn't sustainable and there's no new development.

"The short term doesn't look very good. Unless the Ministry of Finance takes steps to reduce taxes then the recommendations in the plan are useless. Having a

plan is the first step. Having produced a plan, government at the top levels has to have the will to support it."

FFA Deputy Director Ian Cartwright is more optimistic when summing up the progress of the development of fisheries management plans in the Solomons and the region. "The road to the sustainable management of fisheries resources is not an easy one," he says. "Individual European countries, the EU, and the US have all taken decades to implement management arrangements, usually only after spectacular declines in stocks. Why then, are we expecting the Pacific Islands to reach the same point in just a few years, particularly when tuna stocks are in relatively good health?"

He says the trick will be in getting sound management in place before the inevitable biological and economic overfishing occurs. "Progress thus far with the plans has been good and has demonstrated a sound conservation ethic by many Island governments. This commitment must continue to be maintained and supported for the long term if we are to succeed. The future of the world's greatest tuna resource and many Island country economies will be depending on it."



**T**he Forum Fisheries Agency (FFA), formed by member countries of the South Pacific Forum in 1979, is based in Honiara, Solomon Islands.

The agency was formed in response to the far-reaching changes taking place in the 1960s and 1970s in the international Law of the Sea, and the steadily increasing level of commercial tuna fishing in the Central and Western Pacific.

The functions of FFA are to provide scientific, commercial, and technical information, and advice to member countries in relation to the "living marine resources of the region and in particular the highly migratory species." Within that broad scope, under the direction of the Forum Fisheries Committee, FFA has concentrated on assisting its members in the sustainable management and development of their tuna resources.

FFA has received support for numerous projects from both phases of C-SPOD, including the development of a fisheries database, giant clam production, international fisheries cooperation, fisheries surveillance, and fisheries observer training. Funds from Phase II have led to the development of country-specific tuna management plans, legal training, and coordination of monitoring, control, and surveillance efforts of fishing in the region.



*A hawksbill turtle floats along the bottom of the Pacific Ocean*

## Sea Turtles – The Campaign to Save the Pacific’s ‘Sacred Fish’

*By Jennifer Robinson*

Gently holding down the hawksbill turtle, the Pacific Islander uses a tag applicator to attach a small metal tag about 2.5 cm in length to the underside of both of the turtle’s strong front flippers.

Done much like ear piercing, the painless tagging is part of regional and international efforts to track the number of sea turtles left in the Pacific and trace the vast distances they travel. On each tag are individual numeric codes and a return address so the information from the tags can be collected and recorded.

Once tagged, the turtle is gently released back into the ocean. Chances are, the turtle will never be seen again.

Traditionally revered by Pacific Islanders for their endurance, sea turtles are now fighting for their very

survival, as overharvesting, pollution, and coastal development projects infringe on their feeding, nesting, and breeding grounds.

A part of sea life for more than 100 million years, turtles have played an integral role in the legends and diet of Pacific peoples. But, despite the traditional controls on turtle use in countries such as Samoa, the last 50 to 100 years have seen a marked increase in the killing of all age classes of turtles for their eggs, shells, and meat.

Of the seven species of sea turtles in the world, six are commonly found in the Pacific. All are listed as endangered. Three of the species - the green turtle, hawksbill, and leatherback - commonly breed among the 22 Pacific Island states covered by the South Pacific Regional Environment Programme (SPREP).

"Turtles are really a part of Pacific Island peoples' identity and culture," explains Sue Miller, a marine biologist and former SPREP biodiversity officer. "If we lose turtles, we lose part of ourselves."

In 1990, dwindling numbers of the aquatic reptiles led SPREP to examine starting a regional species conservation programme. Approximately two years later, the programme started in earnest after an influx of cash from the Canada-South Pacific Ocean Development (C-SPOD) Program, Phase I.

"The C-SPOD funding underpinned the entire turtle programme and meant that work could really begin in participating states," she says, noting that Australia and New Zealand later came online with further support. "But, it doesn't guarantee the survival of turtles."

"You have to be committed to turtles for a long time because they take so long to go through their life cycles. For example, females take 20 to 50 years to reach reproductive maturity. The problem is that no donor in the world today is committed to the long-term to ensure their recovery."

Blending traditional protective measures with modern monitoring activities such as tagging, the programme involves a diverse group of participants

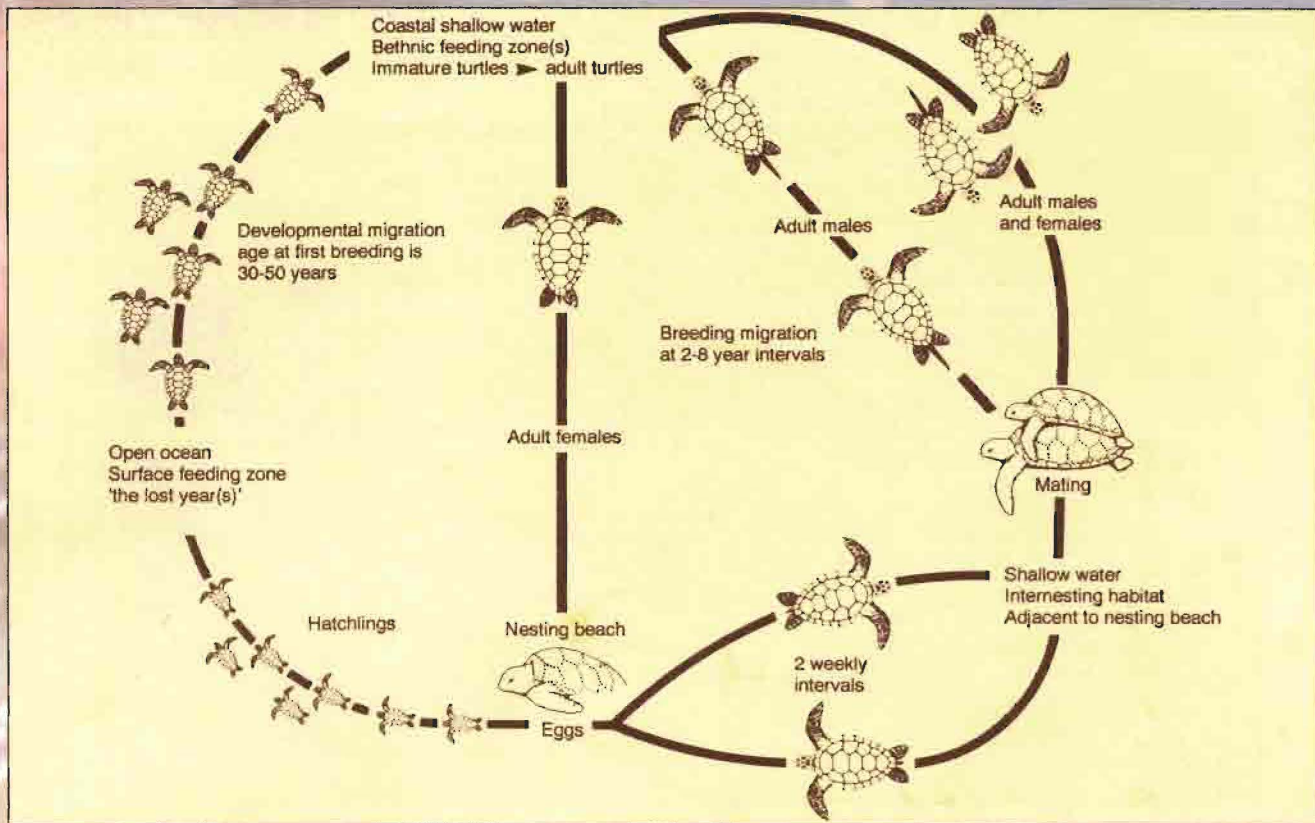
- from government officials to village children - to help protect and track tagged turtles. To bring regional attention to the plight of turtles, SPREP member governments proclaimed 1995-1996 the Year of the Sea Turtle.

"Thanks to the campaign, most people in the region now know turtles are endangered," Miller says. "Turning it around to convince people to take action is another thing."

Adding force to the SPREP campaign, Forum member countries endorsed the conservation programme and recognized the urgent need to protect sea turtles. In Fiji - a vital foraging ground for juvenile and semi-adult turtles - the government placed a moratorium on the killing and selling of turtles in 1995, following it up with a ban from 1997 to December 2000.

According to Fiji Fisheries Department research, between 1980 and 1989, Fiji exported more than 10,000 hawksbill turtle shells to Japan for the international bekko (shell) trade. In the Suva marketplace, a kilo of turtle meat sold for \$5 to \$10.

During the bans that followed, the department received reports of turtle sightings in areas where they hadn't been seen in a long time, says Senior



Graphic: SPREP and Queensland Department of Environment and Heritage

*Turtle Life Cycle*

Fisheries Officer Aisake Batibasaga, noting the government is examining placing another ban on commercial harvesting.

“For me, conservation needs to be on a long-term basis, such as a complete ban on commercial harvesting – maybe for another five years,” he says. “If we completely ban commercial harvesting we’ll see the results around.”

Key to the success of the Fiji bans is working with people to support the traditional harvesting of turtles for such important ceremonies as the wedding of a high chief. But, instead of allowing people to harvest 30 to 40 turtles, the government has only allowed them to take a few.

“The turtle programme isn’t about not eating turtles,” cautions Miller. “Its vision basically states that if we conserve turtles, Pacific Islanders will have a choice in the future on how to use turtles. Overharvesting has taken away that choice for now.”

Focusing largely on education, the regional turtle conservation programme has also created a database where turtle tagging activities and sightings are recorded. Tagged turtles from the South Pacific have been found as far away as the Philippines, Taiwan, and even Japan. For now, only fragmentary data and no comprehensive regular surveys exist on the actual numbers of sea turtles left in the Pacific. Although

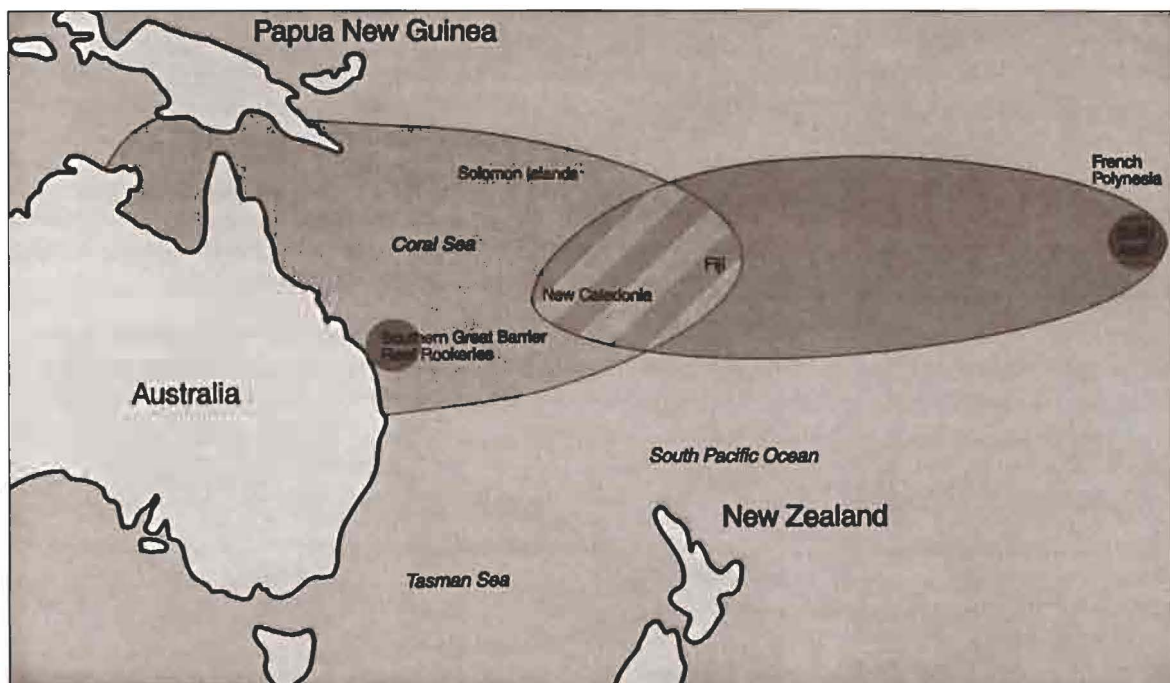
SPREP is concerned, it lacks the resources and personnel to determine the true extent of the turtles plight.

“We don’t have the funds or capacity for this scale of research,” Miller says simply. “However, in a way, investing heavily in research is like rearranging the deck chairs on the Titanic. We know that there is a problem. What we have to do is raise the understanding of the people and for them to take action.”

What statistics do exist show a sea turtle population spiraling downwards towards extinction as the number of breeding turtles decline. Recent surveys on nesting populations in Fiji show an 80 per cent decline in major nesting sites and no new nesting in some areas among the country’s islands, says Batibasaga. Population estimates put the breeding female population for hawksbill turtles at 150 to 200, 30 to 50 for leatherbacks, and 50 to 70 for green turtles. Within the next year, Fiji is planning to undertake a more comprehensive sea turtle population assessment.

In an extreme example, a key Solomon Islands hawksbill rookery appears to be down to its last few cycles of young breeding females. The older, larger animals have gone, most likely harvested.

Overall, the turtle conservation programme has been a success in drawing attention to the plight of



Graphic: SPREP and Queensland Department of Environment and Heritage

*Turtle Migration. Tag recoveries show that turtles nesting in French Polynesia and the Southern Great Barrier Reef often share the same feeding area.*



Photo: Aisake Battibasaga, Fiji Fisheries

*A baby hawksbill turtle crawls out to the water after hatching from the shores of Namena Lala Island in Fiji. The island is the last main nesting site for hawksbills in Fiji.*

sea turtles, but this same awareness has also made the programme a victim of its own success. "I think a lot of people feel they have ticked the box and said, 'We've covered turtles,'" Miller says. "But, in fact, we've barely begun."

Whether conservation efforts are working will take years to find out. But a change in attitude towards turtle conservation, especially among the younger generation, is a step in the right direction. "Things are turning around," she says. "Children are haranguing their fathers to come in and get turtles caught, tagged, and released. Kids are the key. They keep their parents honest."

"I wouldn't be prepared to say that we can save the turtles. I just know we have to try. I couldn't bear to sit back and do nothing. You only have to go to a nesting site or tag a turtle, and you're as tagged as the turtle."



**T**he South Pacific Regional Environment Programme (SPREP) is a regional organisation established by the governments and administrations of the Pacific region to look after its environment. This is reflected in the Mission Statement of SPREP, which calls on the organisation, "to promote cooperation in the South Pacific region and to provide assistance in order to protect and improve its environment and to ensure sustainable development for present and future generations."

SPREP's members total 26, consisting of all 22 Pacific island countries and territories, and four developed countries: Australia, France, New Zealand, and the USA. SPREP is based in Apia, Samoa.

SPREP develops and implements a regionally coordinated and comprehensive range of activities under the following broad programmes: Biodiversity and Natural Resource Conservation; Climate Change and Integrated Coastal Management; Waste Management, Pollution Prevention, and Emergencies; Environmental Management, Planning, and Institutional Strengthening; and Environmental Education, Information, and Training.

At SPREP, the C-SPOD program under Phase I contributed to both the marine turtle conservation project and the coastal management programme. In Phase II, Canadian funding has been used for the Pacific Ocean Pollution Prevention Programme (PACPOL) initiative, the Coral Reef Campaign, the hiring of a regional turtle coordinator, training, a regional coral reef monitoring programme, and organising coastal communities in marine resource management.

# The Buck behind the Bang

## C-SPOD's Marine Studies Scholarships

By Fred Mills

As an educational institution servicing a host of tiny island nations scattered over 33 million sq. km of ocean, one thing you had better do – and do very well – is acknowledge the role that the ocean plays in the livelihoods, culture, and sustenance of your clientele.

The University of the South Pacific's Marine Studies Programme (MSP) has been established for precisely that purpose. It serves as the South Pacific's champion-advocate-trainer-facilitator for an area of study and applied practice that has been called the most important in the region. Standing behind MSP is the Canada-South Pacific Ocean Development (C-SPOD) Program, Phase II, which has committed FJ\$4 million (CAD\$3 million) over seven years in support of marine-related endeavours.

The largest proportion of MSP's C-SPOD II allotment has been funnelled into the creation of post-graduate scholarships. Presently, 21 students are receiving support – 16 at the masters' level, five at the doctoral level. Approximately 30 post-graduate scholarship students have already graduated under both phases of C-SPOD.

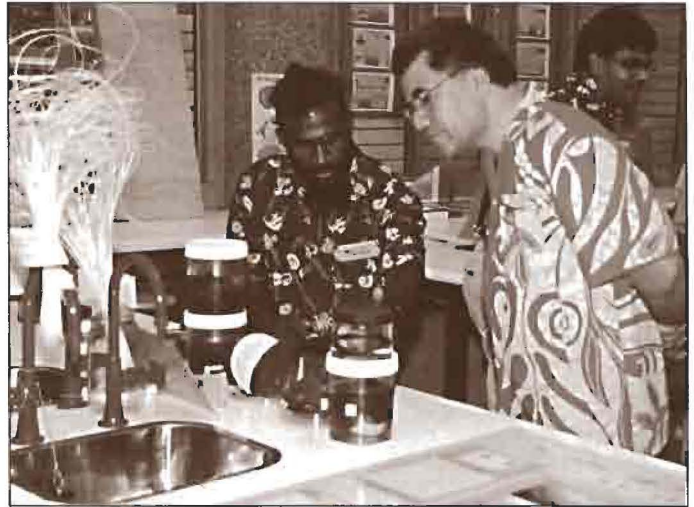
"These graduates, as ambassadors of MSP and of the Canadian funding programme, are the major product of C-SPOD money," says MSP Director, Prof. Robin South. "This scholarship funding represents a tremendous investment in human resources within this region."

In fact, the program is the most significant support to South Pacific students in conducting research within the region, he notes. Other funding agencies tend to take students to outside institutions – meaning their research



*USP C-SPOD scholar Lynette Kumar examines the mantle colour of giant clams in the Solomon Islands for her Masters' thesis*

Photo: USP Marine Studies



*Marine Studies Programme post-graduate student Dako Nating helps USP Vice-Chancellor Esekia Solufa get up close and personal with creatures of the deep at a recent MSP open house*

often has little relevance to Pacific Island Countries (PICs) and, moreover, students are less likely to return to the region following completion of their studies.

Given the array of pressing issues that currently face PICs – such as waste management, climate change vulnerability assessment, coastal zone management, and fisheries conservation – human resource development is a regional priority. Home-grown scientific and technical expertise – highly-trained personnel who have an intimate relationship with the water and the land – is sorely needed.

The scholarship project has also bestowed some significant fringe benefits. For example, the process of developing proposals for C-SPOD II has fostered interaction between high-level regional agencies. This has resulted in a regional management strategy and the formation of a Program Management Committee made up of representatives of USP, SPREP, FFA, and the Forum Secretariat's Marine Sector Working Group. Additionally, the influx of cash to the university represents a minor boost to Suva's economy.

The following are profiles of three C-SPOD funded MSP students and their work.

Fred Mills is the Publications Officer for the Marine Studies Programme, and a CUSO cooperant living in Suva, Fiji. He has a B.Sc.(Hons), BEd, M.Sc. and M.Ed. from Memorial University of Newfoundland, and is a Ph.D. candidate at the University of Toronto.

**JESE VEREBALAVU, Ph.D.**  
**student: *The Integration of Sustainable Coastal Tourism Development into Coastal Zone Management***

Coastal areas have long been valued for their fisheries resources. Estuaries, in particular, because of the influx of freshwater, are one of the richest habitats for coastal marine organisms and are a major source of socio-economic well-being for coastal dwellers.

At the same time, coastlines are treasured as vacation destinations, sites for land development, and sources of identity for indigenous peoples. Increasingly, coasts are becoming objects of battles - economic, environmental and cultural - waged over issues such as resource allocation, exploitation, development, pollution, erosion, storm damage, and flooding.

In PICs, development of coastal tourism is a principal contributor to the loss of coastal zone habitats. Mangrove clearance for tourism development has been well-documented in Hawaii, Fiji, and Vanuatu. Recognising the heavy dependence of PICs on both coastal marine resources and coastal tourism, there is need for a coastal management approach that balances sustainable resource use with responsible development.

My dissertation addresses a key problem of coastal development: namely, the lack of an appropriate strategy for integrating coastal tourism development into coastal zone management. This empirical study seeks to highlight the interests of key stakeholders - landowners, hotel investors, and governments - within the coastal development process.

*Jese Verabalavau is from the Fiji Islands. She is a USP economics graduate: B.A. (1988), Post-graduate Diploma (1994) and M.A. (1998).*

Name	Country	Program	Research Topic
Subashni Appana	Fiji	MSc	To be decided
Ruben Bakeo		MA	To be decided
Lilian Fay	Kiribati	MSc	Women in Fisheries and Anadara Fisheries
Randhir Deo	Fiji	MSc	Marine Pollution
Roseti Imo	Samoa	MSc	Biology of Grafarium
Lynette Kumar	Fiji	MSc	Colouration in Giant Clams
Samuela Lagataki	Fiji	MSc	Mangrove forests
Feral Lassi	Solomon Is	MSc	Giant Clams
Satya Nandlal	Fiji	PhD	Macrobrachium aquaculture
Dako Nating	Solomon Is	MSc	Mangrove Fauna of Isabel, Solomon Islands
James Prasad	Fiji	MSc	Algae - Marine Natural Products
Narendra Prasad	Fiji	MSc	Algae - Marine Natural Products
Rajesh Prasad	Fiji	PhD	Pearl Oyster Culture
Emma Sale-Mario	Fiji	MSc	Environmental Monitoring
Samasoni Sauni	Tuvalu	PhD	Inshore Fisheries
Sandeep Singh	Fiji	MSc	Marine Sediments
Posa Skelton	Samoa	MSc	Algae of Palolo Deep, Samoa
Reuben Sulu	Solomon Is	MSc	Gracilaria Ecology
Gabriel Titili	Fiji	PhD	Histamine in Tuna
Jese Verebalavu	Fiji	PhD	Ecotourism and Coastal Tourism Impacts

Current C-SPODP scholarship students

Established in 1968, the **University of the South Pacific (USP)** is a regional university with three campuses and 11 University Centres, serving 12 Pacific Island Nations. The Marine Studies Programme (MSP) is an interdisciplinary, institution-wide programme of USP and is housed at the Laucala Bay campus in Suva, Fiji.

MSP promotes the conservation, development, and management of regional marine resources. It provides Pacific Islanders with unparalleled opportunities for marine-related research, education, and employment. One particular mandate of MSP is to improve collaboration between USP, Pacific Island nations, regional agencies, and international bodies. The Programme currently hosts about 100 full-time undergraduates and more than 50 post-graduate students.

CIDA has been intimately involved with USP since the early 1980s, funding, among other things, the university's first research vessel. Involvement of C-SPOD started in 1991 - coinciding with the arrival of MSP's present director - and precipitated the establishment of the Marine Studies Programme in 1993.

Aside from the provision of post-graduate scholarships, C-SPOD is currently active in supporting the MSP Development Project, the Post-Harvest Fisheries Project, and the MSP Aquaculture Project.

**EMMA SALE-MARIO, M.Sc. student: *Combined Effects of Redox Potential and pH on Levels of Nutrients and Heavy Metals in Rewa River Water and Sediment***

Long considered the shining path to improved living standards, industrialisation has a familiar dark side – high-volume waste discharge. Fiji's Rewa River, the country's largest and the site of Nausori town, a rubbish dump, and Nausori sewage treatment plant (NSTP), is a prime example of the problems that indiscriminate dumping poses to water bodies throughout the Pacific. It is feared that river effluents, if unmonitored, may prove especially hazardous for local people who rely on the Rewa for transportation, recreation, and dietary protein.

I am conducting short-term, water-quality forecasting of the area surrounding the NSTP. After measuring initial concentrations of nutrients and heavy metals in sediment and water samples from the NSTP and from Kasavu (a control site), a portion of each sample is incubated under conditions of controlled pH and Redox potential (Eh). Eh and pH, used to evaluate equilibrium relationships between elements in solution, are critical factors controlling the fate of environmental pollutants.

Final concentrations of nutrients and heavy metals in water and sediment samples are determined following a 30-day exposure to Eh and pH conditions. Repeat measurements are carried out on three different sets of Eh and pH levels likely to be encountered under natural conditions.

Experimental results clearly show a strong relationship between levels of nutrients and heavy metals under the two variables. Work is continuing toward establishing levels of nutrient and heavy metal release and retention within parameters that mirror the Rewa's environment. It is hoped that the project will generate guidelines to help industrial chemists regulate industrial discharge.

*Emma Sale-Mario is from the Fiji Islands and holds a B.Sc. degree from USP*

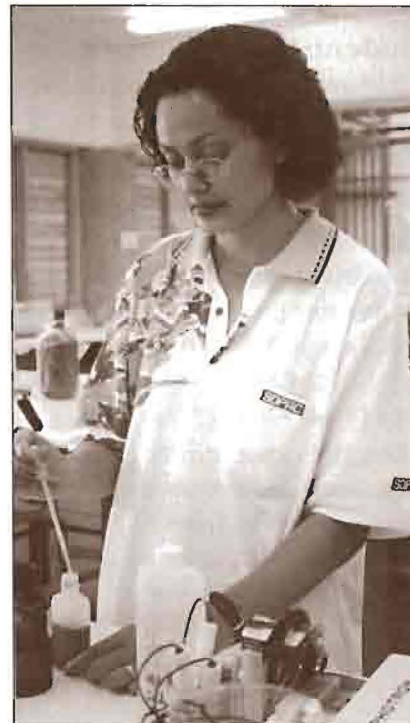


Photo: C-SPOD

*Emma Sale-Mario analyzes a sample for her research project at the University of the South Pacific. She is one of several students who are receiving C-SPOD funding for their post-graduate work.*

**REUBEN SULU, M.Sc. student: *The Effect of Salinity, Temperature and Nutrient Levels on the Growth, Agar Quality and Quantity of Gracilaria maramae.***

Seaweeds or macroalgae are valuable marine resources. Widely used historically throughout Asia and the South Pacific, they are a commodity of increasing international importance.

Seaweeds serve as human food, animal feed, and fertiliser. They are also the source of phycocolloids, the gel-like substances – agar and carrageenan – employed in the food, cosmetics, and pharmaceutical industries. Applications of phycocolloids include gel electrophoresis (in DNA fingerprinting), brewing beer, and producing textile dye fasteners. Gracilaria, a red seaweed species consumed as a sea vegetable in Fiji, is an important source of phycocolloids.

My thesis project seeks to gather knowledge about Gracilaria maramae for use in local mariculture, and in the utilisation and management of wild stocks. Specifically, laboratory research is directed at determining the growth rate, agar quantity and agar quality of G.maramae under varying levels of three key environmental factors – temperature, salinity, and nutrient level – along with their interactions. Identifying conditions that produce the highest yield of good quality agar is a step towards developing G.maramae as an export commodity, alongside currently cultivated seaweeds Eucheuma and Kappaphycus.

The long-term aim is to encourage the export of native seaweed species and avoid the introduction of foreign species for mariculture in the South Pacific.

*Reuben John Sulu is from Gela, Solomon Islands. He graduated from USP with a B.Sc. in 1995 and a Post-Graduate Diploma (Biology) in 1997.*



# From Reef to Retail

## A Certification System for the Pacific's Marine Ornamentals Industry

By Jennifer Robinson

**R**ows and rows of individual aquariums holding one or two bright yellow or striped tropical fish stretch across the floor of Aquarium Fish Fiji like a chain of tiny little glass apartments.

Carefully examined for bacterial infections or the tiniest defects, from a split in their tails to deformed fins, the fish are awaiting shipment to North America and Europe less than a week after their capture for showcasing in a growing number of marine aquariums in homes and businesses.

Pointing out the different species, from Fiji Devils to Blue Tangs, veteran fish collector Tony Nahacky describes how he enforces strict rules on how the fish and corals are harvested and cared for by his collectors. Only items ordered by customers are captured, and the areas where they are taken are rotated so the species don't become depleted or the reefs damaged. Any fish and corals that are too large or small are placed back on the reef where they were found so the collector quickly learns not to harvest what won't be used.

The company exports a self-imposed limit of approximately 100,000 marine ornamentals a year, along with 300 to 400 pieces, approximately 60 kilograms, of live coral a week. Of the fish shipped, company records verify that less than 0.5 per cent die. The company employs eight marine life collectors, three trained coral collectors and four trainees - all of whom are Fijian - as well as a number of casual and permanent staff.

As the only operator in the renowned Beqa Lagoon area, Nahacky's export records show a consistent catch

over his 15 years in business in Pacific Harbour. With his sustainable practices, he claims the numbers and types of species have remained stable.

"Some people get into the business for the money and some because they like scuba diving," explains Nahacky. "I'm an aquarist. I learned to dive because I love aquariums. I'm more interested in everything from that perspective. That perspective is to keep things alive."

His company is one of five marine ornamentals export businesses in Fiji and a growing number in the Pacific that are tapping into an increasing international demand for the colorful and exotic fish, coral, and live rock found in abundance along the stretches of the Pacific's coral reefs.

Although the Philippines and Indonesia supply the bulk of the world's supply of marine species, the South Pacific is carving out its own piece of the international market.

In 1990, the region is estimated to have supplied four to 10 per cent of the world's marine ornamentals, consisting of 200,000 to 250,000 fish, worth US\$1-\$1.5 million. The exported Pacific species included more than 150 types of fish, such as butterfly fish, anemone fish, angelfish, and wrasse, and 60 species of live coral.

With an improved understanding of reef ecology and advances in aquarium technology, hobbyists are now creating 'mini-reefs' in their homes - one of the fastest growing components of the aquarium industry. In comparison to the rather bland 'fish tank' aquariums of the past, mini-reefs are a re-creation of an ecosystem, which require a dynamic mix of corals, reef rock, fish, and algae.

The United States accounts for more than half of the world demand for marine ornamentals, with 700,000 homes having a marine aquarium. In Canada, an estimated 95,000 households have aquariums with marine fish. The average value of ornamental imports into Canada - both freshwater and marine - is approximately US\$5.2 million per year. Forum Island countries are supplying Canada's market via California wholesalers to the tune of US\$110,000 to \$160,000 per year.

Tainting the industry are the unscrupulous methods of harvesting used particularly in Southeast Asia - namely the use of cyanide and other chemicals to stun and catch fish - which have killed slow-growing coral reefs



Photo: C-SPOD

*An Aquarium Fish Fiji employee carefully places a brightly coloured marine aquarium fish into a specially designed bag for exporting overseas*



Photo: Matson

*Marine ornamental fish, corals and live rock wanted by aquarium enthusiasts around the world for 'ini-reef systems' in their homes and businesses are found in abundance along the Pacific's coral reefs*

and resulted in high product mortality rates. Unnecessary mortality from those practices, as well as poor husbandry and overharvesting of organisms from limited areas, has led to added pressures on coral reefs as more organisms are collected to make up for those that die.

Although the Pacific has a relatively good international reputation for providing high-quality fish caught without using destructive practices; there is currently no independent international system to verify exporters' claims of quality and sustainability.

However, a certification process for the worldwide marine ornamentals industry is now in the works by the Hawaii-based Marine Aquarium Council (MAC). Working in collaboration with environmental organisations, communities, and government, the organisation is developing industry standards for water quality, stocking densities, and staff training, as well as a logo to help consumers identify fish caught in an environmentally-sound way.

"The label will be displayed on each tank that has certified animals," says Paul Holthus, executive director of MAC. "This will signify that these

animals have been caught, handled, transported, etc. all through the chain of custody according to MAC standards and by MAC-certified industry operators."

In the Pacific, MAC is working with the South Pacific Forum Secretariat in Fiji to implement a two-year pilot certification programme starting in 2001 and funded by the Canada-South Pacific Ocean Development (C-SPOD) Program. Similar trial runs are planned for Indonesia, the Philippines, and Hawaii.

"At this time, we're not trying to promote the industry," cautions Mike Mullins, Forum Secretariat private sector adviser. "We think that there can be a sustainable industry, but we think it needs to be transformed. The purpose of the project is to transform the existing industry."

Under the Forum Secretariat and MAC programme, experts will hold national consultations and workshops with industry members, government officials, non-governmental organisations, and other interested stakeholders to discuss the ornamentals trade and the MAC standards and certification process. Once a set of standards of practice

for the industry is developed, tested, and agreed upon, exporters will then train their own staff in the approved techniques.

Independent certification companies that are accredited by MAC will inspect and audit the operations and facilities of companies who apply for approval, and do random follow-up checks. The certification at the collector level is expected to be more difficult. Holthus says MAC is reviewing several options, including a possible collector skills test and certificate administered by community-based non-governmental organisations (NGOs).

If improvements are made, the marine ornamentals industry could become a business option for many Pacific countries lacking natural resources, much like black pearls have helped the Cook Islands and French Polynesia. The fish and coral are providing employment opportunities in rural areas where jobs are scarce.

"In a lot of our smaller member countries and in rural areas of our larger member countries you don't have a lot of income-generating opportunities," explains Mullins. "If you're going to develop trade and investment opportunities, you have to look at the comparative advantages naturally occurring in the environment that you can exploit.

"The challenge is to develop these opportunities in such a way that they are cost competitive internationally, as well as environmentally and culturally sustainable."

Presently in Fiji, one of the Pacific's dominant marine exporters, the Ministry of the Environment is examining putting into place a resource management plan to control the marine ornamentals industry to ensure the long-term sustainability of the resource. Since a committee on the issue was formed last fall, no new companies have been permitted to operate and the government is reportedly even considering banning all exports of fish, coral, and live rock.

Mullins stresses that the Forum Secretariat programme is an alternative to banning the entire industry in Fiji, and places an increased burden on industry and other MAC stakeholders to police themselves rather than relying solely on government.

In the past, governments have attempted to control the ornamentals industry, but legislation has largely failed because enforcement has been difficult and the laws haven't tracked and addressed the entire "chain of custody" for the products at an international level, from reef to retail. The MAC programme will augment existing government efforts. Change will occur by harnessing market pressures - namely the growing demand and knowledge of aquarium enthusiasts for fish and coral harvested in a sustainable way - to urge companies to change their ways, says Holthus.

"The solution is literally in consumer's hands," he says. "The single most important force in the marine aquarium industry is their purchasing power. The hard-earned money they pay out for these animals they care about can transform this indus-

try into one that must adopt and adhere to standards for quality and sustainability."

Agreeing, Mullins says the message from consumer groups in favor of the certification process is basically, "If you don't do it, they're not going to buy it." He admits the process will likely make marine ornamentals more expensive, but says marine fish and corals tend to attract high-income earners with disposable incomes who can absorb the added price of monitoring.

"Consumer feedback has been overwhelmingly positive about the need and potential for certification," says Holthus. "It will make a big difference by allowing them to do the right thing through their purchasing decision.

"Some have concerns about price implications, although many feel quite the opposite. For example, in February 1999, we had an Internet town meeting about certification for hobbyists. When a retailer asked a hobbyist if he would pay 15 per cent more for a fish if he was assured that the additional cost supported reef

conservation and the industry's sustainability, the hobbyist responded, 'I would pay double for a top-quality fish and a conserved reef.'"

The MAC certification process also has the support of exporters such as Nahacky. "MAC certification will be like having good regulations," he says. "It can only be a benefit to encourage good practices to raise the whole industry and the profile of those who are doing it. There's no downside for us."

Nahacky says he would like to see all collectors in Fiji MAC-certified to improve industry practices and enhance Fiji's reputation for high-quality products at the international level, as well as government using the MAC guidelines as part of its enforcement of the industry.

"It makes it difficult for us to market our high quality fish if Fiji's reputation is not as squeaky clean as it should be," he says. "Because of the supply chain, the retailer often finds it difficult to know whether he or she is getting Fiji fish from a good operator."



The **South Pacific Forum Secretariat** is the administrative arm of the South Pacific Forum, and is based in Suva, Fiji. Its mission is to work in support of Forum member governments to enhance the economic and social well-being of the people of the South Pacific by fostering cooperation between governments and between international agencies, and by representing the interests of Forum members in ways agreed by the Forum.

The Forum Secretariat's current programmes are aimed at promoting regional cooperation among member states through trade, investment, economic development, political and international affairs, and donor coordination.

The Forum Secretariat was established initially as a 'Trade Bureau' in 1972, and later became the South Pacific Bureau for Economic Cooperation (SPEC).

Recently, the South Pacific Forum has been renamed the Pacific Islands Forum with the changeover taking effect at the next annual Forum meeting in late October 2000.

With help from C-SPOD funding, the Forum Secretariat developed its Maritime Division and a number of related projects, including the regional maritime legal adviser position, which has since moved to the Secretariat of the Pacific Community (SPC). C-SPOD has also provided advisers for the private sector and gender issues to the Forum Secretariat.

In phase II of C-SPOD, the Forum Secretariat is acting as the regional coordinating agency for C-SPOD and has received funding for facilitating fisheries exports between Forum Island countries and North America, a marine ornamentals certification project, and strengthening National Fisheries Organisations.

# Promoting Better Coastal Management

By Jennifer Robinson

Crashing waves, sandy beaches, and resort developments with the perfect ocean view are drawing cards to bring tourists to the Pacific in search of their glossy travel magazine's vision of paradise.

But underneath the postcard-shiny veneer of palm trees and white sand are a number of complex coastal processes, dynamic conditions, and competing users that have the potential to interact in a multitude of ways. Lack of understanding of this very dynamic environment can lead to serious coastal erosion and damage, and can exacerbate the effects of tropical cyclones and storms.

At the Fiji-based South Pacific Applied Geoscience Commission (SOPAC) Secretariat, geologists and engineers are working throughout the organisation's 18 member countries to address coastal and island management issues. Some of the projects that the SOPAC Secretariat works on include assessment of coastal processes and erosion, loss of valuable coastal land, assessment of coastal infrastructure development, and coastal adaptation technologies in response to sea level change and climatic extremes.

Under funding from the Canada-South Pacific Ocean Development (C-SPOD) Program, Phase I Steve Solomon and Donald Forbes of the Geological Survey of Canada, Bedford Institute of Oceanography in Nova Scotia, worked with SOPAC. Among the projects they worked on included an examination of coastal erosion in South Tarawa, Kiribati, and an assessment of the vulnerability of Suva, Fiji to sea level change.

"The work of the Canadian geologists was good and quite appreciated by the countries in which they worked," says Russell J. Maharaj, a SOPAC geologist and engineer.

Changes in C-SPOD programme focus under the second phase of the programme resulted in an end to Canadian support to SOPAC in 1997. Maharaj, along with a marine geophysicist and a geologist are continuing the work of the unit Solomon and Forbes worked in. The three are supported by Australia, the Republic of China, and the Commonwealth Secretariat.

The work by the Canadian duo was part of SOPAC's efforts to assess the nature of evolving and ever-changing coastlines of the Pacific. They looked at the reasons for changes in beach volume and erosion, and factors affecting cycles of soil erosion and collection along island coastlines.

In addition, efforts have also focused on assessing the alteration of coastal contours along built and natural

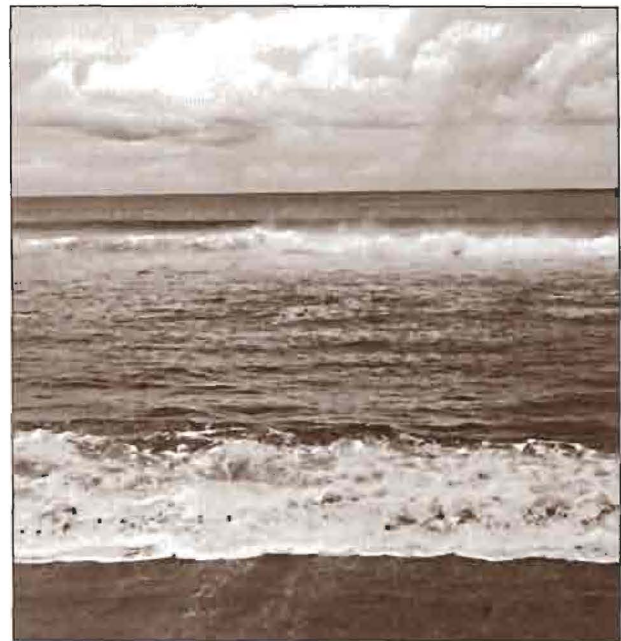


Photo: C-SPOD

*Beach at Sigatoka, Fiji. Wind and waves play havoc on low lying and unprotected Pacific Island Nations causing erosion, flooding and other coastal management problems.*

coastlines such as infrastructure development, road and causeway construction, and coastal protection works.

Key to making the impacts of natural coastal hazards less severe on atolls and volcanic island systems is an understanding of the dynamics of the coastal system and the impact of human activities on the natural processes.

"SOPAC's coastal, or more correctly island systems management program is very broad in its scope," he says. "The majority of Pacific countries are very small islands surrounded by immense ocean space. They are entirely coastal in every sense of the word. There is no continental hinterland. Coastal management projects therefore usually include the entire island system."

By their very design and nature as tiny islands located in the vastness of the world's largest physical feature, the Pacific Ocean, Pacific islands have always been vulnerable to the forces of waves and changing wind patterns. However, recent population growth and urban development concentrated along narrow coastal strips has placed considerable pressures on an already fragile environment.

Adding to coastal management difficulties is a need for data to assess how coastlines have shifted in the past and how they are changing now.

"To solve day-to-day problems you need environmental data," says Maharaj. "There is still a lot more need for that. Many of the SOPAC member countries have data collection programs and projects set up and implemented by SOPAC to collect environmental and coastal data. Generally, all the countries have some data collection programs, but it's not always treated as a priority. It often depends on their resources and time."

As a result, developments are more often than not built without environmental assessment studies. "When decisions are made, there's usually a compromise and optimum decision making is pre-empted," he says. "Unfortunately, there's a lack of understanding of technical issues to solve day-to-day problems."

In Kiribati, one of the Canadian geologists recommended the monitoring of coastal processes on atolls, such as Tarawa, as an "integral aspect of the planning process for all development projects." On the heavily populated atoll, public facilities such as the airport runway often have been built too close to shore and are eroding. Roadways such as the Nippon Causeway linking the islands of Bairiki and Betio are causing sediment to collect in places other than nearby shorelines where it would naturally accumulate.

They also suggested strict enforcement of a "no removal" policy for beach sand, the set-back of developments from the shoreline, and assistance to local agencies for up-to-date survey equipment for monitoring.

"There's only so much development an area can accommodate," Maharaj says. "You have to strike a balance and you have to be prepared to accept the trade off and the consequences of your decisions."

One method of assessing the impact of development is an Environmental Impact Assessment (EIA) for major projects, which weighs engineering, ecological, and sociological aspects of a development and recommends environmentally-friendly solutions for possible negative impacts.

Other coastal protection solutions include the revegetation of shorelines with protective stands of mangroves, the preservation and management of reefs to break ocean waves, and guidelines and designs for coastal protection works. But, for these methods to work, there has to be the determination to make them happen.

"How are we going to get ahead?" he asks rhetorically. "We need to understand our coastal environments, the processes that

affect them, and how they change and fluctuate."

Canadian funding under C-SPOD I made a contribution towards that understanding. However, there are many islands and the task is daunting.



**The South Pacific Applied Geoscience Commission (SOPAC)** is an independent, intergovernmental, regional organisation established by a few South Pacific nations in 1972. SOPAC now has 18 member countries. Its Secretariat is located in Suva, Fiji.

SOPAC's mission is to improve the well-being of the peoples of Pacific Island member countries through the application of geoscience to the management and sustainable development of their non-living resources. Through its Secretariat, SOPAC carries out a wide range of geoscience activities in the region. The Secretariat's primary roles are to gather new data to assist member countries to assess their natural resources, and to build national capacities in the geosciences towards self-sufficiency in the long-term.

Under C-SPOD I, SOPAC received funding for such projects as assessments of coastal development and hydrocarbon exploration, and near shore minerals research. SOPAC also received significant support from the Canadian International Centre for Ocean Development (ICOD) before its dissolution in 1992 for an inshore marine geology programme and fellowship and scholarship funding for post-graduate training.



Photo: C-SPOD

*Walking along the volcanic rock and concrete constructed seawall in Apia, Samoa. To combat fears of erosion and as a first line of defense against storm waves and strong winds, several countries have built seawalls.*

# Canadian Updating Pacific Maritime Laws

by Jennifer Robinson

**P**ulling open filing cabinet drawers and unearthing long forgotten shipping laws is all in a day's work for lawyer and former ship's captain Dr. Peter Heathcoate.

For the past six years, he and his colleagues Capt. Angus Scotland and Inise Rabukawaqa have been quietly toiling away updating piles of antiquated shipping and port legislation from more than 14 countries in the Pacific.

And, they're still not done.

"Even before I left Canada I knew it was an overwhelming task," says Heathcoate in between bites of a meat pie at his Nabua office in Fiji. "Fortunately, all the countries didn't scramble onboard this thing all at once, or it would have capsized."

Working shoulder to shoulder with Pacific lawyers and seamen, he offers guidance as the regional maritime legal adviser for the Secretariat of the Pacific Community (SPC) on maritime policy and the drafting of regulations and legislation. The majority of his work has been funded through the Canada-South Pacific Ocean Development (C-SPOD) Program.

At times a gruff seaman with stories to tell by the hour, Heathcoate displays a lawyer's sharp analytical mind when probing dusty legislation to root out outdated shipping laws.

Born in England, he first went to sea at the age of 17. Rising through the ranks he became a ship's captain at 28 and later moved to Canada. Two years later, he entered Dalhousie University in Halifax, Nova Scotia to study commerce and later law, specializing in admiralty, marine, and fisheries matters.

In between stints at sea, he worked as vice president of marine services for the shipping company Marine Atlantic for 10 years in Moncton, New Brunswick, overseeing the company's then 22 ships and 1,750 employees. He then set out for Halifax in 1990 to use his training as a barrister and solicitor.

Getting itchy feet after staying in one place for too long, Heathcoate couldn't believe his luck when a friend

called on a snowy February day in 1993 to tell him about the job in Fiji.

"Holy Kamoley, this job is made for me," he recalls thinking. "It had Peter Heathcoate written all over it." Eighteen months later, he, his wife and two children arrived in the Pacific.

After getting settled and visiting several countries to examine their maritime regulations and legislation, Heathcoate and his team started working on a new Shipping Act for Samoa. They went through the act section by section reworking definitions and dates, registration of ships, and ship safety.

The Samoan version then served as a working model for similar acts in Cook Islands, Tonga, the Federated States of Micronesia, and Solomon Islands.

"We're tweaking it every time we look at it," he says. "We're now up to our thirteenth or fourteenth draft. The first was a pretty crude cut."

Although independence from colonial powers, such as the French and British, started in the Pacific in the 1960s, many of the countries have yet to shake off the vestiges of colonialism from their maritime regulations and legislation.

Each country has its own set of challenges. Calling the maritime legislation of Nauru a "complete and utter disaster," Heathcoate describes it as stuck in a 1960s time warp. In Tuvalu, they kept finding new laws. "They'd pull out filing cabinets and they'd forgotten it was there," he says shaking his head in exasperation. "There's been a lot of turnaround in these places. There was no sort of corporate memory.

"A lot of the problem in the Pacific isn't that people lack competence, it's that they lack confidence. A, the work is a bit overwhelming and B, there are lots of other things to do because there are only two people in the office."

Describing the countries as "clients," he says he believes the countries have to feel like they "own" the legislation for it to work. The best way to accomplish that is



C-SPOD photo

Capt. Peter Heathcoate

to have Pacific Islanders write the acts themselves.

"I transfer my knowledge to them," he explains. "It's not my legislation. It's their legislation. It would be nice if I could get them to draft every word."

Not keeping their maritime legislation and regulations up to date is leaving Pacific Island countries vulnerable to new rules contained in international conventions, such as the Law of the Sea and STCW-95 (Standards of training, certification, and watchkeeping for seafarers). Failure to comply means a loss of jobs and valuable foreign exchange as well as the prevention of their ships from entering certain foreign ports.

A lack of certification under STCW-95 for a country such as Tuvalu would have a devastating impact on the country's economy, he says. Approximately 30 per cent of Tuvalu's GDP or \$3 million is from money earned by its estimated 600 sailors.

For maritime nations such as Fiji, updating of their pollution regulations and Marine Act is vital for survival because the ocean and shipping link the far-flung and often isolated countries with the rest of the world, says Capt. Waisale Salu of the Fiji Marine Department. "The very nature and layout of our group of islands [in Fiji] is that transportation by sea will always be there," he says. "The legislation is put in place for safer shipping and a cleaner sea."



C-SPOD photo

*Suva Harbour, Fiji. Pacific Island countries need to update their maritime and marine pollution laws and regulations to comply with international conventions.*

In Vanuatu, Heathcoate and teammate Scotland worked with Attorney General Hamlison Bulu to update the country's maritime legislation in 1996. As a flag state, Vanuatu needed to comply with STCW to ensure the 400 vessels listed in their registry of ships stayed, as well as the money from their registration fees, says Bulu. Now, the country is compliant.

"It is very important to raise the understanding level of Pacific Island states to the STCW convention," he says. "Peter Heathcoate and Angus Scotland were instrumental in bringing awareness to the governments. For Vanuatu, that has happened in a big way."

Convinced the advisory programme has done some good in the Pacific, Heathcoate and his team are continuing to slug their way through piles of legal documents - a job expected to last at least until 2003 with SPC.

Examining what he's accomplished, he compares his work with his job at the Canadian shipping company Marine Atlantic. "There was nothing forever there. Whereas here, even if the legislation is updated, the system I worked on will still be there."

*This article appeared previously in the Times and Transcript newspaper of Moncton, New Brunswick, Canada.*



The **Secretariat of the Pacific Community (SPC)**, formerly known as the South Pacific Commission, is the oldest regional intergovernmental organisation in the Pacific Islands. SPC works on a broad range of technical issues complementary to the Pacific Island Forum's policy and economic roles.

SPC's mandate includes responsibility for regional coordi-

nation, advice and development assistance in nearshore and reef fisheries management, and research on highly migratory fisheries. SPC also works on small-scale fisheries development, including assisting Pacific Islanders to obtain a bigger share of the regional tuna fishery, and developing fishery opportunities for women.

SPC was a participating organ-

isation in the first C-SPOD phase, implementing activities in women's fisheries development and fisheries post-harvest training. Funding from AusAID has allowed SPC to coordinate some of its project aims with those of C-SPOD II. To date, SPC has participated in FFA national tuna fisheries management plans funded by C-SPOD. There is also potential involvement in other projects.

# Women and traditional fishing practices: Preserving priceless knowledge in Vanuatu

*By Erin Phelan*

**D**uring September, October and November in Vanuatu the women of Urviv wait for the full moons to rise. Though a meteorologist would likely tell you exactly what time of year it is by the tides, the women do not need to know. They point to a specific part of the sky and say that when the moon rises there, it is time.

The women of Urviv wait for the Nawil: special, edible worms that have been ceremoniously collected for generations. The ceremony is part of their kastom.

The evening that the moon rises, the women wrap dried wild cane to make a torch, as wild cane burns slowly. The light from the torch is used to attract the worms to the surface. While the women wade through the water, they sing. There are four or five different species of Nawil, with custom names for each worm. The women change the words to the song to call forth each group of worms.

As the worms make themselves present, the women scoop them with hand-woven baskets that bear a resemblance to lacrosse nets. And then there is a feast.

Though the Nawil would make an unlikely appearance on menus throughout Canada, Kate Holmes assures that they are “quite tasty”. Holmes is a marine biologist who has been working in Vanuatu, a small country formerly known as New Hebrides, located about 2,300 kilometres west of Australia, since 1998. Her project, “Women and Traditional Marine Tenure” is based out of the Vanuatu Cultural Centre (VCC), a national body committed to recording and protecting indigenous knowledge, that has been strongly supported with funding from the Canada Fund.

Holmes is a volunteer with CUSO, Canada’s volunteer sending agency working throughout the developing world, and was engaged by the VCC to elaborate on work that was in progress on traditional marine tenure (Tok Blong Pacific Vol. 52 No 4 “Supporting Traditional Management of Marine Resources”). In the Pacific, CUSO supports work in indigenous rights, community-based resource management and sustainable economic alternatives - and Holmes’ work falls into all three areas.

“A lot of it has to do with nutrition, with people having enough to eat. The work itself generates a lot of interest from different people, as we are collecting interesting information. But I think that Francis (Hickey, CUSO volunteer, Traditional Marine Tenure) would admit this as well: Vanuatu is a very sexually segregated society, and he was only getting the story and the perspective of men.”

Vanuatu is one of the most progressive Pacific Island nations in cultural policy. Under national legislation, the Vanuatu Cultural Centre has a mandate to preserve, protect and develop cultural heritage of the country. Because history and culture is passed orally from one generation to another, and men and women’s stories vary, the women’s program was essential:

“According to custom, a lot of the people who are the most vocal are men. But women have their own stories and culture,” said Holmes. “In Vanuatu, the practices accorded to women are specific, and the thing with culture and with custom is it is a part of daily life - it isn’t just rituals. Women have a vast amount of knowledge that isn’t considered valuable.

“I’ve heard people say before that ‘women don’t fish’, because they aren’t catching fin fish. But that’s a life - a lot of women do fish for fin fish, though it isn’t as prevalent. But on top of that, women carry shellfish from the reefs,” Holmes says, adding with a humorous tone: “I’d be interviewing someone who says women don’t fish, meanwhile in the background a group of women were collecting shellfish for the evening’s supper.”

Holmes travels to villages throughout Vanuatu’s 80 islands documenting - with audio/visual technology, as well as pen and paper - women’s stories. Her work is three-tiered: documenting women’s traditional fishing practices, encouraging them to continue custom use, and disseminating information to the wider public. The women’s traditional fishing practices are largely based around reef gleaning, which is shellfish collecting.

The tapes recorded from the village visits are placed in a library in the Vanuatu Cultural Centre and only families that have been named are allowed to view them.



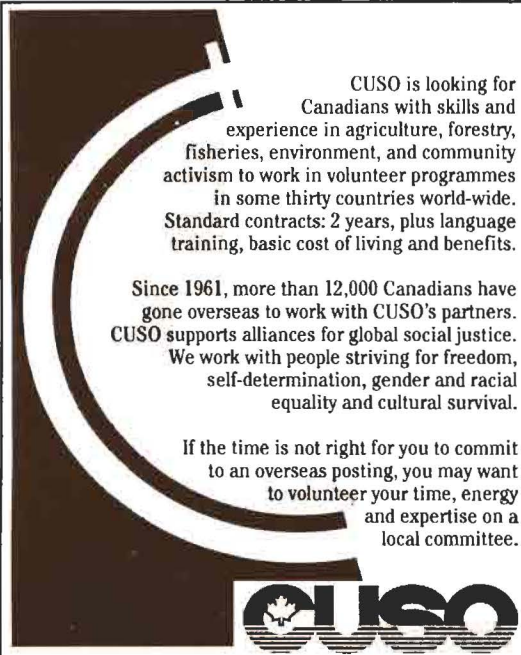
But having the tapes as security - or protection - of indigenous knowledge is not central. What is most important is keeping the culture and customs alive:

"The level of influence we have is on a very local level. I go in and get people talking," said Holmes. One thing that struck me was when I was asking a group of women to show me how to weave the net that collects the Nawil. There were 12 little girls looking on, grabbing the net and trying to weave a little bit, and the women were teaching them. Those little girls will always remember the women who came in with the camera."

The marine biologist has found she frequently dons the anthropologist's cloak. At times the scientist in the young Canadian woman rises up to contradict her work. Because she is documenting stories, often the stories seem like fables. "Some people tell it like it is a story, and others tell it like it is fact. Some things could be both - medicinal stuff, that it might be true that a certain shellfish can act as a medicine and helps with the head.

"Whether the story is a story, or actually helps, doesn't really matter. The real question for the scientist is: Does it help the head?"

Holmes has dug her feet - literally, and figuratively - into her work. She loves traveling to the villages that "seem real and pure", where she immerses herself into the culture. "People will share their ideas more if you are of like mind," she says.



CUSO is looking for Canadians with skills and experience in agriculture, forestry, fisheries, environment, and community activism to work in volunteer programmes in some thirty countries world-wide. Standard contracts: 2 years, plus language training, basic cost of living and benefits.

Since 1961, more than 12,000 Canadians have gone overseas to work with CUSO's partners. CUSO supports alliances for global social justice. We work with people striving for freedom, self-determination, gender and racial equality and cultural survival.

If the time is not right for you to commit to an overseas posting, you may want to volunteer your time, energy and expertise on a local committee.

Check our web site at [www.cuso.org](http://www.cuso.org) for current postings and information on how to apply or call 1-888-434-CUSO (2876) for the office nearest you.

Being of like mind meant, at one stage, a trip into mangrove swamps. One type of shellfish, the banu shell, is found buried in mud that can be as deep as the armpits. To retrieve the banu, one must wade into the mud, feel for the shell with your feet, put them under your toes and bend the leg to bring the banu to the surface.

Holmes was filming this event when she decided to throw the camera to her counterpart, and collect alongside the women. "The women were thrilled I was doing it, and it was a pivotal moment in how women related to me in the village. Months later, when I came back, the women were still talking about how I did the banu!"

Whether the work the Cultural Centre is doing in traditional marine tenure will be adopted, as part of national legislation, remains to be determined. The Vanuatu Department of Fisheries is aware of the work, but changing policy is a drawn-out process in the Pacific. The Cultural Centre is hopeful that the research will generate interest in subsistence issues. But Holmes is quick to add that unlike many countries in the developed world, customary and chiefly systems are still respected in Vanuatu: restricted areas for fishing that are based on custom technique are often more respected than those based on government legislation.

Holmes believes that coastal projects should start with traditional knowledge before exploring scientific methods. "Over the years I've realized that to tackle any conservation issues, you have to consider the community first, the human resources. If they are not in support of what you are doing then the project will fail."

During an international marine conference in November, Holmes presented a paper based on her work with the Cultural Centre. After several hours of sitting in a closed room, listening to paper after paper, she noticed her audience was...drifting off to sleep. She decided to sing the Nawil song to captivate the crowd, and it worked.

When asked for the words to the song, Holmes politely declined. "The problem is custom," she says. "The issue is who will use that song. Someone who doesn't know the custom could use the song to call the worms. There are people in the villages whom believe that the worms have stopped coming because people weren't respecting custom enough. Women used to dress up, and put on perfume out of respect for the Nawil, and they don't do that anymore."

But she'll sing it for you anytime.



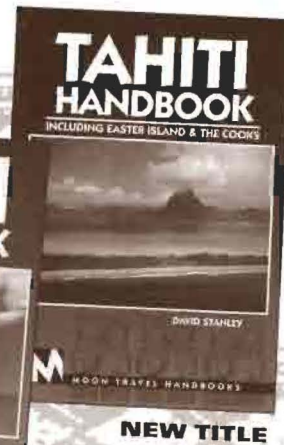
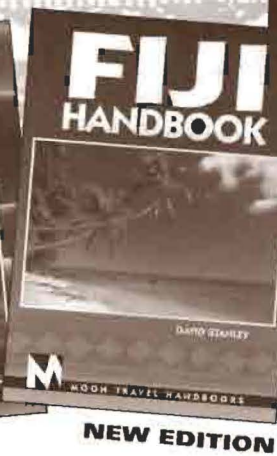
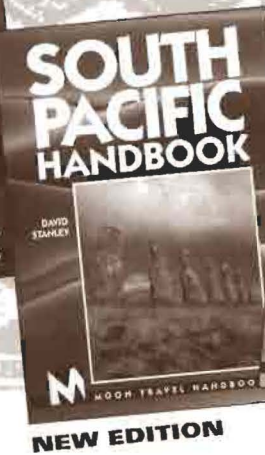
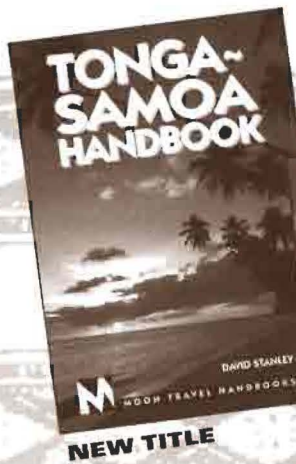
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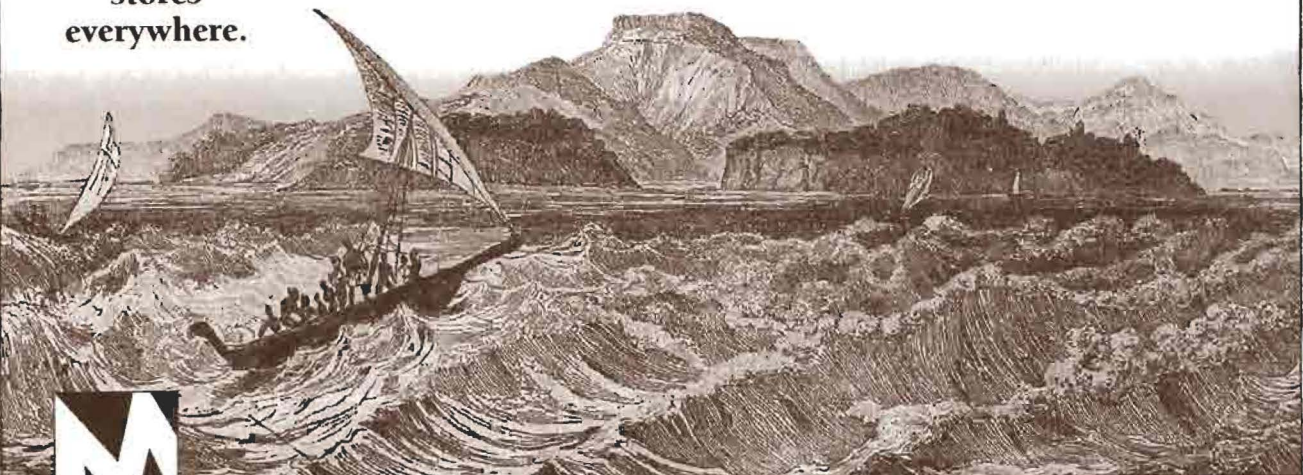
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