

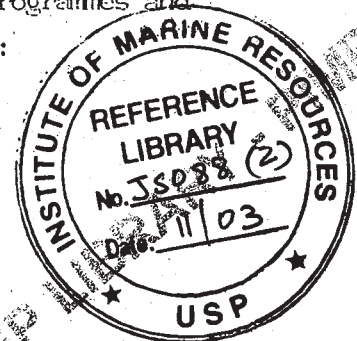
ANNUAL REPORT TO THE COUNCIL

1979

Institute of Marine Resources  
USP, Box 1133,

The Institute of Marine Resources was established in January 1978 with mainly the resources of the Diploma in Tropical Fisheries programme. Dr U. Raj was seconded from the School of Natural Resources for an initial period of three years, as its first Director in February, 1978. In March 1979, the Institute staff and facilities were located in the seaside of the Hangar. CIDA support for the DTF programme ended in December 1978 and USP became fully responsible for funding of DTF and other activities of the Institute. Also, in 1978 the Institute was charged with the responsibility of establishing and operating the Atoll Research Unit in Tarawa with physical facilities being provided by the Government of Kiribati. The present staff, facilities, programmes and immediate future developments of the Institute are as follows:

STAFF



EXECUTIVE ACADEMIC STAFF

- U. Raj, B.Sc. (Hons.) Ph.D. (Otago) - Director  
(Seconded from permanent position-Senior Lecturer in Biology, SNR)
- Leon P. Zann, B.Sc. (Hons.) Ph.D. (U.N.E.) - Lecturer
- Michael G. King, B.Sc., M.Sc., (Adelaide) - Lecturer
- William A. Day, Master Cert. (L.S.T.)  
Chief Engin. Trawler Cert. (L.S.T.) - Fisheries Training Officer
- Gordon W. Groves, J.B., B.S., Ph.D.  
(University of Calif.) - Fellow (from May, 1980)  
to be based at Atoll Research Unit.
- Lesley Bolton, B.Sc. (Hons.) (Cantab.) - Junior Fellow (from Jan., 1980)  
to be based at Atoll Research Unit.
- Pending - Fellow
- Pending - Fullbright - Hays Professor  
in Marine Biology

ASSOCIATE LECTURERS (DTF Programme)

- Kurti M., B.Sc., M.Sc., (Madras) - Lecturer in Aquaculture (MAFF)
- Wallace I., M.Sc., Agriculture Ext. (Reading)  
M.Sc., Agriculture (East Africa)  
N.D.A., Dip. Farm Man. (Seale Hayne) - Lecturer in Extension (FCA)
- Janis A., MSc (IMS Lond.),

- Jayawickrama R.W., B.A. (Hons.) (Ceylon) - Lecturer in Accounting  
Budgeting & Costing (ISAS)
- Griff S., B.Ap. Sci. Nutrition & Food Sci. - Lecturer in Human  
Grad. Dip. Dietet. (W.A.I.T.) Nutrition (SOE)
- Jukanaivalu N., Cert. of Comp. (AUST.) - Lecturer in Charge  
Tech. (C.E.I.) Marine Engineering (F.I.T.)
- Bakarau F., Ist Class Motor (Fiji) - Lecturer in Marine  
Post Trade Cert. Engineering (F.I.T.)
- Rajalingam A.M., Full Tech. Cert. - Lecturer-in-Charge  
(Shipbuilding) City & Guilds Lond. Shipbuilding  
Cett. ED. (Technical) (Leeds.)
- Tavainavesi K. V., Full Tech. Cert. - Lecturer  
(Shipbuilding); Weld. & Fab. shipbuilding  
Craft Pract. (City & Builds, Lond.)  
Cert. ED (Leeds)
- Beale H., B.Sc. (Auck) M.I.E.E. (Lond.) - Lecturer in Pilotage and  
Navigation Seamanship and  
safety (SNR)

VISITING FELLOWS:

- Patricia Morse, B.Sc., M.B., Ph.D. - Fullbright-Hays Professor  
(North-Eastern) in marine biology
- Patricia Mather, D.Sc., (Lond.) - Fellow
- Byers A., M.Sc., Ph.D. (Cork Univ.) - Fellow
- Mara Fretter, M.Sc., Ph.D. (Reading) - Fellow

SHORT TERM VISITORS

- Professor J. E. Morton, D.Sc. (Lond.) - Professor of Zoology  
F.R.S., New Zealand University of Auckland
- Dr Clyde Roper )  
Mr Michael Sweeney ) - U.S. National Museum,  
Smithsonian Institution  
Washington, D.C.
- Dr Joe Houbrick )
- Dr James McLean - Mollusc Department Los  
Angeles County Museum  
California, U.S.A.
- Dr Bo Gohl - International Foundation for  
Science, Stockholm, Sweden
- Dr Manshard - Vice-Rector for Programme  
Use and Management of Natural  
Resources, United Nations  
University, Tokyo, Japan.

FULLTIME JUNIOR INTERMEDIATE STAFF

- E. Ninokibau - Fisheries Assistant
- I. Tuwai - Technician
- S. Chand - Labourer

Pending	- Secretary
Pending	- Chief Technician/Laboratory Manager

LEFT TIME SKIPPER

M. Soreinagata

TEACHING PROGRAMMES

SNR POSTGRADUATE

Ph.D. :

M. G. King - "The Biology of Natantian Decapods of Fiji, with special reference to Heterocarpus spp. and Parapandclus spp."

Principal Supervisor: Dr Uday Raj

M.Sc.:

1) G. Pillai - "The Biology of the mud lobster, Thalassina anomala (Herbst).

Principal supervisor: Dr Uday Raj

2) S. Chey - "The Biology of Penaeid prawns in Fijian coastal waters"

Principal supervisor: Dr Uday Raj

3) M. Giunea - "The Biology, exploitation and management of the sea turtles of Fiji".

Principal supervisor : Dr Uday Raj

4) A. Patel - "The Studies on the Glands Associated with the Ootheca Production in the Praying Mantis."

Co-supervisor: Dr Uday Raj

B. SNR UNDERGRADUATE

NR335 - Marine Biology-Dr Uday Raj (Shared with Prof. J. S. Ryland)

(Field courses run jointly for University of Auckland and USP students shared with Professor J. E. Morton)

C. DIPLOMA IN TROPICAL FISHERIES

DIP II COURSES

INVERTEBRATE ZOOLOGY	- L. P. Zarn
ICHTHYOLOGY	- M. C. King
HUMAN NUTRITION	- S. Croft (SOE)
*KEEPING RECORDS	- A. Jarvis (ISAS)
**PUBLIC SPEAKING	- I. Wallace (FCA)
PRACTICAL NAVIGATION & BOAT HANDLING, PART A	- W. A. Day
GEAR TECHNOLOGY, PART A	- W. A. Day
PRACTICAL FISHING PART A	- W. A. Day
NAVIGATION AND PILOTAGE	- H. Beale (SNR)
SEAMANSHIP AND SAFETY	- H. Beale (SNR)

### TYPE III COURSES

OCEANOGRAPHY AND MARINE ECOLOGY	- L. P. Zann
FISHERIES BIOLOGY AND MANAGEMENT	- M. G. King
*ECONOMICS BUDGETING AND COSTING	- Jayawickrama (ISAS)
*EXTENSION	- I. Wallace (FCA)
PRACTICAL NAVIGATION & BOAT HANDLING, PART B.	- W. A. Day
GEAR TECHNOLOGY, PART B.	- W. A. Day
PRACTICAL FISHING, PART B.	- W. A. Day
AQUACULTURE	- M. S. Murti (MAFF)
MARINE ENGINEERING KNOWLEDGE	- Sukanaivalu & Bukarau (FIT)
GRAPHICAL COMMUNICATION (BOAT BUILDING & TECHNICAL DRAWING)	- Rajalingam & Tavainavesi (FIT)

\* - Courses taken together in year III. Keeping records now largely deals with management principles and organizational structures

\*\* Courses taken together in year III (full year course)

### D. OTHER

1. Annual Lectures/laboratory on "Marine Animals in Medical cases" for graduating medical students (M.O.) F.S.M. by Dr Uday Raj.
2. Seminar/workshop for Regional Participants (11 countries) on Utilization and Management of inshore ecosystems, 24th - 30th November, 1979 Suva, - IIR/UII Seagrass Programme.

### CONSULTANCY AND ADVISORY SERVICES

1. Raj, U. Ryland J.S., Morse F. & Singh, S., (1978)  
"Report on a preliminary environmental study in the vicinity of mineral sand deposits, MBA. 45 pp, for Layton and Associates, Brisbane, Australia and Manganex Ltd., Lautoka, Fiji."
2. Ryland J. S. & Raj, U. (1979)  
"Christmas Island: A preliminary survey of natural resources, development needs and conservation in relation to resettlement of people", for the Government of Kiribati. Verbal report presented to the Government and written scientific report is in preparation.
3. King M. G. & Zann, L.P. (1979)  
"A preliminary examination of Fanga'uta lagoon and surroundings Kingdom of Tonga." Report in preparation.  
Advisory services were provided on numerous occasions to Fiji National Trust, Fisheries Division of MAFF (Fiji) and several private firms.

### RESEARCH

1. Mangrove, lagoon, Reef and outer reef community studies.
2. Biology of freshwater Clam, Batissa violacea (Lamarck) in Fiji rivers.
3. Biology of marine bivalves, particularly Donax spp.
4. Fish species composition of inshore waters
5. Species composition and distribution of compound Ascideans in Tropical South Pacific.
6. Species composition and distribution of nudibranchs and interstitial molluscs in Fiji and Solomon Islands.
7. Traditional fisheries methods and utilization of marine resources.
8. Species distribution and composition of Amphipods in South Pacific Island reefs.
9. Coral sand studies with particular reference to foraminifera distribution and chemical composition.
10. Deepwater corals. The effects of depth on settlement of benthic organisms. Marine fouling and borers of Fiji.
11. A major Institute research has begun on a study of the deepwater (offshore) fisheries and the related environment. This is funded by an Australian Aid Grant.

Several preliminary reports, particularly on taxonomic studies, have been produced while awaiting full publications in international journals.

#### PUBLICATIONS & SPECIAL REPORTS

1. King M. G. & Brown I. Walkden (1979)  
Deepwater shrimp trapping project; report phase 1.  
Technical Paper No. 1, Fisheries Division (MAFF) Fiji. 30pp.
2. King, M.G. (1979)  
The life history of the Goolwa Cockle, Donax (Plebidonax) deltoides (Donacidae: Bivalvia) on an Ocean beach.  
Marine Biol. (Submitted)
3. Morton J.E. & Raj, U. (1979)  
Shore Ecology of Suva and South Viti Levu. U.S.P. mimeo (in press)  
183 pp (numerous illustrations).
4. Raj, U. & Fergusson, J.E. (1979)  
The osmotic and ionic composition of a freshwater clam, Batissa violacea Lamarck (Lamellibranchia : Sphaeridae)  
N.Z. J. Zool. (Submitted)
5. Raj, U. (1979)  
Freshwater clam, Batissa violacea Lamarck (Mollusca: Bivalvia) of Fiji Islands.  
Veliger (submitted)



5. Zann, L.P. & Harker, B. (1978)  
Egg production of the barnacles Platylepas Lanchester, Platylepas Lexastylus (O. Fabricus), Octolasmis warwickii gray and lepas anatifera linnaeus.  
Crustaceana 35 (2): 206 - 214.
7. Zann, L.P. (in press) Partnerships in the sea. 415 pp. (320 illustrations).  
T.F.H., New Jersey.
8. Zann, L.P. (In press - Sept 1980 release). Torres strait.  
195 pp. Cassells, Australia

PREPARATION OF MANUALS  
AND MARINE LITERATURE

Manuals and marine literature which are in various stages of preparation for publication include:

1. Reference guide booklets on the reef, lagoon and coastal communities of Solomon Islands and New Hebrides.
2. A guide book to the common inshore fishes of Fiji Islands
3. A book on coral reefs, mangroves and lagoons of Central Western Pacific
4. A guide book on marine fouling and boring organisms and the maintenance of small boats.
5. A student text book on general fisheries biology for tropical countries.

NEW DEVELOPMENTS

1. ATOLL RESEARCH UNIT: A Senior Scientist, Professor Gordon Groves of University of Hawaii, has accepted appointment as the Senior Scientist. Owing to administrative difficulties relating to his release from Hawaii, he will officially take up appointment in May, 1980. Nevertheless, he will begin work particularly on circulation and Oceanography of the Tarawa Lagoon and Near offshore seas, jointly with USP in January, 1980. A VSA from New Zealand, Miss Lesley Bolton, will take up appointment as Junior Fellow, based in Tarawa from January, 1980.

Dr L. P. Zann spent three weeks in October at ARU to facilitate the purchase of basic equipment and furnishings for ARU housing at Tanaka from a British grant of \$50,000. He also commenced some of the work programme (e.g. marine reference collection, ecological study of the lagoon and outer reef slopes) agreed to between USP and the government of Kiribati.

2. EEC MARINE RESOURCES PROJECT

The financing agreement for the execution of this project (worth 1.2 million European Units of Account) was signed by SPEC on behalf of W. Samoa, Fiji and Tonga in September, 1979. However, before any moneys are released, EEC office in Suva requires a detailed work programme and cash flow document for the first year of operations. Since this involves acquiring precise quotations for equipment purchases from overseas, definite decisions on the future use of the current laboratory and office space in the Hangar for IMR and agreement by the three respective governments on first year priorities, a further delay in commencing the programmes agreed to is inevitable. The document on the first year work programme and expected cash flow is expected within a matter of weeks. Details of the agreed work programme in the overall project have been circulated to the Council at an earlier date.

3. IMR - UNIVERSITY OF HAWAII SEAGRANTS PROGRAMME.

The Vice Chancellor, Dr J. A. Maraj, and the Director of the Institute of Marine Resources, Dr Uday Raj, visited Hawaii to recently concluded successful negotiations initiated originally by the Pro-Chancellor, Dr Langi Kavalika, with the University of Hawaii. This has led to a Grant of about \$US100,000 from US Federal Government. This Grant available over a period of one year, in the first instance, will enable the two institutions to collaborate in improving the Tropical Marine Science capabilities of the IMR and the islands of the USP region as a whole. Details are given in the appended document.

REGULAR PUBLICATION OF THE INSTITUTE

A quarterly bulletin of the Institute will be initiated at the end of this year. It will generally be used as a means of disseminating information on Tropical Marine environment and recent developments directly relevant to the Region. The publication will also contain articles of scientific merit on marine resources of the South Pacific.

It is envisaged that in 1980 the following events will contribute towards a firm establishment of the Institute of Marine Resources with greatly increased capabilities in teaching, consultancy and advisory services in marine sciences:

- a) Provision of teaching laboratory, offices and service facilities now under construction in the Hangar
- b) Construction of reef and lagoon running water systems and a wet and dry laboratory on the foreshore, from EEC funding
- c) Provision of equipment and personnel from programme developments outlined above.

## APPENDIX

### SEA GRANT INTERNATIONAL PROGRAMME

#### PROJECT SUMMARY

- A. Collaborating Agencies: University of Hawaii (Research Adm. & Marine Programmes)  
University of the South Pacific (.I.M.R.)
- Principal Investigators: U. H. - J. R. Davidson; P. Helfrich  
U. S. P. - U. Raj; L. Zann
- Associate Investigators: U. H. - E. H. Chave; J. Harris  
U. S. P. - Project Fellow (1);  
Project Fellow (2)

#### B. Objectives

1. To conduct a joint faculty exchange program between the University of the South Pacific (USP) and the University of Hawaii (UH) to achieve improved tropical marine science course offerings and overall professional improvement within the universities.
2. To expand functional marine extension services with offices at the USP-IMR and in collaboration with the UH Marine Advisory Programme to retrieve and disseminate information.
3. To conduct a pilot technology transfer project using a multi-disciplinary team of UH and USP personnel and others as appropriate.
4. To train two Regional people to serve as marine resource advisors.
5. To assess the programme and develop a follow-up plan of action.

#### C. Anticipated Benefits

1. Academic program and professional improvement through interchange between USP-IMR faculty and UH faculty
2. Enhanced benefits to local people from their marine resource endowments; wise use, development, and management of Pacific island-related marine resources by local people
3. Development of cadre of marine resource advisors.
4. Improved capability of the Institute of Marine Resources
5. Specific knowledge on the transference of the techniques and the socio-cultural factors affecting such transference and assimilation.



### Projected Activities

1. Visits of faculty members from UH to USP and USP to UH in connection with:
  - a. marine science courses now offered and proposed and to assist with examinations and evaluation.
  - b. Seminars, workshops, training programmes
  - c. research studies.

(Note) These visits are not limited to transfer of technology activities and the faculty concerned is not limited to those designated as investigators.

2.
  - a. Provision of one-half time information specialist based at UH to organize, develop and arrange relevant material in support of IMR's extension and advisory role. It is envisaged that the material would be as agreed between IMR and UH and the PEACESAT network would be employed as appropriate.
  - b. Where necessary, personnel may be utilized in a supplementary way to deliver advisory services.
  - c. The production of pamphlets, bulletins, abstracts, bibliographies, etc., as well as audio-visual material, is anticipated.
3. The transfer of technology will focus on post harvest as it relates to inshore marine resources normally available to rural communities. The techniques suggested are small scale canning, dry freezing and vacuum sealing, pickling, drying, salting and smoking, etc. Operations will be located at selected sites in Fiji and in Solomon Islands in the first instance.
4. Two regional candidates will be appointed to the staff of IMR as Project Fellows (NI Sea Grant). They would be expected to serve as marine resource advisors generally but will in the first instance be equipped to function in the areas of technology transfer referred to in B. (3) previously. They will need to be familiar with the selected techniques and be capable of communicating with the demonstrating target groups.
5. Not only will it be necessary to assess progress made in the first year, with respect to the stated objectives but an outline plan produced for two subsequent years. Such a plan should include:
  - a. other technologies and other locations
  - b. capture, handling, and utilization of offshore living resources
  - c. utilization and regulation of non-living resources.

(Note) The socio-cultural implications of all of these elements to be continually monitored and studied as well as disseminated.

Benefits

- 1) This is self evident.
- 2) It is proposed that a more general seminar be organized on "The Utilization and Management of Inshore Ecosystems". In this way a larger number of people could be involved and share in the overall project although the target groups for the technology transfer will be at a lower level.
- 3) The cadre referred to is expected to grow from two to six over the three-year period. Each individual will be able to function as a general advisor but will also have an in-depth knowledge of particular techniques. Over the three-year period, six countries should be involved with at least four sets of techniques operating within those countries.
- 4) This is self evident but recognizes that the capability of IIR is not restricted to its own on line staff. Expertise from UH identified and cultivated over the period will be viewed as available to IIR and counted upon in meeting regional needs .
- 5) The techniques to be introduced later will be determined in consultation with the technology experts identified and these put before regional participants in the seminar proposed in C. (2).

General

- 1) It should be observed that the activities reflect a three-way approach: living resources inshore, living resources off shore and non- living resources of the seabed.
- 2) The activities provide for faculty interchange, training, research, information retrieval and dissemination, technology transfer, and institutional, as well as individual professional development.
- 3) Pacific islanders to be involved span the several levels from managerial through to rural dwellers. The main target group, however, is the rural dweller.

DRAFT BUDGET

A.	Personnel	<u>U.H.</u>	<u>U.S.P.</u>	<u>Total</u>
	Principal and Assoc. Investigators	9,000	3,500	12,500
	Project Fellows	---	14,000	14,000
	Assoc. Faculty Experts and Consultants	7,000	6,500	13,500
	Information Specialist	6,000	---	6,000
	Support Staff Adm./Secretarial	5,000	1,000	6,000
	Casual Labor		1,000	1,000
	Fringe Benefits for A.	5,000?	1,000	6,000
B.	Equipment and Supplies Permanent ) Expendable )			2,500
C.	Travel Local, regional, US Domestic, International	15,000	10,000	25,000
D.	Publications and Documentation	1,000	1,000	2,000
E.	Other Costs			
	Computer	500	---	500
	PEACESAT	500	---	500
	Ext. Materials	750	250	1,000
	Reports, Seminars/Workshops	750	750	1,500
	Overhead	5,000	2,000	7,000
	Contingencies	1,000	1,000	2,000
				<hr/> 101,000
	Sea Grant			\$92,800
	U. H.			4,100
	U. S. P.			4,100
				<hr/> \$101,000