

ANNUAL REPORT TO COUNCIL
1984

U Raj
Director
December, 1984

1. AIMS AND OBJECTIVES

The Institute of Marine Resources was established in January 1978, with the following broad objectives:

- (a) *research into regional marine resources, including fish stocks and stocks of other kinds of marine life, undersea minerals and exploration of the seabed.*
- (b) *the development of consultancy services for regional governments.*
- (c) *development of educational programmes in marine sciences.*
- (d) *the dissemination generally of information on tropical marine environment.*

In order to fulfil these objectives IMR has been projected as:

- (a) *an advisory body for Governments in all questions of the exploration of Marine Resources inside and outside of 200 nautical mile economic zone, and in problems of the protection of the environment.*
- (b) *a scientific Institute carrying out applied scientific study in living and non-living resources of the sea for the island countries of the U.S.P.*
- (c) *an educational Institute, through direct research and indirect means.*

The Institute has been set the task to develop expertise and resources in the following areas:

- *marine biology*
- *fisheries biology*
- *aquaculture*
food technology as applied to marine products
- *marine geology and marine geophysics*
- *physical, chemical and biological oceanography and related marine meteorology*
- *marine pharmacology*
- *coastal marine engineering*

When fully established the Institute has been envisaged to have a broad capability in all spheres of marine sciences relating to the exploitation and management of the resources of the 200 mile economic zone of the member countries of USP. However, mindful of the activities of other organizations, such as the South Pacific Commission (SPC), Forum Fisheries Agency (FFA), Committee for the Co-ordination of Joint Prospecting for Mineral Resources in South Pacific Offshore Areas (CCOP/SOPAC) and National Fisheries and other Marine Programmes of the member countries, the Institute has tended to avoid duplication of effort. Its programmes have been governed by requests from member governments. Activities for 1984 have been further constrained by uncertainty of funding which is largely derived from EEC aid.

2. FACILITIES

2.1 BUILDINGS

The main location of the Institute is on the valuable prime land at Laucala Bay foreshore, leased to U.S.P. by the Government of Fiji for this specific purpose. The Institute is accommodated in temporary, white-ant infested wooden buildings and a laboratory and lecture hall formerly occupied by the School of Natural Resources (floor area comprises 1700m²; offices 736m²; teaching laboratories 20m²; research laboratories (3) 150m²; workshop 100m²; stores 480m². No action has been taken on the detailed plans for permanent buildings, laboratories, aquarium, workshops etc., completed in 1980 by the Architect firm of John Rounds, Lee and Partners.

The Institute has a field station at Dravuni Island, Kadavu, with a small laboratory and 14 bed dormitory (floor area: 103m²). The Dravuni station, funded by E.E.C., was completed in December 1981 and it was opened by Fiji's Prime Minister, Ratu Sir Kamisese Mara.

A second, smaller station has been constructed in Tonga, in 1982, at the Fisheries Division Headquarters in Nuku'alofa. The Institute, by arrangement, shares this facility with Fisheries Division, Tonga, which gives access to all its facilities to IMR in return.

The Institute developed an Atoll Research Unit (ARU) in Tarawa, Kiribati. This Unit comprises a laboratory, offices and storage area (floor area 182m²) and a three-bedroom cottage nearby. Since June, 1983, the management of this Unit and its assets have been transferred to the Kiribati Centre Director, Mr Roniti Teiwake, who has also been appointed ARU Director. IMR is now responsible for only specific research projects.

2.2 EQUIPMENT

The Institute is well-equipped to undertake basic research in oceanography, marine and fisheries biology.

Miscellaneous laboratory glassware, ovens, precision balances, chemicals, photographic and darkroom equipment, fishing gear, nets, oceanographic instruments (salinity, temperature, pH etc., current metres, dredges, grabs, plankton nets etc.) and diving equipment (two high pressure compressors, 14 complete sets of SCUBA tanks and all gear) have been provided by EEC, French and other aid.

The Institute has two motor vehicles: one 4-wheel drive, short wheel base Landrover (30 months old) and a Datsun pickup utility (2 years old). Both are in excellent condition.

2.3 BOATS

Nautilus: 13m G.R.P. (fibreglass) launch powered by a V8 Caterpillar diesel. Hydraulic winch, pot haulers and fishing reels; radar, echosounders and radio. (Construction cost \$60,000, built in Canada, launched in 1976). It has berth for four persons.

Aphareus: 13.7m steel fisheries training and research vessel powered by a GM 471 diesel. Hydraulic capstan, hauler, and reels; radar; echosounder, recirculating aquarium for livebait well and storage hold. (Cost \$120,000, built in Suva). The *Aphareus* was launched by Adi Lala Mara, the wife of Fiji's Prime Minister, in June, 1982.

Outboard craft: Three 4m rubber inflatable dive dinghies, three 4m alloy dinghies, three wooden punts of 5 to 8m.

3. STAFF

A summary of staff and their categories is given in Table 1.

3.1 ESTABLISHED STAFF

The Institute operates with a very small core staff but draws upon specialized staff from project funding and affiliated overseas universities and institutes. Thus, in 1984, core staff consisted of 2 senior academic (one being the Director, fully funded by EEC) and one comparable administrative positions, 6 junior intermediate staff and 3 hourly paid staff.

3.2 AID-FUNDED POSTS

Two graduate positions, 3 junior intermediate posts and 5 hourly paid staff were funded by EEC.

3.3 SHORT-TERM APPOINTMENTS AND GUEST LECTURERS

Victoria University of Wellington provided 1 marine geologist for 10 weeks and ORSTOM provided 1 fisheries biologist for two weeks to assist in running specialist courses.

3.4 LEAVE AND RESIGNATIONS

The only senior academic staff (other than the Director), Dr Zann, completed his 6 years of service at the end of November and proceeded on his contract termination leave. This position is now vacant.

TABLE 1: STAFFING1. SENIOR ACADEMIC & COMPARABLE:

*U. Raj, B.Sc. Hons. PhD. (Otago)	Director and Marine and Fisheries Biologist
**L.P. Zann, B.Sc. PhD. (UNE)	Fellow (Senior Lecturer)
S. Singh, FTC (C&G) MIST	Laboratory Manager

2. GRADUATES

*J. Seeto, B.Sc. (USP)	Graduate Research Assistant
*S. Chandra, B.Sc. (USP)	Information Officer

3. JUNIOR INTERMEDIATE STAFF

Mrs S.L. Nath	Secretary
Mrs S. Sharan	Clerk Typist
E. Ninokibau	Fisheries Assistant
*J. Maiwelagi	Skipper, "Aphareus"
*I. Burua	Engineer, "Aphareus"
A. Prasad	Maintenance Serviceman
I. Tuwai	Executive Officer (in charge of records & Purchasing)
H. Haq	Technician

4. HOURLY PAID, UNESTABLISHED

S. Chand	Labourer
A. Tumucacala	Cleaner/handyman
M. Prasad	Cleaner/handyman
*F. Manuelli	Technical Assistant
*M. Nautu	Deckhand
*S. Newton	Deckhand
*W. Rokosawa	Deckhand/boatman
*F. Lavelawa	Caretaker, Field Station

* EEC-funded or aided posts

** Left U.S.P. service on 23 November

4. TEACHING AND TRAINING PROGRAMMES

The Institute continues to teach credit courses at all levels of the regular University programmes (i.e. postgraduate, undergraduate degree and certificate).

4.1 POSTGRADUATE

(a) Ph.D:

M.G. King - "The ecology of deepwater caridean shrimps (Crustacea: Decapoda: Caridea) near tropical Pacific Islands with particular emphasis on the life history patterns to depth".

The degree was awarded in September. It represents the first doctorate in science awarded by U.S.P.

(b) M.Sc:

(i) M. Guinea - "The Biology of sea snakes of Fiji".

This thesis is now in a final draft form. M. Guinea is now resident in Australia.

(ii) L.K. Bolton - "Biology of the marine clam, *Anadara maculosa*, in Kiribati".

This thesis is in the process of being written up. Miss Bolton is now resident in New Zealand.

(c) M. Phil:

R. Teiwaki - "The policies and administration of marine resources in Kiribati: (Study being co-supervised by IMR and Professor R. Crocombe)..

This study is in progress.

(d) Postgraduate Certificate in Applied Science:

Lui Bell - W. Samoa.

4.2 B.Sc. COURSES

The Institute provides 2 out of 4 (50%) 300-level Biology courses for the School of Natural Resources.

(a) Marine Biology:

This course emphasizes tropical marine biology. An introduction to the physical, chemical and biological factors in tropical marine environment is given as a basis for discussion of marine organisms. The organisms studied include the plankton, nekton and benthos of lagoons and offshore waters. Coral reefs, mangroves, lagoons and tropical shores are studied in detail.

The course consists of three hours of lectures, five hours of laboratory work or work on individual projects, each week. Additionally, an 8-day intensive field course (usually during the mid-semester break) on coral reefs, mangroves, lagoons and tropical shores forms an integral part of the programme.

(b) Fish and Fisheries Biology:

This course provides an introduction to fish as aquatic vertebrates, a background of fisheries science and a treatment of population dynamics from the biological and management viewpoints. While few students may ultimately enter the field of fishery research, the course provides, both, for these and others, an understanding of the need for and the problems of fisheries management.

Practical work includes the study of fish by dissection and appropriate preparative methods, use of all forms of fishing gear, species identification, routine fisheries procedures, problem exercises and simulation-type population experiments.

In table 2, the numbers of students who have taken these only two credit courses in marine science available at USB, from 1979-1984, are given by their nationalities

TABLE 2: STUDENTS WHO HAVE TAKEN NR335 AND NR337 OFFERED THROUGH IMR, FROM 1978-1984, BY THEIR NATIONALITIES

COUNTRY	Marine Biology (NR335)								TOTAL	Fish & Fisheries Biology (NR337)							
	1978	1979	1980	1981	1982	1983	1984	1978		1979	1980	1981	1982	1983	1984	TOTAL	
Fiji	10	5	9	5	3	4	7	43	7	5	5	5	6	8	5	41	
Tonga			1				1	2		1		1			2	4	
W. Samoa			1		2		2	5			1		1		1	3	
Solomon Is.					1		1	2				1	1			2	
Kiribati					1	1		2					2		1	3	
Tuvalu							2	2							1	1	
Cook Is.								0								0	
Vanuatu				1			2	3				1				1	
Niue		1						1			1					1	
Tokelau								0								0	
Nauru								0								0	
TOTAL	10	6	11	6	7	5	15	60	7	6	7	8	10	8	10	56	

4.3 CERTIFICATE OF EARTH SCIENCE AND MARINE GEOLOGY:

The programme is one sponsored by CCOP/SOPAC, at the request of Regional Governments, for inservice training. It is the only non-living resources training programme offered through the Institute, in close co-operation with Victoria University, Wellington. It comprises of a 3-months basic course and four 6-weeks long second courses. The courses are mounted in summer vacation to enable inservice staff to attend. The courses are:

(a) Basic Earth Science and Marine Geology (Level 1):

An introduction to the geological time scale, geometry, plate tectonics and oceanography with discussions on mineral resources and exploration, energy resources in the south-west Pacific, the rock and mineral groups, their classification and recognition. Laboratory practicals include thin section cutting, use of the petrological microscope, sieving sediments, simple statistics, and topographic, bathymetric, and geological map interpretation. Geophysical surveying, marine surveying and navigation and geological mapping are introduced in field studies.

(b) Earth Material (Level 2): (Course 1)

This course includes mineralogy, hand specimen recognition, minerals and economics, optical mineralogy, thin sections and petrographic description. The petrography of igneous rocks (classification, chemical and mineralogical composition, grain size, texture and crystallization), sedimentary rocks (classification, mineralogy and description of terrigenous sediments, limestones and grain size, composition and sorting) and metamorphic rocks) roles of agents of metamorphism, textures, structures and mineral assemblages from contact and regional metamorphism) are examined. It reviews concepts of plate tectonics, island arc environments, Pacific Ocean evolution and the south-west Pacific arc plate boundary. Mapping of stock intruded into low-grade regional metamorphic rocks, volcanoclastic and sedimentary sequences is conducted and report writing outlined.

(c) Marine Geology and Earth History - (Course 2)

This course commences with principles of marine stratigraphy, correlation using fossils, paleomagnetism, rocks and radiometric dating. Sedimentary structure, facies concept, seafloor geology and deepsea environments, ocean circulation patterns, sea level and climatic history, coral reef environments, and fluvial, deltaic and inshore/beach environments are examined. The identification and morphology of major fossil groups and evolution, and paleoecology are outlined. Inshore marine surveys are conducted. Investigation of coastal erosion, delta formation, inshore sedimentation, reclamation and dune formation. Fieldwork includes mapping, project work and report writing.

(d) Resource Assessment/Mapping: (Course 3)

Construction materials including those for concrete road aggregate, cement making, dams and other free standing structures and building stones are discussed. Other topics include: a basic description of soils and determination of soil properties, weathering processes and rates, causes, prevention and control of soil erosion, ore genesis, off-shore mineral resources, structural geology and advanced geological map interpretation, and mining geology. Fossil fuels as a non-renewable energy (origins of coal, natural gas and petroleum, deposits and traps, exploration and exploitation), water (surface and ground water, artesian water) and hydro-electricity are discussed.

(e) Earth Science in Development Projects; Hazards: (Course 4)

This course outlines the elements of planning including the role and neglect of earth sciences in planning, air photograph interpretation, the use of geophysical surveys (particularly seismic refraction, magnetic and resistivity) and seismic hazards (faulting recognition and mapping active faults, earthquake magnitude scales, effects of earthquakes on rocks and soils, and quake zoning).

The numbers of students who attended the 1984 summer course are given in Table 3, by their country of citizenship:

TABLE 3: STUDENTS IN 1984 SUMMER COURSE ON MARINE GEOLOGY AND EARTH HISTORY, BY COUNTRY OF ORIGIN:

COUNTRY	NO. OF STUDENTS
Solomon Islands	1
Vanuatu	2
W. Samoa	2
Tonga	1
Fiji	6
Papua New Guinea	1
TOTAL	13

The first batch of students will qualify for the award of the Certificate in February, 1985, after this summer's course. At present USP is holding discussions with Victoria University to award the Certificate jointly, bearing the seal of both the Universities.

4.4 SHORT SPECIALIST COURSES:

- (a) A short course, illustrated with practicals, on Poisonous and Venomous Marine Animals of the South Pacific was given to 53 graduating and senior students of the Fiji School of Medicine.
- (b) The CIDA-sponsored refresher course on the Management of the 200 mile EEZ, jointly to be mounted with FFA this year, was postponed to February, 1985, for logistic reasons.

5. RESEARCH, CONSULTANCY AND ADVISORY SERVICE

The major research commitments were in EEC-funded project:

- (a) Outer reef resources survey - a continuing study on deepsea fish, shrimps and Nautilus, and related fauna.
- (b) Tuna baitfish study in Kiribati - under ARDU Director's supervision.
- (c) Biology of Rastrelliger spp. - a continuing study.
- (d) Fish consumption and fisheries yields from coral reefs of Pacific Islands.
- (e) Seafood toxins.
- (f) Mangrove communities and impacts of foreshore development.

Consultancies and other research undertaken on behalf of regional governments, of major significance were:

- (i) Lobster resource survey of the Kingdom of Tonga.
- (ii) Investigation of fish and marine life mass mortality in the Kingdom of Tonga.
- (iii) Outbreak of fish poisoning in the Federated States of Micronesia.
- (iv) Fish poisoning in Fiji caused by imported canned fish from Japan.
- (v) Environmental Impact of several tourist resort development on foreshore land, in Fiji.

A list of research, consultancy and advisory reports of IMR, in recent years, is given in Table 4 to illustrate the fact that IMR works throughout the USP Region and that on most occasions work done in one country is equally applicable in all member countries. To date, the Institute has accommodated all requests for services from member governments. Details of published material by IMR are given in the appended publications list.

TABLE 4: RESEARCH, CONSULTANCY AND ADVISORY SERVICES UNDERTAKEN BY IMR, IN RECENT YEARS TO USP MEMBER GOVERNMENTS

RESEARCH/CONSULTANCY/ADVISORY SERVICES	COUNTRY												
	FIJI	TONGA	WESTERN SAMOA	SOLOMON ISLANDS	KIRIBATI	TUVALU	COOK ISLANDS	VANUATU	NIUE	TOKELAU	NAURU	PAPUA NEW GUINEA	MICRONESIA
1) Fishermen of Tonga	✓												
2) Ascidians of Reef Flats of Fiji	✓												
3) Commercial Fisheries in Western Pacific Islands	✓	*	*	*	*	*	*	*	*	*	*	*	*
4) *Distribution & Morphometric Variation in Freshwater clam	✓	*	*	*	*	*	*	*	*	*	*	*	*
5) Osmotic & Ionic Composition of tropical freshwater clam	✓	*	*	*	*	*	*	*	*	*	*	*	*
6) Visual System of <i>Mautilus pompilius</i>	✓	*	*	*	*	*	*	*	*	*	*	*	*
7) Ecology & Fisheries of Fanga'uta Lagoon		*	*	*	*	*	*	*	*	*	*	*	*
8) *Traditional and Introduced Fishing craft in the South Pacific	*	*	*	*	✓	*	*	*	*	*	*	*	*
9) Subsistence Fisheries in Pacific Islands	*	*	*	*	*	*	*	*	*	*	*	*	*
10) Traditional Patterns of Marine Resource Utilization	✓	*	*	*	*	*	*	*	*	*	*	*	*
11) Energy Crisis and Pacific Islands Fisheries	✓	*	*	*	*	*	*	*	*	*	*	*	*
12) Intertidal fauna of Southern Tarawa Lagoon					✓								
13) *Introduction of <i>Aradara maculosa</i> to North Lagoon in Kiribati					✓								
14) Corals of Tarawa Atoll					✓								
15) Survey of Seawave Energy along coral coast of Viti Levu	✓												
16) Environmental Chemistry of Christmas Island lagoons					✓								
17) Coral Sand Investigations		✓											
18) Islands of Ha'apai: Utilization of Land and Sea Resources		✓											
19) Artisanal Fishery and Fishing Vessels of Fiji	✓												
20) Artisanal Fishing Fleet of Funafuti						✓							
21) Canoes of Tuvalu						✓							
22) Marine Ecology of Betio Island													
23) *Biology & Fisheries of Spiny Lobsters in the Kingdom of Tonga	✓												
24) Pacific Island Marine Education	✓	*	*	*	*	*	*	*	*	*	*	*	*
25) Incidence of ciguatera poisoning in the Region - WHO Final Report	*	*	*	*	*	*	*	*	*	*	*	*	*
26) Conservation Strategy for Fiji - A Country Profile	✓												
27) * Inshore/Nearshore Ecosystems of South Pacific Islands	*	*	*	✓	*	*	*	*	*	*	*	*	*
28) Outer Reef Slopes of Fiji - Inshore/Nearshore International Workshop	✓												

Table 4 cont.....

C O U N T R Y

REPORT/CONSULTANCY/ADVISORY SERVICES	FIJI	TONGA	WESTERN SAMOA	SOLOMON ISLANDS	KIRIBATI	TUVALU	COOK ISLANDS	VANUATU	NIUE	TOKELAU	NAURU	PAPUA NEW GUINEA	MICRONESIA
29) New Species of <i>Paracaesio</i> from Fiji Islands	✓												
30) New Species of Anthiine fish Genus from Fiji Islands	✓												
31) Occurrence of Paralytic Shellfish Toxins in xanthid crab from Suva Barrier Reef, Fiji Islands	✓												
32) Ciguatera, Clueteoroxism & Other Seafood poisoning in Fijian Waters	✓												
33) Seafood Poisoning in Tropical Regions	✓												
34) High Waves at Makin in December - 1979													
35) Flow through Tarawa Channels													
36) Earthquakes at Arorae													
37) Lagoonal Fish & Fisheries of Dravuni, Fiji	✓												
38) Fish, Shellfish & Crab Poisoning in Fiji	✓												
39) * Botanical Survey of Tidal Forest (Mangal of Fiji, Tonga & Western Samoa)	✓	✓	✓										
40) Marine Food Processing - Simple Techniques for Island Needs	*	*	*	*	*	*	*	*	*	*	*	*	*
41) Social Factors of Shore Colonization & Lagoon Usage	✓												
42) Beche-de-mer in waters of Tarawa Atoll	✓												
43) Examination of algal & fish samples from Kiribati	✓												
44-47) Analyses of canned fish (4 reports)	*	*	*	*	*	*	*	*	*	*	*	*	*
48) Ecology of Causative agents in Marine Food poisoning in Fiji	*	*	*	*	*	*	*	*	*	*	*	*	*
49) Mass Mortality of Marine Life in the Kingdom of Tonga	✓												
50-51) Toxicity tests for ciguateric fish - from Pingelap, The Federated States of Micronesia (2 reports)													✓
52) Ciguatera incidence for Tokelau													✓
53) Scombrotoxicom investigation - Solomon Is.				✓									
54) Turtle farming for South Pacific	*	*	*	*	*	*	*	*	*	*	*	*	*
55) Fish Taxonomy - Niue													
56) Environmental Consequences and Management of Coral Sand Dredging in Suva Region	✓												
57) * Traditional knowledge of Marine Environment	✓												
Shore Ecology of Suva & South Viti Levu	✓												
The Study of oil drilling in Bligh Waters (Vols. No. 1 & 2)	✓												
Investigation of Komave Reef Platform	✓												

C O U N T R Y

REPORT/CONSULTANCY/ADVISORY SERVICES	FIJI	TONGA	WESTERN SAMOA	SOLOMON ISLANDS	KIRIBATI	TUVALU	COOK ISLANDS	VANUATU	NIUE	TOKELAU	NAURU	PAPUA NEW GUINEA	MICRONESIA
62) Investigation of Saveni Bay and Coastal Environment	✓												
63) Biological study of Naselai back-reef area	✓												
64) Design & Construction of fishing gear for tropics	✓	*	*	*	*	*	*	*	*	*	*	*	*
65) ⁺ Tech. Report on deepsea bottom fishes of Fiji	✓												
66) ⁺ A manual of Deepwater fisheries of the Tropical Pacific	✓	*	*	*	*	*	*	*	*	*	*	*	*
67) Water hyacinth, in Ba River, Western Viti Levu, Fiji	✓												
68) Abundance, distribution & biology of Tuna in Fijian Waters	✓	*	*	*	*	*	*	*	*	*	*	*	*
69) Growth & Mortality of blue sprat, in Fijian waters	✓												
70) Biological impact of oil drilling in Bau & Nadi waters	✓												
71) Limited Marine Investigation at the Fijian Hotel, Yanuca Island.	✓												
72) Basic first aid handbook: venomous marine animals	✓	*	*	*	*	*	*	*	*	*	*	*	*
73) ⁺ A checklist of the marine, brackish & freshwater fishes of Fiji	✓												
74) Tropical Pacific's deepwater shrimps	✓	*	*	*	*	*	*	*	*	*	*	*	*
75) Food webs; In Marine Invertebrates of Southern Australia	*	*	*	*	*	*	*	*	*	*	*	*	*
76) Deepwater Shrimp resources of Vanuatu								✓					
77) Trapping Survey for deepwater shrimps in PNG													
78) Deepwater Caridean Shrimps in Southwest Pacific Islands	*	*	*	*	*	*	*	*	*	*	*	*	✓
79) ⁺ Life history patterns of deepsea shrimps	✓	*	*	*	*	*	*	*	*	*	*	*	*
80) Algal - bearing didemnid Ascidians in the Indo-West Pacific	✓	*	*	*	*	*	*	*	*	*	*	*	*
81-82) Prompt reports on the 1st & 2nd Scientific Survey of the South Pacific. IMR, USP/ Kagoshima University, Japan	✓	*	*	*	*	*	*	*	*	*	*	*	*
83) ⁺ The freshwater clam of Fiji Islands.	✓												
84) Changing technology in subsistence fisheries in Pacific Islands	*	*	*	*	*	*	*	*	*	*	*	*	*
85) A trapping survey for deepwater shrimp in Western Samoa.	✓	✓											
86) Deepwater shrimps of Tonga	✓												
87) Biology of the biology of mud lobster	✓	*	*	*	*	*	*	*	*	*	*	*	*
88) Biology of littoral Penaeid Prawns in waters	✓	*	*	*	*	*	*	*	*	*	*	*	*

COUNTRY

REPORT/CONSULTANCY/ADVISORY SERVICES

FIJI TONGA WESTERN SAMOA SOLOMON ISLANDS KIRIBATI TUVALU COOK ISLANDS VANUATU NIUE TOKELAU NAURU PAPUA NEW GUINEA MICRONESIA

- 89) Life history patterns in deepwater shrimps ✓
- 90) Living together in the Sea *
- 91) Subsistence Fisheries of Tuvalu ✓
- 92) Fiji Modular Wave energy converter ✓
- 93) Seawave energy survey in Western Samoa ✓
- 94) Assessment of Seawave energy potential and development prospects for Tongatapu Is. Kingdom of Tonga ✓
- 95) Artisanal fishery and fishing vessels of Tonga ✓
- 96) Reef ecology and fish taxonomy - Cook Is. ✓
- 97) Inshore/Nearshore Invertebrate Fisheries - In Inshore/Nearshore International Workshop. ✓
- 98) Deepwater shrimps of Tonga: a preliminary survey near Nuku'alofa ✓
- 99) Fulbright-Hays research fellowship report: Interstitial Molluscs and Opisthobranchs of Fiji ✓
- 100) Traditional Management and Conservation of Fisheries in Kiribati and Tuvalu Atolls ✓
- 101) Distribution, abundance and ecology of Blue Coral in the Pacific *
- 102) Preliminary survey of fish consumption in Tokelau ✓
- 103) Preliminary survey of inshore fisheries of Upolu Island, Western Samoa ✓

* Studies carried out in one country but applicable to all USP member countries
 + in press
 ✓ study carried out in a particular country

6. FUTURE DIRECTIONS AND PROJECTED WORK PROGRAMME FOR 1985

- 6.1 The Forum Fisheries Committee which guides the operations of the Forum Fisheries Agency (FFA) has agreed to act as the Advisory Board to IMR on programmes dealing with living resources.

The committee governing the work programme of the Committee for the Co-ordination of Offshore Prospecting in the South Pacific (CCOP/SOPAC) has been approached by the University to act as an Advisory Board to IMR in non-living resources programmes.

- 6.2 The Institute has been given a guarantee of funding by EEC to mid 1986. The projected work budget from this grant is appended herewith. We still await the final approval from EEC in Brussels.

- 6.3 A submission from USP for further funding of IMR through EEC (Lome III) has been made.

- 6.4 While awaiting the outcome of aid negotiations and directions from Advisory Boards, the Institute is projected to undertake the following programmes:

(a) TEACHING:

- (i) Postgraduate - continue to provide opportunities to Regional candidates through available fellowships; Encourage non-Regional students to undertake field studies in the region.
- (ii) B.Sc. - - continue to service School of Natural Resources courses in marine sciences.
- provide additional options (e.g. the proposed marine affairs course), with a view to offering a specialised degree in marine sciences, if resources allow.
- (iii) Diploma - the Diploma in Tropical Fisheries will be re-introduced from 1986, if resources are available.
- (iv) Certificate - continue to offer the Certificate in Earth Science and Marine Geology programme until demand is satisfied.
- careful consideration will be given to upgrade this programme to Diploma or even degree level.
- (iv) Short courses- continue to provide specialized in-service courses, such as the Management of 200 mile EEZ.

Council is requested to endorse the principle that teaching of credit courses should not be limited to Schools.

- (b) RESEARCH AND CONSULTANCY:
- (i) The Institute will take advantage, by virtue of its unique locality, to strengthen and foster research on tropical ecosystems such as coral reefs, lagoons, outer reef slopes and mangroves. Related oceanography will form integral part of ecosystems study. This will provide a basis for environmental management and protection.
 - (ii) Mindful of the application of research to resource development and management, the Institute will be guided by its Research Advisory Boards to undertake appropriate studies.
 - (iii) The Institute will continue to provide consultancy services, within its area of competence, when commissioned by the member governments.

The broad objectives of the Institute can be fulfilled if it is allowed an orderly development through a long-term planning. The present, year to year, planning is most frustrating and unsatisfactory. It provides no opportunity for careful staff development, and hence the development of Regional expertise.

APPENDIX 1

PROJECTED WORK BUDGET FROM EDF 1985
PROJECTED WORK BUDGET FROM EDF TO MID 1986

INSTITUTE OF MARINE RESOURCES

EDF 1985 Budget

	Project A	Project B	Project C	Project D	Other Small Projects	Research and Training not directly associated with major projects	Total
A. Consultancy	6,000	6,000	6,000	6,000	5,000	6,000	35,000
B. Technical Assistance							
1. Professional Staff	5,000	5,000	4,000	5,000	3,000	3,000	25,000
2. Boat crew (Aphareus)	9,500	3,500	3,500	3,500	3,000	2,500	25,500
C. Training						15,000	15,000
D. Research	15,500	14,000	3,000	4,700	5,000	5,000	47,200
E. Buildings							
F. Vehicles/Vessels	8,000	3,000	3,000	3,000	2,500	2,500	22,000
G. Equipment	5,500	3,000	4,000				12,500
H. Library						4,000	4,000
	49,500	34,500	23,500	22,200	18,500	38,000	186,200

A. Salary of permanent director is spread evenly across all categories.

Projects

- A. Outer Reef Resources Survey
- B. Lagoon and Reef Fisheries
- C. Seafood Toxins
- D. Nearshore Communities

B. Technical assistants' salaries allocated to particular projects where possible but approx. 25% retained for small projects and additional research and training.

C. Training costs allocated on a project basis where relevant but not all training effort is directly related to projects.

H. Library requisitions are best included under additional research and training.

INSTITUTE OF MARINE RESOURCES

EDF 1986 (until 30/6/86) Budget

	Project A	Project B	Project C	Project D	Other Small Projects	Research and Training not directly associated with major projects	Total
A. Consultancy	3,000	3,000	3,000	3,000	2,500	3,000	17,500
B. Technical Assistance							
1. Professional staff	2,500	2,500	2,000	2,000	1,500	2,000	12,500
2. Boat crew (Aphareus)		2,500		1,250	4,625	4,625	13,000
C. Training							
D. Research	4,000	6,000		2,100	2,500	2,500	17,100
E. Buildings							
F. Vehicles/Vessels		2,000		1,000			3,000
G. Equipment							
H. Library	9,500	16,000	5,000	9,350	11,125	12,125	63,100

A. Salary of permanent director is spread evenly across all categories.

B. Technical assistants' salaries allocated to particular projects where possible but approx. 25% retained for small projects and additional research and training.

C. Training costs allocated on a project basis where relevant but not all training effort is directly related to projects.

H. Library requisitions are best included under additional research and training.

Projects

- A. Outer Reef Resources Survey
- B. Lagoon and Reef Fisheries
- C. Seafood Toxins
- D. Nearshore Communities

APPENDIX 2

IMR PUBLICATIONS LIST

INSTITUTE OF MARINE RESOURCES - PUBLICATIONS

INTERNATIONAL PUBLICATIONS AND PROCEEDINGS OF PAPERS PRESENTED

- (1) **Fiji Red Cross Society & J Seeto
Basic First Aid Handbook (1983)
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Editors: S A Shepherd and I M Thomas
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Deepwater shrimp resources of Vanuatu. Marine Fisheries Review
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The Prompt Report of the first scientific survey of the South Pacific (in press).
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The Prompt Report of the second scientific survey of the South Pacific (1983).
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- (19) Raj, U (in press)
The distribution and morphometric variation in the freshwater clam, Batissa violacea Lamarck (Lamellibranchia: Sphaeriidae) of Fiji Islands. New Zealand Journal of Science.
- (20) Raj, U (1981)
The incidence of Ciguatera poisoning in the Region - Current status - Country report for Fiji.

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- (21) Raj, U (1981)
Conservation strategy for Fiji: A country profile. Paper presented at the 15th General Assembly, International Union for Conservation of Nature and Natural Resources, Christchurch, N.Z., 11-23 Oct., 1981.
- (22) Raj, U (1981)
Inshore and Nearshore marine ecosystems of the South Pacific Islands Inshore and Nearshore International Workshop, July, Suva.
Abstracts in Proceedings.
- (23) Raj, U (1981)
Outer Reef slope fisheries of Fiji. Inshore Nearshore International Workshop, July, Suva. Abstracts in Proceedings.
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A Preliminary Survey of fish consumption in Tokelau.
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A preliminary survey of the Inshore fisheries of Upolu
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