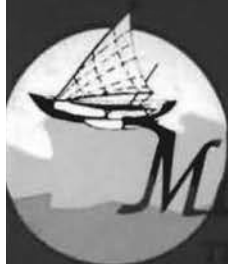




**THE UNIVERSITY OF THE SOUTH
PACIFIC**

MARINE STUDIES PROGRAMME

Annual Report
1995



Marine Studies

The University of the South Pacific

Incorporating the
Institute of Marine Resources
Ocean Resources Management Programme
Public Marine Education Programme
Pacific Islands Marine Resources Information
System (PIMRIS)
Atoll Research Programme
International Ocean Institute Operational Centre
at The University of the South Pacific
and
Dravuni Island Field Station

**THE UNIVERSITY OF THE SOUTH
PACIFIC**

MARINE STUDIES PROGRAMME

**Annual Report
1995**

Incorporating the
Institute of Marine Resources
Ocean Resources Management Programme
Public Marine Education Programme
Pacific Islands Marine Resources Information
System (PIMRIS)
Atoll Research Programme
International Ocean Institute Operational Centre
at The University of the South Pacific
and
Dravuni Island Field Station

**Compiled by: T. Pickering, N. Bulai,
& G Robin South**

List of Contents

INTRODUCTION

The Marine Studies Programme Management Board

List of Staff

SUMMARY OF PROGRAMMES & ACTIVITIES

- Marine Studies an Overview, 1995
- Institute of Marine Resources, Honiara, Solomon Islands
- ORMP
- Earth Science & Marine Geology
- PIMRIS
- Marine Public Education
- Atoll Research Programme
- Dravuni Field Station
- International Ocean Institute

List of Publications

Visitors

Acknowledgments

We are grateful to the Canadian International Development Agency (CIDA), for continued funding of projects in Marine Studies Programme Development; PIMRIS; Marine Geology and ORMP. Without this significant funding the progress described here would not have been possible. The services provided by Canadian Ocean Resource Associates Inc. in support of these projects is warmly appreciated.

We are also grateful for funding from UNDP (IOI-South Pacific) the Government of France, the Canada Fund, and USAID (PIMAR project, Tarawa Lagoon Study, Kiribati). The University has identified Marine Studies for special funding over the period 1994 - 1996; we are highly indebted to USP's member countries who have had the foresight to give special consideration to this programme.

**UNIVERSITY OF THE SOUTH PACIFIC
MARINE STUDIES PROGRAMME**

Annual Report 1995

INTRODUCTION

Marine Studies is an interdisciplinary, university-wide programme, administered by the Professor of Marine Studies in collaboration with the Schools and Institutes, and with the advice of the Marine Studies Advisory Board, whose membership includes representatives from regional and international agencies and donor organizations. The mission of the USP Marine Studies Programme is to:

- . **Provide the necessary opportunities for Pacific Islanders to understand, conserve, develop, manage and utilize their living and non-living resources in a rapidly changing world;**
- . **Provide Pacific Islanders with the widest possible range of opportunities for research, education, training and employment in the marine sector; and**
- . **Provide for improved collaboration between the University of the South Pacific, island nations, regional and international bodies in their common goals in the marine sector.**

The following are administered through Marine Studies:

- . **The Ocean Resources Management Programme**
- . **The Institute of Marine Resources located in Honiara, Solomon Islands**
- . **The Atoll Research Programme (previously the Atoll Research and Development Unit), located in Tarawa, Kiribati.**
- . **The Dravuni Island Field Station**
- . **The Marine Public Education Programme**
- . **The Pacific Islands Marine Resources Information System (PIMRIS)**
- . **The International Ocean Institute, South Pacific Regional Operational Centre**

**UNIVERSITY OF THE SOUTH PACIFIC
MARINE STUDIES PROGRAMME**

Annual Report 1995

Marine Studies also provides support services to all marine-related activities at the University, including the operation of a research vessel and small boats to access to the field, and a dive facility.

**UNIVERSITY OF THE SOUTH PACIFIC
MARINE STUDIES PROGRAMME**

Annual Report 1995

THE MARINE STUDIES PROGRAMME ADVISORY BOARD

Dr Vijay Naidu	-	Pro Vice Chancellor (Academic) [Chairman]
Professor Robin South	-	Coordinator of Marine Studies
Dr Wadan Narsey	-	Director of Planning & Development
Professor Epeli Hau'ofa	-	Head of SSED
Mr Gunnu Pillai	-	Head of SPAS
Mr Hugh Dickson	-	Bursar
Mr Philipp Muller	-	Director, SOPAC
Mr Sunia Waqainabete	-	Fiji Fisheries Dept.

**UNIVERSITY OF THE SOUTH PACIFIC
MARINE STUDIES PROGRAMME**

Annual Report 1995

<p>LIST OF STAFF 1995</p>

Academic and Comparable Staff

Coordinator

G Robin South BSc (Hons) PhD DSc *Liv* FLS
Professor of Marine Studies & Director, IOI-South Pacific

Professors

Viliam Ted Buchwald BSc *Man* MSc PhD *Lond*
Head of Maths & Computing Science, SPAS

Peter Newell BSc PhD *Lon*
Head of Biology Dept., SPAS

Subramaniam Sotheeswaran BSc *Cey* PhD DSc *Hull* CChem, FICC
Head of Chemistry Dept., SPAS

Randolph R. Thaman MA UC *Berk* PhD *U.C.L.A.*
Professor of Pacific Biogeography, SSED

Crosbie Walsh DipTech BA *NZ* MA *Well* PhD *Massey*
Head of Development Studies, SSED

Readers/Associate Professors

William Aalbersberg BA *C'nell* PhD *Calif.*
Chemistry Department, SPAS

Kanayathu Koshy MSc *Kerala* PhD *WI* CChem MRSC
Chemistry Department, SPAS

**UNIVERSITY OF THE SOUTH PACIFIC
MARINE STUDIES PROGRAMME**

Annual Report 1995

Mahendra Kumar BSc *USP* PhD *Nott*
Physics Department, SPAS

Patrick D. Nunn BSc PhD *Lond*
Geography Department, SSED

Senior Lecturers

Philomena Gangaiya BSc MSc GCEd *USP* PhD *Camb*
Chemistry Department, SPAS

Alison Haynes BSc *Cant* PhD *Open* CBiol MBiol
Biology Department, SPAS

Roger Lowery BSc PhD *Hull*
Biology Department, SPAS

Barbara MacLeod BSc *NSW* PhD *Adel*
Mathematics & Computing Science Dept., SPAS

Gunnu Pillai BSc *Madr* PGCertEd *Lond* MSc *USP* CBiol MBiol
Biology Department & Head of SPAS

Lecturers

Vina Ram Bidesi BA *USP* MA *Kagoshima*
Ocean Resources Management Programme, SSED

Anthony Chamberlain BSc *NSW* GCAS *AMC* MAppSc *AMC*
Marine Studies Programme

Ganeshwar Chand BA MA *USP* PhD *NY*
Economics Department, SSED

Matakite Maata BSc GCEd *USP* MSc *Cant*
Chemistry Department, SPAS

Paul Markham BSc PhD *Lond*
Biology Department, SPAS

**UNIVERSITY OF THE SOUTH PACIFIC
MARINE STUDIES PROGRAMME**

Annual Report 1995

Timothy Pickering BSc BSc(Hons) PhD *Vict U Well*
Marine Studies Programme

Sitiveni Ratuva BA GCEd PGDipSoc *USP*
Sociology Department, SSED

Milika Naqasima Sobey BSc PGDipBiol *USP*
Biology Department, SPAS

Sandra Tarte BA *Melb*
History/Politics Department, SSED

Joeli Veitayaki BA MA *USP*
Coordinator Ocean Resources Management Programme, SSED

Veikila Vuki BSc *USP* MSc *James Cook* PhD *Southampton*
Marine Studies Programme

Visiting Fellow

Russell Howorth BSc *Southampton* PhD *Vict U Well*
Training Coordinator, SOPAC

Fisheries Training Officer
Jone Maiwelagi

Administrative Staff

Umesh Nath	Assistant Project Officer
Nanise Bulai	Secretary
Fulori Liwaiono	Clerk/Stenographer, IOI
Susan Naco	Clerk/Typist, ORMP

Technical & Other Support Staff

Sunia Lavaki	CertMarineEngHigherNatDip <i>UK</i> Chief Technician
---------------------	---

**UNIVERSITY OF THE SOUTH PACIFIC
MARINE STUDIES PROGRAMME**

Annual Report 1995

Fiu Manueli	Technician & Acting Dive Officer
Suren Chand	Fisheries Assistant
Mahendra Prasad	Handyman/Cleaner
Vilitati Dawainavesi	Handyman/Cleaner

Research Vessel Crew

Jope Lesavua	Captain & Fisheries Officer
Durwood O'Connor	Engineer
Samuela Talili	Crew
Netani Tulele	Crew

Dravuni Island Field Station

Filimone Lavelawa	Caretaker
--------------------------	------------------

Atoll Research Programme, Tarawa, Kiribati

**Temakei Tebano DipEd, BEd *USP* MSc *James Cook*
Manager & Fellow**

Vacant	Graduate Research Assistant
Kirata Apisai	Technician
Tekirua Riinga	Field Assistant (Fish Poisoning Project)
Etii Teikona	Watchman
Mariano Betero	Watchman
Tekeuea Beia	Cleaner
Aomoro Taauri	Volunteer
Tebou Taanako	Volunteer

Institute of Marine Resources

**Johnson Seeto BSc *USP* MSc *Otago*
Lecturer Marine Studies Programme & Director (ad interim)**

**Toata Molea BSc MSc *USP*
Fellow, Institute of Marine Resources, Solomon Is**

**UNIVERSITY OF THE SOUTH PACIFIC
MARINE STUDIES PROGRAMME**

Annual Report 1995

Pacific Islands Marine Resources Information System

(USP Library)

Ganeshan Rao *MLS Br Col BSc Ed Dip Admin St USP Cert Lib Mgmt Wash*
PIMRIS Coordinator

Nirmala Gounder *Cert Lib, Dip Lib Inf USP*
PIMRIS Assistant

International Ocean Institute Operational Centre at the University of the South Pacific

G. Robin South *BSc (Hons) PhD DSc Liv FLS*
Director

Seremaia Tuqiri *BA USP Dip. Mar. Aff. Dalhousie*
Coordinator

Joeli Veitayaki *BA MA USP*
Coordinator, Secretariat for the South Pacific
Independent World Commission on the Oceans (July-December)

Affiliated Academic Staff

South Pacific Applied Geoscience Commission

Fuka Kitei'aho
Assistant Instructor, Certificate of Earth
Science and Marine Geology

Institute of Applied Sciences

Edward Anderson *BA Harvard, PhD Dalhousie*
Senior Academic Assistant, Marine Pollution Programme

**UNIVERSITY OF THE SOUTH PACIFIC
MARINE STUDIES PROGRAMME**

Annual Report 1995

1995 IN REVIEW

1995 was an extremely busy year for the Marine Studies Programme. The University continued to give MSP high priority, and this was reflected in the growing level of response that we are receiving from throughout the region, and world-wide. During the year there was also a new spirit of cooperation among all of those staff involved in the programme, and I am most grateful for this. The various sections of MSP are featured separately in this report: here I want to highlight some of the year's events that concerned the overall programme.

Our Academic Programmes took a major step forwards this year, with the development and approval of two new undergraduate degree programmes: a BSc majoring in Marine Science, and a BA minoring in Marine Affairs. The new programmes begin in Semester I 1996. In addition, a major revision of the presentation of MSP in the USP Calendar was undertaken, including the re-numbering of all marine courses under the MSP flag.

A major development of the year was the decision by the Government of Japan to send a Basic Design Mission in response to our request for Japanese Grant Aid to build new marine studies facilities. The Fisheries Engineering Company was selected to carry out the work, and spent six weeks at USP in August and September, returning again in November to fine-tune their proposal. We are hopeful that final approval for the project will be granted in early 1996. We are grateful for the strong support of the University, the Japan International Cooperation Agency, the Embassy of Japan and the Government of Fiji in seeing this project to the approval stage. The MSP team was instrumental in putting together a convincing project proposal. The Marine Studies Centre will include a 5,000 m² main building, a 200-seat lecture theatre, accommodations for 20 students and 5 long-term visitors, a cafeteria, workshops, a fisheries post-harvest laboratory, and a new research vessel.

1995 saw at long last the start-up of the Institute of Marine Resources in Honiara. Johnson Seeto, longest-serving MSP staff member, agreed to serve a one-year term as Director and went to Honiara in July. IMR is currently sharing facilities with the Solomon Islands Fisheries, while the USP Honiara Centre assists with administrative and financial arrangements. It was decided to make the Aruligo Site, next to ICLARM as the permanent home of IMR, and plans for this were commenced by year-end.

**UNIVERSITY OF THE SOUTH PACIFIC
MARINE STUDIES PROGRAMME**

Annual Report 1995

The Atoll Research Programme continued with an active year. The Tarawa Lagoon Management report was completed by BioSystems, and now requires a careful evaluation in order to determine how implementation should take place. Dr Gary Yeo acted as MSP-ARP Liaison, which proved a good arrangement for all concerned.

PIMRIS showed an increase in its services during the year; under new arrangements Ganeshan Rao, Coordinator, combined PIMRIS duties with his other responsibilities. Nirmala Goundar did an admirable job looking after PIMRIS operations while Ganeshan took a long leave at the end of the year.

Publication of MSP Technical Reports has continued, and several new issues were in preparation at year's end. The series is proving an increasingly useful medium for the publication of MSP staff and visitor research reports, reviews and bibliographies.

Our support from the Canada-South Pacific Ocean Development Project continued, and with agreement from the Executing Agency, CORA, we were able to reallocate remaining funds under C-SPODP I to extend some of the projects until the end of 1996 or early 1997. In November we participated in meetings with CIDA and the members of the South Pacific Organizations Coordinating Committee to discuss arrangements for the second phase of C-SPODP. USP will be one of four agencies to be funded under this CAD\$14.0 million programme.

Outreach was an important feature of 1995: with the support of Continuing Education and under the guidance of Jone Maiwelagi assisted by Suren Chand, MSP ran a series of fisheries workshops throughout Fiji. The workshops specifically targeted youths and fishers who needed guidance in basic fishing skills, and proved very popular. In addition, the Marine Public Education Programme assisted in the coordination of a Marine Awareness Workshop in Savusavu, targeting tourism dive operators. The Fiji Dive Operators Association provided the planning and framework for the Workshop. Plans are being made to build on the success of both of these programmes.

The International Ocean Institute Operational Centre, closely linked to MSP, had a very active year and ran a total of four courses, drawing participants from many parts of the world. Many USP staff assisted in the delivery of these courses. In addition, IOI-South Pacific was designated as the Secretariat for Oceania for the Independent World Commission on the Oceans. Joeli Veitayaki, Coordinator ORMP,

**UNIVERSITY OF THE SOUTH PACIFIC
MARINE STUDIES PROGRAMME**

Annual Report 1995

was seconded to IOI-South Pacific for the second half of the year to act as Coordinator for the Secretariat, and organized a successful series of public hearings throughout the region. Vina Ram Bidesi took on the responsibilities of Coordinator, ORMP during Joeli's secondment, while Capt. Peter Heathcote of the Forum Secretariat assisted with ORMP teaching through a personal services contract.

Cooperation continued to be an important feature of MSP, and among many others we maintained profitable relations with Astrolabe, Inc., the University of Otago, the University of Newcastle, the University of Tokyo and the members of SPOCC.

There were a number of staff changes during 1995. Dr Veikila Vuki was appointed as Lecturer in Oceanography, and has been hard at work to introduce this discipline for offer to students in 1996. Dr Timothy Pickering was appointed as a replacement for Johnson Seeto, and has proved to be an asset to MSP. Cherie Whippy did an admirable job as Coordinator of the Marine Public Education Programme for part of the year, until she gave birth in November. Sereana Tagivakatini took over from Cherie. Temawa Taniera resigned from ARP, and we are grateful for all of the assistance that she provided there. Toata Molea joined the IMR staff as its first Fellow. The end of 1995 saw Dr Gary Yeo return to Canada on completion of his C-SPODP-funded project. We have been greatly indebted to him for his hard work and commitment to MSP, and I am pleased to report that he will soon be able to rejoin us for a new contract beginning in 1996.

I want to thank the USP Administration, the MSP Coordinators, all of the MSP staff, our many friends from around the world and our donors and supporters for having made 1995 a most significant year for MSP.

G. Robin South
Coordinator, Marine Studies Programme &
Professor of Marine Studies

**UNIVERSITY OF THE SOUTH PACIFIC
MARINE STUDIES PROGRAMME**

Annual Report 1995

SUMMARY OF PROGRAMMES & ACTIVITIES

INSTITUTE OF MARINE RESOURCES

History

The Institute of Marine (IMR) began operations in Honiara, Solomon Islands on June 1st 1995 with the appointment of Toata Molea as Fellow. The Director, Johnson Seeto finally arrived in Honiara on 23rd July after an earlier week long visit in March to assess the situation. The starting-up of the IMR in the Solomon Islands had resulted from a USP Council decision and a reorganisation of marine studies at the University of the Pacific (USP). The Taiwanese Government has assisted the IMR start-up with an equipment grant of US\$100,000.

The Institute is presently housed in an office and a laboratory within the Solomon Island Fisheries Division Building in Honiara. This is a temporary arrangement until a final site is acquired by the Solomon Island Government. At present, IMR financial and overseas telecommunications activities are carried out through the USP Solomon Island Centre.

The Ministry of Education and Human Resources Development (MEHRD) of the Solomon Islands is still in the process of purchasing a three hectare site at Aruligo for the IMR. There is still some dispute about the ownership of the associated foreshore lease and a court decision is still pending. The development process at Aruligo is pushing ahead in consultation with the Ministry of Education and Human Resources Development officials and USP. An IMR Project Proposal for Aruligo was put together by the Director of Physical Planning and Facilities at USP in November. The Aruligo site development will have laboratories, offices, library, covered outdoor working areas, student facilities, and staff housing.

It is the intention of the IMR to have a town office in addition to the Aruligo development which is approximately 25 km out of Honiara town. The office of the Vice Chancellor and the Physical Planning and Facilities Section at USP, together with MSP, are presently looking into the scenario of building a few offices, laboratories and classrooms for IMR within the USP Centre compound. Locating the IMR office within the USP Centre complex will consolidate activities from the present two tier arrangement.

**UNIVERSITY OF THE SOUTH PACIFIC
MARINE STUDIES PROGRAMME**

Annual Report 1995

The initially allocated town site at the western end of the Solomon Island College of Higher Education (SICHE)'s School of Marine and Fisheries' Ranadi campus was deemed to be unsuitable for IMR because of the widening of the main road and the unavailability of the house. The decision to go with the Aruligo and USP Centre sites follows on from discussions, during the VC's visit in mid-September, with the MEHRD as well as with SICHE director and after consultation with the Professor of Marine Studies in Suva.

The Institute of Marine Resources, which is an out-post of the USP's Marine Studies Programme in Fiji, is a regional institution and must serve the needs of the region. However, the activities will obviously concentrate in the Solomon Islands. The IMR was initially charged with carrying out research but this focus was considered to be too narrow. Its expanded role will include conducting consultancies and EIAs; running short courses and conducting workshops; earning revenue through contract work; providing help to the local educational institutions (SICHE, schools) in developing marine curriculum; providing information on marine matters to members of the public; aiding the Fisheries Division/sector (and other government departments) as well as developing a good working relationship between IMR and the Solomon Island Government. The IMR will draw on MSP and USP expertise to achieve some of these activities which, however, will be limited by the availability of funds. The IMR had a small operating non-salary budget of \$F20,000 (\$S148,000) in 1995 with the same allocation for 1996.

A small resource centre is also being developed to help disseminate marine information to members of the public.

The IMR will continue to be guided by the MSP, Institutes Board of Management, as well as by outside suggestions. A weekly report on the IMR activities is written for the Professor of Marine Studies.

It is envisaged that a secretary position will need to be created as the IMR work load increases. At present, all menial work is being carried out by the Director or the Fellow. The USP Accounts Clerk, Mrs Liz Tiba looks after the accounts. The vacant technician position has not been filled yet because his/her services are not required yet. A second Fellow position may be added to the IMR staff in 1997. The full complement of IMR staff is expected to be filled within the next three years.

The director's position was advertised in November and it is envisaged that this

**UNIVERSITY OF THE SOUTH PACIFIC
MARINE STUDIES PROGRAMME**

Annual Report 1995

person will replace Johnson Seeto who returns to the Marine Studies Programme, USP in June, 1996.

Research Programmes

Johnson Seeto	Fishes of the Solomon Islands Fishes of Fiji The Edible and Useful Marine Aquatic Resources of the Solomon Islands Cone Shells of Fiji Additions to the Cowries of Fiji.
Toata Molea	The Edible and Useful Marine Aquatic Resources of the Solomon Island Checklist of fish names in Lau language Lau Traditional Fisheries Technology.

Consultancies

Environmental Impact Assessments - Toata Molea was working with the Ross Corporation; Jackson Lum of the South Pacific Applied Geoscience Commission (SOPAC); geology staff of the Ministry of Minerals, Mining and Energy, and Gary Yeo of the Marine Studies Programme (MSP), USP on an EIA of the lower Matepono River for a baseline study and the potential impact of mining of gold at Goldridge in June. A report is being compiled with other team members. Johnson Seeto identified the marine molluscs for this study.

Johnson Seeto and Toata Molea were working with Jon Luxton Leqata of Fisheries Division on the foreshore immediately behind Fisheries Department in August and September. This area is the proposed site of the expansion of the Fisheries Division and a new jetty. The report (Phase 1) has been completed. Phase II will be carried out in March, 1996.

Book Review - Johnson Seeto reviewed the book by John Morton entitled "The Shore Ecology of the Tropical Pacific" for UNESCO which earned the Institute US \$1500. This book is now being updated with the suggested changes incorporated.

Mike Batty head of the Rural Fishing Enterprises Project (EU funded and based at Fisheries Division) explored the possibility of IMR (specifically Toata Molea) doing

**UNIVERSITY OF THE SOUTH PACIFIC
MARINE STUDIES PROGRAMME**

Annual Report 1995

a mid-term review of their project in April 1996. IMR is agreeable.

Meetings and Conferences Attended

Toata attended the AEPAD Tutors Conference at SICHE on 4th to 8th December.

Johnson Seeto spoke at the Fisheries Division Annual Conference/Workshop on the role of IMR and the Marine Studies Programme at USP. A lot of interest was shown by staff with regard to the marine courses and programmes on offer.

Equipment

We received a Digital Venturis 466 (486) computer with an Epsom LQ-1170 printer from the USP Computer Fund. Some office equipment was also purchased in 1995. We will purchase a van and two lap top computers from the Taiwanese Equipment Fund in 1996. At present we are using Fisheries Division computers and Toata Molea's truck for transport.

We have not spent much funds from the IMR Equipment Fund (Taiwanese Grant) yet because of a lack of storage space and we will only buy on a need-to basis.

Projects and New Initiatives

The Grouper Management Project was resubmitted through the Forum Secretariat to the European Union for funding, having earlier been shelved because the IMR was not yet established in Honiara at the time of the initial proposal.

Professor Chris Ireland from the University of Utah wants to collect sea squirts and sponges from the Solomon Islands for testing for bio-active compounds in association with IMR. This is still being discussed as amongst USP staff as it has numerous implications for property rights and patents if new compounds are found. This follows on from Jerry Kokoshka's (student at the University of Utah) earlier unsuccessful application to do the same type of collection in the Solomon Islands.

Erik de Ruyter van Steveninck's IHE Project Proposal on Reefscore (Resilience of Coral reef ecosystems to human fishing pressure) has been down-scaled and will be based in Fiji only (deleting the Solomons and Kiribati as the two other study countries) and the proposal has been submitted to the EU for funding.

**UNIVERSITY OF THE SOUTH PACIFIC
MARINE STUDIES PROGRAMME**

Annual Report 1995

Michel Blanc (South Pacific Commission Fisheries Education and Training Adviser) is exploring the possibility of conducting the Integrated Fisheries Training Course with IMR in Honiara or in Fiji (in light of the cessation of the Nelson Polytechnic course). IMR is agreeable to the principle.

IMR explored possibilities in Continuing Education with Cema Bolabola (USP Extension Service) and with Leonie Smilie of the Ministry of Women (SIG) to set up training activities such as smoking and preservation of fish.

There is potential IMR co-operation with Peter Doherty and David Williams of Australian Institute of Marine Science (AIMS) and the Solomon Island Fisheries Division on a project on the recruitment and seasonality of selected fish species. The Director of Fisheries is keen that Toata Molea join this project.

There is interest from Peter Hayward (University of Wales) to do some work through IMR on Solomon Island Reefs, and he has sought funding under the "Darwin Initiative scheme". The University of Queensland also wants to do reef ecology studies in the Solomons with Fisheries Division staff and IMR.

Dick Haamori of SICHE wanted to know if IMR can run a field course on a freshwater environment for an in-service course for science teachers. This had not yet been finalised but IMR was agreeable.

Professor Boris Krungalz of Israel wants to do joint work on the effects of anthropogenic pollutants, specifically heavy metals, on the marine environment and geochemical aspects of the development of hypersaline water bodies in hot climates. A letter detailing IMR expertise in the area has been sent and a reply anticipated.

David Greenfield from the Zoology Department (University of Hawaii) is seeking an NSF grant to study associations of fish assemblages with specific habitat type and to develop a database in the Pacific that is comparable with the database he has established for the Atlantic Ocean. He wants to do a joint study with USP staff, preferably in Fiji.

Toata Molea will visit the Marine Studies Programme, USP and various fisheries/marine institutions in Fiji for two weeks in February, 1996.

The Ministry of Forestry, Environment and Conservation (SIG) wants to conduct

UNIVERSITY OF THE SOUTH PACIFIC MARINE STUDIES PROGRAMME

Annual Report 1995

an EIA with IMR and Fisheries Division personnel. The study will be carried out sometime in 1996 (subject to the availability of funding) off the coast of Kolombangara in the Western Province to investigate the marine life close to an area heavily logged by a Malaysian company.

Teaching

Toata Molea was a tutor and conducted lab classes in the USP Centre for semester II (covering the course BIF03 - Foundation Biology B). There were 14 students divided into two lab classes. This activity took up 7 hours per week but more hours were spent preparing and marking. The Centre could not recruit a biology tutor and IMR agreed to help. This is expected to continue in 1996.

Toata Molea taught Maths for SICHE's Distance Education Centre in the (AEPAD) Adult Education Proficiency Award (Distance) which was funded by COL/SIDEN (Commonwealth of Learning/Solomon Island Distance Education Network). Fourteen students were enrolled for an hour course per week. Toata was also involved in teleconference activities linking the main centre at SICHE to sub-centres in the Provinces thus allowing students to talk to tutors and vice versa. This will continue in 1996.

Johnson Seeto supervised the completion of USP Student Michelle Lam's MSc thesis entitled "An initiating study of Marine Fouling Communities on two tropical woods *Calophyllum vitiense* (hard wood) and *Agathis vitiensis* (soft wood) treated with either tri-butyl-tin or copper based anti-fouling paint" for Professor South. This will continue in 1996.

Co-operation

IMR and the USP Centre staff organised the arrangements for the visit of Joeli Veitayaki (Secretary of the World Commission of the Oceans and Co-ordinator of the Ocean Resources Management Programme at USP). A Public hearing was held in Honiara on October 20th to discuss the ratification of the UN Law of the Sea Convention and its implications to the Solomon Islands.

Mr. Myknee Qusa from the Solomon Island National Herbarium helped IMR identify all the coastal plants for the Fisheries Environment Impact Assessment (EIA).

IMR had discussions with Johann Bell of ICLARM about the possibility of joint

**UNIVERSITY OF THE SOUTH PACIFIC
MARINE STUDIES PROGRAMME**

Annual Report 1995

research, sharing of facilities and placement of USP post-graduate students at their facility.

Johnson Seeto talked to Andrew Richard of the Forum Fisheries Agency (FFA) about the work of Associate Professor Per Sundberg from the University of Gottenberg (Sweden) who was working on ribbonworms (nemerteans) in the Solomon Islands.

Toata Molea and Michael Osbourne discussed Solomon Island Water Authority (SIWA)'s Honiara town sewerage strategy and future treatment plants.

Public Marine Education

Toata Molea talked several times over many weeks on the Solomon Island Broadcasting Commission (SIBC) radio programmes "Our Resources" and "Our Environment". Topics discussed included nuclear testing in the South Pacific; main marine ecosystems; pollution; foreign fishing companies, interactions between seagrass beds, mangroves and coral reefs; and The Sea. These sessions were between half an hour and an hour long.

Information Dissemination and Help Provided

IMR informally provided advice and literature on a range of marine topics to:

- Solomon Islands Fisheries Division (identified marine organisms, discussed research programme and data collection to establish minimum legal lengths for spiny lobsters, helped staff establish contact with MAF New Zealand lobster researchers, discussed possible collaboration on projects like Ciguatera poisoning in Temotu and a survey of Lake Teggano in Rennell, helped edit reports and letters)
- ICLARM Coastal Aquaculture Centre (information on the reproductive biology of holothurians)
- Solomon Island National Museum (helped Daniel Eta to clean and identify shells, and set up a price structure for marine shells based on rarity and quality)
- Hawthorn Institute of Education, Australia, (John Broadfoot) and SICHE

**UNIVERSITY OF THE SOUTH PACIFIC
MARINE STUDIES PROGRAMME**

Annual Report 1995

(Dick Haamori) about IMR help for their New Science Education Programme

- Fisheries staff, secondary school students and members of the public (such as advice on the Marine Study Programmes and Courses available at USP's Laucala Campus)
- local and overseas businessmen (for example, on potential for a Solomon Island jellyfish fishery and the seasonality of jellyfish, identification of green turban shells *Turbo marmorata* for use as mother of pearl inlays in Japanese lacquered furniture)
- local fishers (helped identify sea cucumbers for a group of Malaita fishers)
- overseas researchers (for example, Mark Rigby from University of Alberta, Canada, who wanted to know how many reef fish species are found in Fiji (based on the Fishes of Fiji manuscript).

Visitors

Mr Ian Banner, Director of Physical Planning and Facilities, USP paid three visits to discuss IMR and the Aruligo site developments.

The Vice Chancellor of USP, Mr Esekia Solofa, visited IMR and the MEHRD.

Deputy Director, Forum Fisheries Agency (FFA) Mr Andrew Wright paid a courtesy visit to IMR.

CIDA Programme Officer (Asia and Pacific), Mr Ron Baird, visited IMR to touch base with the director and Michelle Lam (a CIDA sponsored student).

Mr Joeli Veitayaki (Secretary, Independent World Commission on the Oceans) visited IMR and to hold his Independent World Commission on the Oceans hearing on the United Nations Law of the Sea (UNLOS) ratification.

Mr Dic Haummori and Mr John Breadfoot (SICHE) visited to discuss Marine Science curriculum development and marine courses on offer at USP.

Ms Megan Graeme, former Marine Science student at the University of Otago and

**UNIVERSITY OF THE SOUTH PACIFIC
MARINE STUDIES PROGRAMME**

Annual Report 1995

Waikato Regional Council employee came to visit IMR.

Mrs Sereana Tagivakatini, Science Fellow at the Institute of Education (IOE, USP) and Acting Coordinator of the Public Marine Education Programme) came to visit IMR.

Acknowledgements

We wish to thank; the Solomon Island Fisheries Division for hosting the IMR in our first 6 months of operations and for allowing us the use of their facilities, the staff of the USP Centre at Honiara for putting up with the added IMR work, the USP Centre Director Mr Glynn Galo for all his help in establishing the IMR, Mrs Nirmala Gounder of PIMRIS for all the information she has provided to date, the Minister of Education and Human Resources Development (Solomon Islands) and his staff for their help, and Professor South and Ian Banner for their continued support.

OCEAN RESOURCES MANAGEMENT (ORMP)

The Ocean Resources Management Programme is part of USP's Marine Studies Programme located in SSED.

ORMP offers university degree level courses which are broad based and interdisciplinary. The courses are available to BA and BSc students who will in the course of their career take up decision making and advisory roles in areas relating to marine resources development, management and conservation. ORMP also assists in organizing other programmes at USP, short intensive courses and workshops for in-service personnel in managerial and administrative positions that deal with marine affairs.

ORMP offers four undergraduate courses. These include at the 200-level: Introduction to Ocean Resources Management (UU201) and Fisheries Economics and Management (UU203). At the 300-level there are courses on the Management of Ocean Resources in the South Pacific (UU301) and Coastal Fisheries Management and Development (UU303). The inter-disciplinary teaching covers relevant and interesting topics in Law of the Sea. Oceanography and non-living resources, marine environment, biological and economic aspects of living resources, national and regional management issues and integrated ocean use. UU201 and UU301 are offered through the University Extension services to allow

UNIVERSITY OF THE SOUTH PACIFIC MARINE STUDIES PROGRAMME

Annual Report 1995

people in the region to take it from home. From 1996, students can do a BA degree (with double major) in Marine Affairs.

The development of new courses on Law of the Sea and Ocean Policy and Integrated Coastal management are a priority and would further add to the list of courses for specialization in the Marine Affairs degree programme.

The post graduate courses addressing a wide range of ocean resources management issues are available. These are SE405 - Selected studies on Regional Management of Marine Resources in the South Pacific and SE406 - Selected studies on the Statutory Management of Marine Living Resources in the South Pacific.

The Marine Studies Programme through the ORMP offers the Certificate in Ocean Resources Management and Policy, Diploma in Ocean Resources Management and Policy and Diploma in Fisheries Economics and Management. In 1995, the first lot of diplomates graduated. The Marine Studies courses including ORMP courses would change prefix from UU to MS in 1996.

Staffing

In 1995, Joeli Veitayaki continued as the Coordinator of the Programme and Vina Ram-Bidesi as lecturer.

Ms Elizabeth Matthews, a Fulbright scholar left the Programme in June after completing her one year term. Itoyoshi Yoshida, a Fulbright student from Duke University was attached to the Programme from June to August doing work on Coastal Resources Management in the Kaba area.

Ms Anuradha Dutt was replaced by Ms Susan Naco as Clerk/Typist for the Programme in June. Captain Peter Heathcote of the Forum Secretariat took up part-time appointment as the Coordinator of UU301 course in the second semester while Joeli Veitayaki was on secondment to IOI-South Pacific.

Teaching

In 1995, enrolment in semester 1 in MS201 was 27 and in MS303 was 31. In Semester II, 55 students enrolled in MS301 and 14 in MS203. Enrolment in MS201 through extension was 31 and MS301 was 18.

**UNIVERSITY OF THE SOUTH PACIFIC
MARINE STUDIES PROGRAMME**

Annual Report 1995

There were two post-graduate students.

Activities

In the first semester Joeli Veitayaki attended two workshops at the State University of New York and the University of Rhode Island on UN Train Sea Coast Programme and Integrated Coastal Zone Management. Joeli attended a NETTLAP workshop in Manila in May. The workshop was on Integrated Coastal Zone Management.

During the second semester, Joeli was on secondment to the IOI-South Pacific to coordinate the South Pacific submissions to the World Commission on Oceans. This led him to travel extensively in the region, visiting Western Samoa, Tuvalu, Kiribati, Solomon Islands, Australia, New Zealand and the Marshall Islands. This experience has given Joeli the exposure to learn about issues in the marine sector as well as get acquainted with administrators in key positions in the marine sector in the region.

Joeli published a book entitled "Fisheries Development in Fiji. The Quest for Sustainability." The book describes various aspects of fisheries management and administration in Fiji and would be a useful guide to the understanding of the operation of the fisheries sector in the region.

In the absence of Joeli, Vina Ram-Bidesi was acting Coordinator, Captain Peter Heathcote, the Legal Maritime Adviser at the Forum Secretariat took up part-time appointment as Coordinator of UU301.

Vina attended the NGO Forum on Women in Beijing in September as a member of the SPACHEE's Ecowoman Project and a member of the Women and Fisheries Network.

ORMP staff and friends conducted a preliminary baseline survey of Marine Resources of Kaba Point. The work was carried out by Joeli, Vina, Elizabeth Matthews and Ann Ballou with the support of Fiji Fisheries Division. The report is still being reviewed but was much appreciated by the village authorities because it highlighted some basic findings and recommendations. The Fiji Fisheries Division is thinking of extending a similar study in other villages as well.

Vina participated in the IOI-South Pacific Workshop on Management Issues in

**UNIVERSITY OF THE SOUTH PACIFIC
MARINE STUDIES PROGRAMME**

Annual Report 1995

Environmental and Resource Economics conducted by the Economics Department.

Consultancy

Joeli and Vina participated with other staff members in a SPREP consultancy on Destructive Fishing Practices in the Pacific Islands. The report will be published by SPREP in early 1996.

Joeli was a Coordinator and an instructor in two of the IOI-South Pacific's training workshops: Coastal Management with Special Reference to Small Islands and Management and Development of Coastal Fisheries. Vina conducted the session on Fisheries Management Issues for the Small Islands Training Workshop.

EARTH SCIENCE AND MARINE GEOLOGY PROGRAMME DEVELOPMENT

Earth Science Teaching

Marine Studies Programme staff member Dr Gary Yeo was directly involved in teaching of Earth Science components for several courses at USP, these being SC204 Marine Geology and Sedimentology, SC301 Applied Geology, UU201 Ocean Resource Management, SCC23 Earth Resources and Mapping, SC106 Introductory Geology, SC203 Physical Geology, CH304 Geochemistry and Marine Chemistry, UU301 Ocean Resource Management, and GE306 Pacific Geoscience. It is gratifying to report that student numbers showed another increase in 1995 for these courses. This highlights a need to now assign technicians and demonstrators to these courses as is done for other laboratory-science disciplines. Currently, Earth Science lecturers are shouldering this burden themselves.

For the introduction of the new degree programme, Bachelor of Science (Marine Science), the course on Marine Geology and Sedimentology will henceforth be identified as a Marine Studies course, with new code MS211. Three new degree programmes which include Earth Science courses will be available from 1996 onwards; a double-major in Earth Science and Geography, a BSc in Marine Science, and a BA in Environmental Studies.

In response to requests from Earth Science and Environmental Science BSc graduates in the region for a Graduate Diploma in Marine Geology, proposals were developed for such a programme. A new course on Physical Sedimentology

**UNIVERSITY OF THE SOUTH PACIFIC
MARINE STUDIES PROGRAMME**

Annual Report 1995

(MS401) was approved for inclusion in the 1996 Calendar, and proposals for Carbonate Sedimentology, Hydrogeology and Volcanology have been prepared. If approved, these would be offered as one course per semester over two years.

USP continues to support SOPAC's Earth Science and Marine Geology Certificate programme, through provision of a lecturer for 30% of the programme, a technician, classroom and laboratory space, and boats/crew for field trips. A three-year funding cycle for this programme has just been completed.

Research Projects

A baseline study on hydraulics, water chemistry and ecology was carried out in the Matepono River in the Solomon Islands for SOPAC and the Solomons government. This was done in anticipation of a new goldmine development in the river catchment.

A long term reef monitoring project at sites on Suva Reef (Fiji) and Tarawa Reef (Kiribati) was continued as part of a global UNEP project: Monitoring Coral Reefs for Global Change.

There was a preliminary investigation of calcification rates on Suva Reef in collaboration with Prof. Shigeru Ohde of the University of the Ryukyus, which would be worthwhile continuing at a later date since there is little data available for reef carbonate productivity rates in the South Pacific.

Christine Fung carried out a Directed Study (SC300) project on the interaction of artificial tailings from the Namosi copper deposit on seawater. The study concluded that dissolved copper levels in seawater would most likely not be a problem if copper mining were to go ahead.

Other Activities

A pilot workshop was run on Marine Awareness and Reef Ecology for Fijian villagers, at the request of the Fiji Dive Operators Association. This included the Earth Science topic "Geology, development, and physical environment of reefs". The objective was to provide villagers with information that can enable them to make well-informed choices about utilization of marine resources, and to understand the needs of eco-tourism business ventures. There was strong support among participants for development of a marine reserves system in Fiji, and there

**UNIVERSITY OF THE SOUTH PACIFIC
MARINE STUDIES PROGRAMME**

Annual Report 1995

is demand for similar workshops elsewhere in Fiji.

DRAVUNI ISLAND FIELD STATION

The field station at Dravuni Village was occupied by the following groups and individuals throughout the year:

- for the second time in two years we had 19 students and Lecturers from the Long Island University spending 10 days in January
- the President of the Astrolabe Incorporated, Joan Koven together with the Littlers (Mark & Diane) and Barrett Brooks from the Smithsonian Institute, for the first time after 3-6 visits appreciated coming over and staying from February to March rather than in the middle of the year
- during the USP mid-semester break the two courses of Marine Biology and Geology shared the station space with some students located in village accommodation
- two teams from Earthwatch, coordinated by Dr Denis Goulet of University of New York at Buffalo stayed for four weeks altogether from July to August
- from November to December the Seagrass project team, this time managed and coordinated by Dr Satoshi Nogima of the Kumamoto University stayed for about 6 weeks
- the Long Island University group came again at the end of the year on the 29th December for 9 days to round off '95 and began the '96 visits

Dr Simon Jennings of Newcastle upon Tyne University visited at irregular periods from September until he left Fiji in early 1996. Ashwin, a Physics PostGrad. assistant at USP has a solar powered transmitter at the station which he visited 3 times during the year.

RESEARCH VESSEL ACTIVITIES

Research Vessel APHAREUS' contribution to the Marine Studies activities

**UNIVERSITY OF THE SOUTH PACIFIC
MARINE STUDIES PROGRAMME**

Annual Report 1995

commenced quite early in 1995 and it was envisaged that the year would be fairly busy for the vessel. Details of activities are shown in the table below.

Research Vessel Aphareus: 1995 Activities

#	Vessel Charter	Numbers of Trip	Total No. of Days	Average Passengers	Comments
1.	Long Island Uni., NY.	1 trip	9 days	17	To Dravuni Island then to dive & study areas.
2.	Astrolabe Inc.	2 trips	4 days	4	Ferry to Dravuni and back.
3.	BI305, SPAS	6 trips	10 days	17	Ferrying to Study Area and also sea-bed & water sampling
4.	SC303, SPAS	4 trips	4 days	8	Sea bed & water sampling using day grabs & light gears
5.	SOPAC	1 trip	9 days	24	Ferry student to study area in Waya Is., Yasawa
6.	Fisheries Div., Fiji.	2 trips	3 days	4	Deploy 2 set Fish Aggregative Device
7.	MRD/IAS	1 trip	1 day	20	Sea-bed and water test using Ponar Graps & other samplers
8.	Earthwatch Group	4 trip	16 days	10	Ferry to Dravuni then to dive observation site.
9.	WISCONSIN Uni., IPS	1	1	22	Ferry to reef
10	BI307, SPAS	1	2	6	Deploy and collect Nautilus traps/specimen
	G/TOTAL	23 trips	59 days		

The vessel activities for the year was carried out with overall success, serving researchers and students groups well in the execution of their various projects.

**UNIVERSITY OF THE SOUTH PACIFIC
MARINE STUDIES PROGRAMME**

Annual Report 1995

All activities by the RV Aphareus came to a halt, however, when it developed serious engine trouble on the 11th October, 1995. The vessel is now under repair.

INFORMATION SERVICES:

Pacific Islands Marine Resources Information System (PIMRIS) Coordination Unit

PIMRIS based at the University of the South Pacific Library, has achieved the major objective of establishing a Regional Coordination Unit. The Unit has the objectives of coordinating a regional plan for an organized collection, bibliographic recording, and dissemination of fisheries and marine information to the Pacific Island Countries. Through a sub-project (Outreach Project) PIMRIS has been providing assistance to island countries within the South Pacific region in marine information management. The development of a regional database on marine resources is another major objectives of PIMRIS.

The PIMRIS Coordination Unit Project commenced in early 1989 and the PIMRIS Outreach Project started in 1990. 1995 saw the formal completion of the sub-project, however, technical assistance to the island countries will continue as needed. The funding has been provided by the Canadian International Development Agency (CIDA) through the executing agent, Canadian Ocean Resources Associates (CORA)

Regional Cooperation

The participation of regional organisations (South Pacific Commission (SPC), South Pacific Applied Geosciences Commission (SOPAC), Forum Fisheries Agency (FFA), South Pacific Regional Environmental Programme (SPREP), and The University of the South Pacific (USP)), in marine information dissemination and sharing has been excellent.

Regional Communication

Electronic Mail: It is really a great advantage, as of this year, that all the regional organisations cooperating in PIMRIS are on Electronic Mail communication. Hence, a number of discussions and information requests are delivered easily.

PEACESAT: A number of Pacific Island countries' fisheries departments as well as

UNIVERSITY OF THE SOUTH PACIFIC MARINE STUDIES PROGRAMME

Annual Report 1995

FFA and SPC(Noumea) have PEACESAT ground stations. The PIMRIS Coordination Unit is able to use PEACESAT communication channels via Fiji Fisheries Division or SPC (Suva) Stations via phone patch mechanism very conveniently. Hence there has been a significant reduction in long distance communication costs

International Cooperation

PIMRIS Coordination Unit at USP has been successful in establishing contacts and agreements with numerous institutions outside the region in the field of marine information. The new one in 1995 was Scripps Institute of Oceanography Library's discussion on a pilot project for document delivery over internet.

This will enable PIMRIS to receive documents and share information at no or minimum costs. Discussions will continue during 1996.

PIMRIS' Participation in International Databases

Discussions with FAO on PIMRIS becoming an input centre for Aquatic Sciences & Fisheries Abstracts(ASFA) are on hold due to staffing situation at PIMRIS. So is the case with discussions with National Information Services Corporation (NISC - USA) for PIMRIS to contribute electronic records in exchange for CD Databases.

VII Pacific Science Congress 1997 of Pacific Science Association (PSA)

USP will be the host of this Congress in July 1997. A request from the President of PSA was made to the President of IAMSLIC (International Association of Aquatic & Marine Science Libraries & Information Centres) for IAMSLIC's participation in the Congress. Since PIMRIS is recognised as the South Pacific Regional Group of IAMSLIC, the request was forwarded to the PIMRIS Coordination Unit. Discussions were held with the Chairperson of the Session on Marine Resources for the Congress. PIMRIS will present a display as a part of the Session.

Collection Development

The regional organisations cooperating in the PIMRIS Network have been very regular in depositing copies of their publications with the Coordination Unit. USP's School of Pure and Applied Sciences' *'South Pacific Journal of Natural Sciences'*, Marine Studies Programme's *'MSP Technical Report Series'*, and the *'Fisheries Research Bulletin of Tonga'* have been added to the list of PIMRIS publications that are used for exchange arrangements with international institutions

UNIVERSITY OF THE SOUTH PACIFIC MARINE STUDIES PROGRAMME

Annual Report 1995

Efforts have continued at identifying, acquiring and processing all materials on marine resources in the South Pacific with the aim of building up a strong marine collection to support and enhance the information services PIMRIS has been continuously soliciting people and organizations to deposit documents on marine resources, specific to the Pacific region, with USP Library. During 1995 260 items were obtained from PIMRIS contacts.

Library Instruction

Library lectures were conducted for science students of the University on the usage of scientific indexes and abstracts. These included : Biological Abstracts, and Chemical Abstracts. The lectures were organised in liaison with the USP science lecturers and the Reader Services Librarian of the USP Library. The sessions proved to be very successful.

Special bibliographic instructional lectures were conducted for the students of Ocean Resources Management Programme. Literature searching skills and database availability were discussed.

Specific demonstrations were given to individuals as well as groups of students in searching electronic databases including CD-ROMs.

Publications

A project on publishing a selected list of Ocean Resources Management Programme(ORMP) student research papers has been initiated. The papers have been organised by the ORMP staff and will be edited and technical production work done by USP Library staff. The production is expected to be complete in early 1996 with USP Marine Studies Programme providing the funds for printing.

PIMRIS database development

Some editorial work on quality control has continued during the period of reporting. A new set of records have been received from SOPAC. PNG is in the process of sending an update of their latest records. More records are expected from the cooperating institutions and countries before some more work can proceed in the release of further updates of this database.

It is anticipated that selected specialised subject bibliographies can be generated

**UNIVERSITY OF THE SOUTH PACIFIC
MARINE STUDIES PROGRAMME**

Annual Report 1995

from this database.

Staff positions

Up until March 1995 there were two full-time and one part-time staff in PIMRIS. Ganeshan Rao (PIMRIS Coordinator) and Nirmala Gounder (PIMRIS Library Assistant) were working full-time. Ana Dakunivosa (Clerk-Typist) is being shared by other departments within the Library.

Due to a staffing situation at the University Library, the professional positions were reviewed to allow for coverage of all departments within the Library. Hence, as of March 1995, the PIMRIS Coordination Unit has been staffed with a half-time professional position for the Coordinator (Ganeshan - also being the Acting Serials' Librarian); Nirmala continuing as the full-time PIMRIS Assistant with Ana still as per the previous arrangement.

The Coordinator's position is therefore being funded through the Library's core funding while the PIMRIS Assistant continues to receive funding from the Project budget. The Clerk-Typist's position is also funded from the Library as was from the beginning of PIMRIS.

Although it is anticipated that a full-time professional position for the PIMRIS Coordinator will be provided, the current arrangement also serves as a trial for long term planning. It is becoming more evident that there is an essential need to have a full-time professional position to enable an effective and efficient service in PIMRIS.

Ganeshan was on special leave without pay overseas from mid July till mid December 1995. Meanwhile, the University Librarian (Mrs Esther Williams) assumed the administrative responsibility of PIMRIS on a part-time basis. Ganeshan still maintained close communication with the PIMRIS Coordination Unit via electronic mail.

Staff training

PIMRIS clerk-typist attended a vocational training course in 'Advanced Word Perfect' while the PIMRIS Assistant received special on-job training on the use of electronic mail for international communication.

**UNIVERSITY OF THE SOUTH PACIFIC
MARINE STUDIES PROGRAMME**

Annual Report 1995

The PIMRIS Coordinator received specific training at the University Computer Centre on use of TELNET, LYNX, and NETSCAPE facilities to access remote information sources via internet.

The University of the South Pacific, under the Australian International Development Programme (IDP) funding assistance, sponsored the PIMRIS Coordinator for an attachment and understudy visit to the Commonwealth Scientific & Industrial Research Organisation's (CSIRO) Information Services Branch (Melbourne) and the Fisheries Division (Hobart), Australia. The visit was from 4-13 January 1995. The visit also enabled establishing contacts in CSIRO as well as other institutions in Melbourne. Acknowledgement is expressed to the IDP and USP for the sponsorship.

Information services

Regular PIMRIS products and services include

- (i) PIMRIS Newsletter (Quarterly) Vol 7 Nos. 1,2,3 & 4, circulation 399.
- (ii) Current contents awareness service for 132 periodical titles held by USP(114) and SOPAC (18). Monthly circulation 40. SPC has forwarded its serial titles list to the Coordination Unit and some titles will be included.
- (iii) Recent publications list (monthly)
- (iv) PIMRIS Information packages

PIMRIS products and promotion have resulted in the growth of information services to users in the region.

	1994	1995	
Reference Requests:	508	709	increase of 39.6%

The requests for information include both quick reference and research type reference questions as well as literature searches. Types of users were mainly USP students, Fisheries Officers, and Researchers, followed by USP staff, other Libraries, Government officers, Embassies and the private sector.

**UNIVERSITY OF THE SOUTH PACIFIC
MARINE STUDIES PROGRAMME**

Annual Report 1995

PIMRIS Outreach: Country Assistance and Other Technical Assistance

Fisheries/Marine Resource Division Libraries in the region (a total of 14 countries) have received technical assistance in information management. Installation of the CDS/ISIS software and PIMRIS database system; and varying levels of training have been provided. In all cases the library workers received lessons on the CDS/ISIS software including data-entry, searching and printing facilities. Instruction in basic cataloguing, library organisation and information management was also provided. During 1995 a number of countries and two institutions were given different forms of assistance.

Solomon Islands: The PIMRIS Coordinator visited Solomon Islands from 20-27 January, sponsored by FFA funding with a very minor component from PIMRIS. A review session was held with the library staff at Solomon Islands Fisheries Department and the USP Centre on library management and database maintenance. The Department had already received detailed technical assistance from PIMRIS staff in previous years so this visit enabled a follow-up. Some technical improvements were made to the database set-up (on CDS/ISIS) with more training to the staff. Forum Fisheries Agency received a basic training workshop in CDS/ISIS database management software. The training was to introduce the concept of information management; define a system & database development and its significance in information access. Technical details associated with database development; data entry; storage; indexing; printing; data export/import; and information retrieval using CDS/ISIS were taught. ICLARM Aquaculture Research Centre (Solomons) received a session on database creation using CDS/ISIS. Since the staff had attended the Workshop at FFA it was easier to develop a library database system for local use. ICLARM's headquarters library (Philippines) has a reciprocal arrangement with PIMRIS on information exchange.

Fiji: The Fisheries Division, Ministry of Agriculture, Fisheries and Forests, is in the process of filling the full-time position of its Library/Information Assistant. PIMRIS has offered to provide technical training to enable the Division to resume its library services which has been at a very low level since the departure of previous staff. The Division launched the " 1995 Year of the Turtle" on 28 March to which the PIMRIS Coordinator was invited to attend. The year-long campaign to conserve sea turtles was officially launched by the Minister for Agriculture, Fisheries and Forests.

Papua New Guinea: The PNG Department of Fisheries & Marine Resources (DFMR) is reported to be going through a review process. It will be setting up an

**UNIVERSITY OF THE SOUTH PACIFIC
MARINE STUDIES PROGRAMME**

Annual Report 1995

Information & Publication Division to sustain and strengthen the work done by PIMRIS in PNG. The DFMR Librarian is currently on a seconded assignment with the SPC Fisheries Information Unit in New Caledonia for 1995. The experience gained will be of great benefit to DFMR. It is hoped that the local marine information network initiated during PIMRIS outreach visits will be strengthened through setting up of the new Information Division in DFMR. Discussions have been held with the DFMR Librarian regarding plans for the production of the 'PNG Fisheries Bibliography'. Considerable amount of work has been done between PIMRIS and PNG to set up a database for this purpose. PNG fisheries will send the final set of electronic record to PIMRIS where the editorial & technical work will be performed.

Nauru: A new set of PIMRIS database structure disks with instructions were sent to Fisheries Section for installation and use. The FFA Information Officer visited Nauru to provide technical assistance in fisheries information management. The visit was planned in consultation with the PIMRIS Coordination Unit.

Western Samoa, Tuvalu, & Kiribati: The library/information staff from these countries' fisheries departments are performing their duties satisfactorily after their training attachment at PIMRIS/USP Library in December 1994/January 1995.

Palau and Federated States of Micronesia: A set of references (in electronic format) from the first edition of Palau Fisheries Bibliography has been received. The Bibliography Update project will continue in 1996 upon receipt of more updated reference list. Jean-Paul Gaudechoux, Fisheries Information Officer visited these two countries and briefed the PIMRIS Coordinator on status of marine information management. It was felt that there was a need for some in-country technical assistance during 1996 which PIMRIS could provide (as provided to some other Pacific island countries in the past). SPC will follow up with Palau and FSM re:funding such assistance.

Collection Development for National Centres

Efforts at improving the national Fisheries Divisions library collections continued. Although items were delivered during 1995, no new orders were placed and in view of the anticipated formal winding up of the Outreach project all pending long overdue orders were canceled by the middle of this year .

**UNIVERSITY OF THE SOUTH PACIFIC
MARINE STUDIES PROGRAMME**

Annual Report 1995

Future strategies and funding

1. Internal Assistance: It has been noted that the services from the PIMRIS Coordination Unit is benefitting MSP significantly. Almost 41% of the information requests are from the USP staff & students. In view of this and the benefit provided to the region, the University Library and Marine Studies Programme have jointly worked on some strategies:

a. Short Term: The PIMRIS projects' completion date was 31 August 1995. Upon receipt of confirmation from CIDA/CORA, the Marine Studies Project Coordinators proposed a re-allocation of any surplus funds from all sub-projects according to MSP's priorities. The proposal was approved during discussions between the USP and CIDA/CORA. The PIMRIS Outreach Project formally ended on 31st August 1995 with final narrative & financial reporting to be completed at the end of the 1995. The PIMRIS Coordination Unit project was extended until 31st December 1996 with additional funding allocations. It is noted that the Library is providing a half-time Coordinator (note the comments under the subheading **Staffing-Positions** above) and a half-time Clerk-Typist from its core budget leaving only the Library Assistant's position and the operational costs to be funded under the Project.

b. Long Term: The Library has incorporated one Assistant Librarian (AL) (Marine Studies), one full-time and one part-time Library Assistant (Marine Studies) positions in its 1997-1999 triennial budget for USP's core funding. It has been indicated that this proposal will receive strong support from MSP during the triennium discussions. MSP plans to provide the operational costs to facilitate the activities of marine information services. This was included in MSP's submission to the University for the same triennium core funding.

c. MSP - Marine Studies Information Centre(MSIC): Under Japanese aid a new MSP complex is planned for late 1997 in which the MSIC will be based. It has been agreed to place PIMRIS' operations at the MSIC which will be staffed by the positions mentioned in part (b) above.

2. External Assistance

In view of the strong regional support for the continuation of PIMRIS services, funding in-part for the marine information services will be incorporated as part of a USP's Marine Studies funding proposal which will be submitted to CIDA for its

UNIVERSITY OF THE SOUTH PACIFIC MARINE STUDIES PROGRAMME

Annual Report 1995

assistance under the CSPODP II funding cycle.

Conclusion

PIMRIS has identified Information Services & Products, and Database Development as its core activities. However, technical assistance and information management training will be provided based upon expressed needs. An attempt is being made to let the core activities of PIMRIS be maintained in view of the marine information needs of USP's Marine Studies Programme and the Pacific islands region. The regional mandate of PIMRIS can not be dissociated from the PIMRIS Network as that was the fundamental rationale behind the setting up of this System.

PIMRIS Coordination Unit acknowledges the funding support of Canadian International Development Agency. It also acknowledges the support of the USP Marine Studies Programme.

PUBLIC MARINE EDUCATION

The major activities carried out under the Public Marine Education Programme for 1995 were as follows:

1. Workshops

Regional Workshop (July 3-7): The second Regional Workshop for National Coordinators of Marine Education was held at the University of the South Pacific in July. Fifteen participants from the region attended the week-long workshop.

Follow Up in-service Training Workshops in the Region: As of December, 1995 all the countries in the region except for Nauru, Tuvalu, Vanuatu, Marshall Islands and Papua New Guinea have conducted their Marine Education Workshops. Contact has been made with country coordinators to keep the Public Marine Education Coordinator informed of any progress in this regard.

Marine Awareness Workshop (July 23-26): A Marine Awareness Workshop for Dive Operators and Traditional Fishing Rights Owners was conducted in Savusavu, Fiji with the help of two Marine Studies Staff Members.

**UNIVERSITY OF THE SOUTH PACIFIC
MARINE STUDIES PROGRAMME**

Annual Report 1995

2. Country visits

Cook Islands (May 15-24): The Coordinator worked with the Conservation Service Staff on a marine project funded by Canada Fund. Meetings were also held with key individuals in the Education Department, Curriculum Development Unit, the Teacher Training College and the Natural Heritage Project to discuss needs and concerns of marine education programmes relevant to the Cook Islands. Visits were also made to one primary and one secondary school for discussions with science teachers and principals.

Nauru (June 11-12): The Coordinator had discussions with the Secretary of Education, the Director of Education and Science Curriculum Officers regarding how Marine Education could be incorporated into Nauruan Science Curricula. She also visited one secondary school as well as two primary schools. The lack of marine education resource materials was a constraint that teachers faced. Copies of PME booklets were distributed.

Palau (June 14): Discussions were held with the Marine Conservation Education Officer Division of Marine Resources and the Environmental Educator Palau Environmental Quality Protection Board regarding the environment education project that the two officers were involved in and the Public Marine Education Programme at USP. A visit was also made to the Palau Community College where the Coordinator of the Belau Science Demonstration Centre gave a briefing on the Marine Biology Summer Course offered at the College.

Publications

PME Newsletter, VOICE: Two issues have been completed and distributed to Education Ministries/Departments around the region. The first issue featured Seashells while the second featured Sea Turtles. 5000 copies of each issue was produced.

Reprinting of Earlier Marine Publications: 500 copies of reprints were made of each of Coral Reefs Information Book, Pacific Ocean Alphabet Book, Marine Life Colouring Book, and Basic Questions in Oceanography.

Report of the Second Public Marine Education Regional Coordinators Workshop: This report was compiled to include country papers presented at the workshop. Copies were distributed to Workshop participants and to Marine Studies, IOE and

**UNIVERSITY OF THE SOUTH PACIFIC
MARINE STUDIES PROGRAMME**

Annual Report 1995

CORA.

Procurement of Resource materials

The following Video Tapes were procured for the PME Library: Sex on the Reef, Let Our Turtles Live, Turtle Excluder Devices, Great Barrier Reef - Ribbon of Life, Reef Report, South Pacific Coastal Environments (English and Fijian versions) and Coral Grief. A number of titles on Marine Education were also purchased from various publishers as reference material.

Regional Advisory meeting (October 16th)

This was held at the University of the South Pacific and were attended by the following persons:

Robin South	-	Professor of Marine Studies, USP
Cliff Benson	-	Director, IOE, USP
Michel Blanc	-	Fisheries Adviser, SPC, Noumea
Russell Howorth	-	Training Coordinator, SOPAC
Vina Ram	-	Lecturer, ORMP, USP
Isoa Korovulavula	-	Coordinator, SPACHEE, USP
Jayshree Mamtora	-	PIMRIS Representative, USP
Sereana Tagivakatini	-	Fellow in Science Education, IOE and Coordinator, Public Marine Education, USP.

Projections for 1996

A budget proposal and workplan for PME Activities for 1996 have been prepared and submitted to the Director of IOE and the Professor of Marine Studies. Activities identified at the Regional Advisory Committee Meeting have been given priority and work has started on various aspects.

Acknowledgements

The coordination of the Public Marine Education Programme was taken over by Ms Cherie Whippy-Morris in March, 1995 and changed hands in October when Cherie had to go on leave. I would like to thank Ms Whippy-Morris for the work she had coordinated during the better part of 1995. I would also like to thank the various persons and organisations that the Coordinators of the programme have worked

**UNIVERSITY OF THE SOUTH PACIFIC
MARINE STUDIES PROGRAMME**

Annual Report 1995

with during 1995. Their support and encouragement in establishing a network that has become an important feature of Public Marine Education is much appreciated.

ATOLL RESEARCH PROGRAMME, Tarawa, Kiribati

Projects

Ciguatera Fish Poisoning - this project is ongoing into its final year, with progress reports in print, and testing of fish samples delayed due to closure of testing facilities in Australia and USA; also fish samples collected from Tarawa, Christmas Island and Canton went rotten due to frequent power cuts and failure of the cooling facility at ARP over a weekend.

Chicken egg production at a village level - this work is ongoing and the second report in a series is underway.

Traditional Medicine - some herbal medicinal recipes have been collected and compiled in Kiribati language; the traditional practitioners association has been established; the Constitution is in place and ready for review by the Attorney General's office and endorsement by Cabinet; an application for registration and incorporation into the Health System is being processed.

Flying Fish identification and spawning run - this work is ongoing.

Shell fish (Anadara) study has been completed and the final report is being prepared.

Housing Survey funded by ODA, UK had been completed, the draft report had been compiled and awaits approval by Cabinet.

Activities

ARP staff participated in the Conservation Area consultancy for North Tarawa, Kiribati.

It is planned to visit Tuvalu and Marshall Islands to follow up on the projects initially drafted for them but the timing and other commitments on both sides would not allow anything to happen during 1995.

**UNIVERSITY OF THE SOUTH PACIFIC
MARINE STUDIES PROGRAMME**

Annual Report 1995

A visit was made to Nauru for participation in a three day workshop which focussed on the conservation and management of reef fisheries and establishment of a marine park. The Nauru Fisheries Department is likely to request more technical assistance in the design of their various marine projects, but has not come up with any concrete proposals yet.

Kirata Apisai (technician) underwent a three month attachment with SPAS and Computer Centre; his training focussed on laboratory equipment maintenance at SPAS but only partly covered detection of faults in computers and printers (the reason he was initially sent for).

Staff Changes

Two staff members resigned for personal reason towards the end of last year. Ms Temawa Taniera who had been filling up the Research Assistant's position had taken up a consultancy career with the Ministry of Environment and Social Development; Mr Iannang Teaioro who was working on Ciguatera Fish Poisoning joined the same ministry.

Conferences/Meetings attended (1995)

1. International Coral Reef Initiative, Suva, Fiji.
2. Pacific Islands and ASEAN Foods Nutrition Conference, Suva, Fiji.
3. Fisheries Resource Management and Marine Park Workshop, Nauru.
4. Kiribati Traditional Medicine, Tarawa, Kiribati.

INTERNATIONAL OCEAN INSTITUTE OPERATIONAL CENTRE

IOI-South Pacific completed a very busy final year of operations under GEF funding. The Training Programme was very active, with a total of four courses successfully run, two of which were new.

**UNIVERSITY OF THE SOUTH PACIFIC
MARINE STUDIES PROGRAMME**

Annual Report 1995

1995 Training Programme:

July 31st - September 8th

Coastal Management with Special Reference to Small Islands

New Course

[Coordinators, Joeli Veitayaki and G. Robin South]

Funded by the Commonwealth Secretariat

13 participants

October 23rd - November 24th

Management Issues in Environmental and Resource Economics

New Course

[Coordinator, Dr Roman Grynberg]

Funded by the Sasakawa (Nippon) Foundation

10 participants

Management and Development of Coastal Fisheries

Second offering

[Coordinators, G. Robin South and Joeli Veitayaki]

Funded by GEF/UNDP

12 participants

November 24th - 29th

Practical Taxonomy of Indo-Pacific Crustose Coralline Algae

Second offering

[Coordinator, Dr Derek W. Keats, University of Western Cape, South Africa]

Partially funded by the Government of France, and by the participants

12 participants

A total of 47 participants attended the training programme, and originated from a total of 21 countries. The participation of a large number of USP staff as instructors in the IOI courses has been a major asset. The running of these programmes, especially with three of them overlapping, placed a considerable strain on our staff and resources, which should be avoided in future.

In research, the Director and Joeli Veitayaki were heavily involved in the preparation of a paper on Fisheries for the Fiji Constitution Review Commission,

**UNIVERSITY OF THE SOUTH PACIFIC
MARINE STUDIES PROGRAMME**

Annual Report 1995

which was completed in November. The paper cannot be released until the Commission's report has been made public.

IOI-South Pacific was designated as the Secretariat for the South Pacific for the Independent World Commission on the Oceans. We received funding from the Sasakawa (Nippon) Foundation that enabled us to second the services of Joeli Veitayaki full time as Coordinator of the Secretariat, from July until December. This high-profile activity culminated in the holding of hearings throughout the region and also in New Zealand, and the production of a substantial report that will be ultimately incorporated in the Commission's report, to be completed in time for the Year of the Oceans, in 1998. A series of research papers and other contributions are still anticipated in completion of our work.

Only one issue of Pasifika was published in 1995, because of heavy work loads in the training programme.

The Director attended the meeting of Centre Directors in Malta in May, and in December he and the Coordinator attended the second Director's meeting, held at Puntarenas, Costa Rica, followed by Pacem in Maribus XXIII.

The Government of Fiji renewed our Memorandum of Understanding to operate as an International NGO for a further three years, until the end of 1998. Dr Danny Elder conducted an evaluation of the Centres established under the original GEF project, and gave IOI-South Pacific a very good write-up. He was particularly impressed with the course on Environmental and Resource Economics, which he stated was "world class". Congratulations to Roman Grynberg and Koenraad van Landeghem for their sterling work. We ended the year on a good note with sufficient funds to continue operations in the coming year,

**UNIVERSITY OF THE SOUTH PACIFIC
MARINE STUDIES PROGRAMME**

Annual Report 1995

APPENDIX 1

List of Publications from work done
under the auspices of MSP
(USP Staff are listed in **BOLD**)

PUBLICATIONS

Aalbersberg, W. and **Parkinson, S.** Traditional Pacific food technology. Science of Pacific Island Peoples Vol 3. Morrison J., Geraghty, P. and Crowl, L. (Eds.). USP, Suva, Fiji (1994).

Aalbersberg, W. and **Parkinson, S.** Thought for food. Technology, food and food processing. In : Tony Marjoram, Ed. Technology for Development in the South Pacific. Intermediate Technology Publications, London, pp. 165-175 (1994).

Aalbersberg, W., **Minura, N.,** **Nunn, P.D.,** **Ravuvu, A.D.** and **Yamada, K.** Assessment of Coastal Vulnerability and Resilience to Sea-Level Rise and Climate Change - Case Study : Yasawa Islands, Fiji, SPREP, APia, W. Samoa. 118pp. (1994).

Aalbersberg, W. and **Dreier, U.** Microbiology of Pacific fermentations. Proceedings of Louis Pasteur Centenary : Microbes, Environment, Biotechnology, Pasteur Institute, Paris, in press.

Bidesi, V.R. 1995. Changes to women's role in fisheries development in Fiji. In: Matthews E. (ed.) Fishing for Answers. Women and Fisheries in the South Pacific. Women and Fisheries Network Suva pp 71-90.

Bidesi, V.R. 1995. Towards self-reliance and sustainability. A study of women's fishing in the South Pacific. In: Sato Y. (ed.) Regional Development and Cultural Transformation in the South Pacific. A critical examination of the sustainable development perspective. Graduate school of International Development : University of Nagoya, Japan pp87-111.

**UNIVERSITY OF THE SOUTH PACIFIC
MARINE STUDIES PROGRAMME**

Annual Report 1995

Haynes, A. 1994. Reproductive strategies in the freshwater genus *Septaria* (Neritidae). *Malacological Review Supplement* b, 1-7.

Jennings, S. and Polunin, N.V.C. 1995. Comparative size and composition of yield from six Fijian reef fisheries. *Journal of Fish Biology* 46: 28-46.

Jennings, S. and Polunin, N.V.C. 1995. Relationships between catch and effort in multispecies Fijian reef fisheries subject to different levels of exploitation. *Fisheries Management and Ecology* 2: 89-101.

Jennings, S. and Polunin, N.V.C. (1995). Multispecies responses of Indo-Pacific reef fishes to exploitation. Final Report to the ODA Fishery Management Science Programme, 70pp.

Koshy, K. Chemistry through distance teaching - A South Pacific Experiment of Dist. Ed. Vol. 15, No. 2, 1994 291-299.

Littler, M.M. and D.S. Littler, 1994. A pathogen of reef-building coralline algae discovered in the South Pacific. *Coral Reefs* 13:202.

Littler, M.M. and D.S. Littler. 1995. Impact of CLOD pathogen on Pacific coral reefs. *Science* 267:1356-1360 + Contents Photo.

Littler, M.M. and D.S. Littler. 1995. A colonial tunicate smothers corals and coralline algae on the Great Astrolabe Reef, Fiji. *Coral Reefs* 14: (In Press).

Littler, D.S. and M.M. Littler. In Press. A new bacterial disease impacts Pacific coral reefs. *Ocean Realm*.

Littler, M.M. and D.S. Littler. In Press. A new threat to coral reefs. In G. Johnson and P. Raven, eds. *Biology, Understanding Biology, and Human Biology*. W.C. Brown Communications. Inc., Dubuque, Iowa.

Littler, M.M. and D.S. Littler. In Press. Black Band disease in the South Pacific. *Coral Reefs*.

N'Yeurt, A.D.R., D.S. Littler and M.M. Littler. Submitted. *Avrainvillea rotumensis* sp. nov. (Bryopsidales, Chlorophyta), a peltate species from the South Pacific. *Cryptogamic Botany*.

**UNIVERSITY OF THE SOUTH PACIFIC
MARINE STUDIES PROGRAMME**

Annual Report 1995

Littler, M.M., D.S. Littler, B.L. Brooks and J.F. Koven. Submitted. A mound-forming association of Fungiidae discovered on the Great Astrolabe Reef, Fiji. Science.

Littler, D.S. and M.M. Litter. In Draft. Marine algae and seagrasses of the South Pacific.

Cheetham, J.L., Bazin, M.J., Markham, P. & Lynch, J.M. (1995). A method utilizing mycelial fragments to estimate the relative biomass densities of fungal species in mixed culture.

Markham, P. Journal of Microbiological Methods 21, 113-122.

Clavier, J., Newell, P., C. Garrigue, B. Richer de Forges, & A. Di Matteo, (1995). Soft substrate macrobenthos of Fiji's Great Astrolabe Lagoon. List of taxa, densities and their biomass. Rapp. scient. tech. ORSTOM Noumea (in press).

Nahas F., Wetzel, J. Digenetic Trematodes of Marine Fishes from Suva, Fiji: The Family Gyliuchenidae Ozaki, 1933.

Newell, P., J. Clavier and J. Riley (1995) The biodiversity of the invertebrate faunas of the soft sediments from the Great Astrolabe Reef (Kadavu Group, Fiji) and Tarawa (Kiribati) lagoons in the South Pacific. Proceedings of the DIWPA International Workshop, Singapore 1-3 December 1995.

Lloyd, C.R. Newell, P., Doyle, M., Kubuabola, S., & Sinclair, Knight, Merz & Co. (1995) Wairabetia EIA. IAS Environmental Report No. 75.

Nunn, P.D. 1995. Holocene tectonic histories for five islands in the south-central Lau group, South Pacific. The Holocene, 5, 160-171. [7 figures, 5 tables].

Nunn, P.D. 1995. Lithospheric flexure in southeast Fiji consistent with the tectonic history of islands in the Yasayasa Moala. Australian Journal of Earth Sciences, 42, 377-389. [11 figures, 4 plates, 3 tables].

Nunn, P.D. and Finau, F.T. 1995. Late Holocene emergence history of Tongatapu island, South Pacific. Zeitschrift fur Geomorphologie, 39, 69-95. [6 figures, 8 tables].

**UNIVERSITY OF THE SOUTH PACIFIC
MARINE STUDIES PROGRAMME**

Annual Report 1995

Yamada, K., Nunn, P.D., Mimura, N., Machida, S. and Yamamoto, M. 1995. Methodology for the assessment of vulnerability to sea level rise and climate change for South Pacific countries. *Journal of Global Environmental Engineering* 1, 101-125. [6 figures, 1 table].

Pickering, T.D. M.E. Gordon & L J Tong (1995) A preliminary trial of a sprang culture technique for growing the agarophyte *Gracilaria chiteneis* (Gracilariales, Rhodophyta). *Aquaculture* 130 : 43-49.

Sotheeswaran, S. Traditional Medicine in the Pacific islands : The Scientific Evidence in Science of Pacific Island Peoples (Fauna, Flora, Food and Medicine) Vol. 3, p. 143-146, (July 1994); published by the Institute of Pacific Studies (1994).

Teaioro, I and Tebano, T., 1995. A Progress Report on Ciguatera Fish Poisoning in Kiribati.

Taniera, T., Tabe, T. and Tebano, T., 1994. Socio-Economic of Seaweed Farming in Kiribati.

Karaiti, B., Cati, A., Taurii, A., Kamarie, A. and Tebano, T. (edit), 1996. Akawa-ni-Kiribati (Makoro and Tebano, T. (edit), 1996. Akawa-ni-Kiribati (Makoro 2): Te Kibee ao Te Uu (Traditional Fishing Methods of Kiribati, Part 2). Reef Torch Fishing and Eel Trapping: Atoll Research Programme, USP. (In I-Kiribati language).

Cati, A., Taniera, T. and Tebano T. (edit) 1995. Bai-n-aoraki ni Kiribati (Traditional medicines of Kiribati) Atoll Research Programme, USP, Kiribati. (In I-Kiribati language).

South, G.R. 1995. Mechanisms for interregional cooperation in fisheries education and training - the Pacific Islands perspective. In : Western Fisheries Consultative Committee: Workshop on Human Resource Development Planning and Information Networking: Cooperation and Coordination in Fisheries Education and Training. EDSA Plaza Hotel, Mandaluhong City, PHILIPPINES. 11-12 May, 1995. 18pp + Figures and Appendices.

South, G.R. and J. Veitayaki, 1995. Meeting the challenge: the Marine Studies Programme at the University of the South Pacific. pp. 73-78 In: CRAWFORD, B.R., COBB, J.S. and C.L. MING (eds). Educating Coastal Managers. Proceedings of the

**UNIVERSITY OF THE SOUTH PACIFIC
MARINE STUDIES PROGRAMME**

Annual Report 1995

Rhode Island Workshop. Coastal Resources Management Project, Coastal Resources Center, The University of Rhode Island, and Center for the Environment, U.S. Agency for International Development. Narragansett, RI, USA. 184 pp.

South, G.R. 1995. Edible Seaweeds: An important source of food and income to indigenous Fijians. pp. 43-37 In: Elizabeth Matthews (ed) Fishing for Answers. Women and Fisheries in the Pacific Islands. Women & Fisheries Network, Suva. 177pp. [reprinted without illustrations from ICLARM Quarterly].

South, G.R. Ocean Management in the South Pacific: the Role of the University of the South Pacific. In: Foundation for International Studies, University of Malta, Valletta. 29 - 31 May 1995. 11pp + 3 figs.

South, G.R. and J. Veitayaki, 1995. Fisheries. Report to the Fiji Constitution Review Commission [restricted distribution].

South, G.R. 1995. Gracilaria maramae sp. nov. (Gracilariaceae, Gracilariales, Rhodophyta), an economically important species from the Fiji Islands, South Pacific. pp. 177-184 In: Abbott, I.A. (ed.) Taxonomy of Economic Seaweeds. With Special Reference to some Pacific Species. Volume V. California Sea Grant. xx + 254 pp.

Thaman, R.R. 1995. Urban food gardening in the Pacific Islands: A basis for food security in rapidly urbanising small-island states. Habitat International 19 (2) : 209-224 (Special issue: Urban agriculture and cities in the developing world, Guest editor, D. Drakakis-Smith).

Thaman, R.R., Clarke, W.C., Tebano, T., Taniera, T. and Eritaia, B. 1995. North Tarawa Conservation Area: South Pacific Biodiversity Programme Project Preparation Document. Environment Unit, Ministry of Environment and Social Development, Bikenibeu, Tarawa, Kiribati.

Thaman, R.R. and Devoe, N.N. 1995. Ethnobotany and changing land use in North Ambrym, Vanuatu. In Tang, H.T., Finiasi, L.S. and Enevoldsen, K. (eds.), What value forests and trees: Proceedings of Heads of Forestry Meeting 1993, 20-24 September, Nadi, Fiji. Field Document No. 6 (RAS/92/361). South Pacific Forestry Development Programme, Suva. pp. 179-189.

**UNIVERSITY OF THE SOUTH PACIFIC
MARINE STUDIES PROGRAMME**

Annual Report 1995

Thaman, R.R., Gillett, R. and Prescott, N. 1995. Ha'apai Conservation Area: South Pacific Biodiversity Programme Project Preparation Document. Land and Environmental Planning Unit, Ministry of Lands, Survey and Natural Resources, Nuku'alofa, Tonga.

Thaman, R.R. and Whistler, W.A. 1995. Strategies for the protection and planting of trees: A preliminary report of a study of uses, husbandry and performance of trees in forestry and agroforestry systems in Samoa, Tonga, Kiribati and Tuvalu. In Tang, H.T., Finiasi, L.S. and Enevoldsen, K. (eds.), What value forests and trees: Proceedings of Heads of Forestry Meeting 1993, 20-24 September, Nadi, Fiji. Field Document No. 6 (RAS/92/361). South Pacific Forestry Development Programme Suva. pp. 170-178.

Thaman, R.R. and Whistler, W.A. 1995. Samoa, Tonga, Kiribati and Tuvalu: A review of uses and status of trees and forests in land use systems with recommendations for future actions. Part I. TSS - 1 Technical Support Services at Programme Level, UNDP/FAO Work Programme 1992-1993 (Project RAS/92/TD4). South Pacific Forestry Development Programme, Suva and Food and Agricultural Organization of the United Nations, Rome. 83pp.

Thaman, R.R. and Whistler, W.A. 1995. Samoa, Tonga, Kiribati and Tuvalu: A review of uses and status of trees and forests in land use systems with recommendations for future actions. Part II. Annotated checklist of important agroforestry species of Samoa, Tonga, Kiribati and Tuvalu. TSS - 1 Technical Support Services at Programme Level, UNDP/FAO Work Programme 1992-1993 (Project RAS/92/TD4). South Pacific Forestry Development Programme, Suva and Food and Agricultural Organization of the United Nations, Rome. 76pp.

Faka'osi, T., Filiasi, L., Thaman, R.R. and Smith, A.J. 1995. SPREP/USAID Tonga Coastal Reforestation and Protection Project: Final Project Report. Forestry Division, Ministry of Agriculture and Forestry, Nuku'alofa, Tonga. 30pp.

Thaman, R.R. 1994. Marine ethnobiology. A foundation for marine science education in the Pacific Islands. Pacific Curriculum Network 3(2): 8-11. (Actually published in 1995).

Veitayaki, J. 1995. Towards self-reliance and sustainability. Institute of Pacific Studies. Suva. pp. 233.

**UNIVERSITY OF THE SOUTH PACIFIC
MARINE STUDIES PROGRAMME**

Annual Report 1995

Veitayaki, J. 1995. The Peaceful Management of Transboundary Resources in the South Pacific. pp4119-506 in Blake, G.H., J. Hildesley, M. A. Pratt, R.J. Ridley, C.H. Schofield (eds.). The Peaceful Management of Transboundary Resources. London: Graham F. Trotman/Martinus Nijhoff.

Veitayaki, J. 1995. With G.R. South. Meeting the Challenge: The Marine Studies Programme at the University of the South Pacific. pp 73 - 78 in Crawford, B.R., J.S. Cobbs, L.M. Chon (eds.). Educating Coastal Managers: Proceedings from the Rhode Island Workshop. Narragansett, Rhode Island: Coastal Resources Management Project, Coastal Resource Center, The University of Rhode Island, and Center for the Environment, US Agency for International Development.

Veitayaki, J. 1995. With G.R. South, Fisheries. A research paper submitted to the Fiji Constitution Review Commission (Limited circulation).

Veitayaki J, Bidesi, V.R., Mathews E, Gibson L, & Vuki V. 1995. Destructive Fishing Practises in the Pacific Island Region with a case study of Dynamite Fishing. SPREP Technical Report.

Vuki, V.C. 1995. Long term changes of Suva Reef flat communities from conventional in site survey and remote sensing methods. GIS & Remote Sensing News, no. 10 p5.

Newsletter

Atoll Quarterly: Published by the Atoll Research Programme, Kiribati.

Pasifika: Published by the International Ocean Institute Operational Centre at USP.

PIMRIS Newsletter: Published by the PIMRIS Coordination Unit, USP Library.

Pacific Ocean Voice: Published by the Marine Public Education Programme.

**UNIVERSITY OF THE SOUTH PACIFIC
MARINE STUDIES PROGRAMME**

Annual Report 1995

<p>APPENDIX II Visitors to Marine Studies 1995</p>

January:

David Nedwell	University of Essex, UK
Henry Blackburn	University of Darbus, Denmark
Mustafa Varoglu	University of California, USA
Alastair Lyon	St. Leonard's College, Australia

February:

Bernard Huon-Dumentat	Action Humanitaire International
H. Watanabe	JICA
R. Arthur	VSO
Curly Carswell	FDOA

March:

Lai Tuifagalele	MAI WAI SEAFOOD
Federico Busonero	MAI WAI SEAFOOD
Peter Trudgill	University of Lausanne, Switzerland
Jean Hannah	University of Lausanne, Switzerland

April:

Patricia Tuara	SPC Women's Fisheries Officer
----------------	-------------------------------

**UNIVERSITY OF THE SOUTH PACIFIC
MARINE STUDIES PROGRAMME**

Annual Report 1995

May:

Semisi T. Fakahau	Commonwealth Secretariat
Abe Ross	Memorial University of Newfoundland
Mike Gawel	Guam Planning Council

June:

Sinji Furumaya	Kitano Construction Corp.
Danny Elder	UNDP, New York
Leon Zann	Southern Cross Uni, Australia
Yasahiro Tojo	Embassy of Japan
Vinay Chand	Price Waterhouse
John Collen	Victoria University of Wellington
Richard Bayer	Otago University, NZ
Anthony Mazeroll	West Texas, A & M Unco., USA
H. Ogawa	Azuga Sekicej Co., Ltd.

July:

T. Inoue	Japan Trade & Travel Ltd.
Sally Carson	Otago University
Bernard Huon-Dumentat	World Life Fund for Nature
Rick Thorpe	WWF
Peter Hunnam	WWF
Robert Piper	UNDP
Sylvie Schosseler	UNDP
Biliana Cicin-Sain	University of Delaware, USA
Robert Krecht	University of Delaware, USA
T.Ogasawara	Fisheries Engineering Co. Ltd.
J.Illingworth	NIWAR, New Zealand

August:

R. Hull	Univ. of Waterloo, Canada
W.W. Charters	University of Melbourne, Australia

**UNIVERSITY OF THE SOUTH PACIFIC
MARINE STUDIES PROGRAMME**

Annual Report 1995

Sue Miller	SPREP
Carl Gibson	Scripps Ins. of Oceanography
Shigeru OHDE	Univ. of Ryukyus, Mar. Science
Genta Yasunaga	Univ. of Ryukyus
Steve Thorpe	Southampton Oceanography Centre, UK
Chris Johnston	Campus Review Newspaper, Australia
E. Ishihara	Fisheries Agency, Japan
Toshiho Ryo	JICA, Japan
Yusuke Suda	National Fisheries University, Japan
Toyomitsu Terao	Fisheries Engineering Co. Ltd.
Taizo Kaneko	Fisheries Engineering Co. Ltd.
Takayuki Jimbo	JICA, Fiji Office
Toshiya Ogasawara	Fisheries Engineering Co. Ltd.
Michio Torii	Fisheries Engineering Co. Ltd.
Shimura Shigeru	JICA, Inst. Int's Coop.
Michael Moore	Scripps Inst. Oceanography
Kim Brown	Scripps Inst. Oceanography
Sebastian Troeng	Univ. of Lund, Sweden

September:

John Moffett	W.W. Norton & Co.
Andy Marcinkus	SHIMNOZU, Australia
Shigenori Nada	SHIMNOZU, Australia
Simon Jennings	University of Newcastle, UK
Marie Ferland	Univ. of Wollongong

October:

Brad Carte'	Smithline
Michel Blanc	South Pacific Commission
Hanns Buchholz	Geography, Hannover University
David Smith	Univ. of Hawaii
Gabriel Talokwai	SICHE, Honiara, Solomon Island
Derek Sikua	Ministry of Education, Honiara, Sol. Is.

**UNIVERSITY OF THE SOUTH PACIFIC
MARINE STUDIES PROGRAMME**

Annual Report 1995

November:

Robert Abbott	EA Global
Jack Colwell	Acadia University, Nova Scotia, Canada
Yasuyuki Kawasaki	YANMAR DIESEL ENGINE CO.
Daryl Warbrooke	Carpenters Motors
Denise Paterson	Queensland, Australia

December

G. Cameron	Saint Mary's Univ.
Kelvin Passfield	Cook Islands
Fichez Renand	ORSTOM, Noumea
Jacquis Clavier	ORSTOM
Kristi Hanson	Univ. of Hawaii
Larry Liddle	Long Island University
Ronald P. Pfisher	Long Island University