

**THE UNIVERSITY OF THE SOUTH PACIFIC
INSTITUTE OF MARINE RESOURCES**

**ANNUAL REPORT
1990**

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IMR AND ASSOCIATED STAFF, 1990

1. Senior Academic and Comparable

G Robin South	Director, & Professor of Marine Studies (from April)
J Seeto	Acting Director (until April), Fellow
V Vuki	Fellow (until Oct)
** G Hureau	Fellow (until Sept)
V Ram	Fisheries/Extension Officer
J Maiwelagi	Fisheries Training Officer
R Hume	Chief Technician (until July)
S Lavaki	Chief Technician (from Aug)

2. Junior/Intermediate Staff

K Toaisi	Fisheries Officer (until Oct)
I Tuwai	Executive Officer (until Oct)
H Begum	Technician (until May)
F Manueli	Technician & Special Assistant for Earth Science and Marine Geology programme (from June)
* D O'Conner	Engineer
N Bulai	Secretary (from Feb)
M Singh	Clerk/Typist (until Feb)
F Uluiburotu	Clerk/Typist (from May)

3. Hourly Paid, Unestablished

S Chand	Labourer
M Prasad	Cleaner/Handyman
V Dawanivesi	Cleaner/Handyman
* F Manueli	Technical Assistant (until May)
* L Wilson	Technical Assistant (from Sept)
* M Nautu	Deckhand
* S Newton	Deckhand
* (Vacant)	Deckhand/Boatman
* F Lavelawa	Caretaker, Field Station

4. Fiji Institute of Technology Staff

J Prakash	(DTF SCD64)
S Raikuna	(DTF SCD65)
K Tavainavesi	(DTF SCD65)
Capt. T Tikoicolo	(DTF SCD53, 54)
Capt. D Mitter	(DTF SCD53, 54)

5. Certificate in Earth Science & Marine Geology

R Howorth	SOPAC
* (Aided Posts)	
** (Service Voluntaire)	

1990 IN RETROSPECT

by
G. Robin South, Director

A number of significant events have marked the past year, several of which have cast an air of uncertainty on the future of IMR; none of these, however, lessened the warmth of the reception that I received on my arrival in Suva on April 1st to take up duties as Director of IMR and Professor of Marine Studies, or the enthusiasm with which the staff have tackled their work. The size of the tasks awaiting me made it abundantly clear that my time would be well accounted for!

At its May 1990 meeting the USP Council approved a resolution from the Solomon Islands representative that the whole of IMR should be relocated in Honiara as soon as possible. This resolution superseded the 1988 Council decision that only the Applied Research component of IMR should move to Honiara; a decision that had resulted in the development of plans for the expansion of the USP Honiara Centre to accommodate IMR's new activities. The new Council decision was made on the understanding that no future demands would be made on the University for recurrent funding of the relocated IMR; capital funding was to be raised from external sources. The University and the Government of the Solomon Islands are now jointly proceeding on the development of plans for the IMR (Solomons). When taking into consideration the present activities of the IMR at the Laucala Campus, however, it is evident that a very large proportion of them are devoted to the teaching of the Diploma in Tropical Fisheries, and to support of other marine-related courses and research on the main campus. These important support facilities must remain in Suva, which means that the IMR (Solomons) will need to have an entirely new programme. Details of the proposed programme will be provided in the Five-Year Plan.

The future of the IMR is thus also closely linked to the development of the Marine Studies Programme Five-Year Plan. It has been my priority task to draft this plan, and it was largely completed by the end of the year.

Further uncertainty about the future of IMR (and all other USP Institutes) was generated at the

October 1990 Council meeting; Council re-iterated their requirement that Institutes be self-funding (something that the University has repeatedly argued about in its Triennial Submissions to the University Grants Committee); a review of Institutes will now take place. Certainly, IMR has been far from self funding for some time.

These uncertainties, together with the moratorium on new admissions to the Diploma in Tropical Fisheries, with the on-going review of the programme, and with the continuation of poor staff salaries (improved later in the year), caused inevitable unrest and uncertainty among the staff. None of these difficulties, however, significantly altered their resolve to continue on, or hindered the major planning activities that kept us increasingly busy as the year progressed. Above all, the support that the University is giving to the development of the Marine Studies Programme has instilled more than a little optimism in everyone.

For the rest of this overview I would like to emphasize the very positive developments of the past year. I hasten to add that a number of these do not necessarily relate strictly to the Institute of Marine Resources, but to my broader responsibilities as Professor of Marine Studies and the plans that I am beginning to put in place for the development of the USP Marine Studies Programme. In February I was privileged to attend the signing, in Washington D.C., of the Agreement between Astrolabe, Inc. and the University of the South Pacific. Through this Agreement Astrolabe, Inc. will assist USP in the development of the Dravuni Island-Field Station, and in the establishment of a major international research programme associated with the Great Astrolabe Reef. This exciting development was endorsed by the Pacific Science Association at their June 1990 Executive Meetings in Honolulu. An important first development from the Agreement was the donation of some US\$40,000-worth of diving equipment by the Apollo Sports Company Ltd., of Japan.

There have been other positive results from our plans to focus on Coral Reef research. A major funding programme has been set up with the assistance of the French Embassy in Suva; this programme will provide two Fellows (marine ecology and marine resources), and substantial additions to our field equipment and computers. On a wider basis, I am hopeful that collaboration with French research institutes in the South Pacific will be improved.

At its 22nd RTMF held in Nouméa, New Caledonia in August, the South Pacific Commission unanimously endorsed the recommendation from the Crossland Report that a Post-Harvest Fisheries Facility be established in Suva, preferably in association with USP. This decision follows several years of deliberation, and will be a very positive step in providing a major new area of training and research. Planning for the facility will now proceed.

The International Centre for Ocean Development and the Canadian International Development Agency have continued their strong support of the development of Marine Studies at USP. During the past year several new funding initiatives have been taken. Approval was granted for the establishment of 8 post-graduate scholarships leading to the Masters degree in Marine Studies, over the next five years. Other initiatives under consideration include the funding of the appointment of a Lecturer/Senior Lecturer in Marine Geology for a three-year term, and two aquaculture-related projects. With the support of ICOD (to the South Pacific Commission), I will be participating in a human resources study of needs in fisheries training in the South Pacific, in early 1991.

As will be evident from this Report, IMR has had a very active year, although some areas (such as consulting and research) have been disappointing, principally because of the heavy teaching responsibilities of the staff. We did, however, host visits from a broad range of people from several countries, and assisted a number of them in the conduct of research programmes. Notable research visitors were Prof. Geoffrey Power of the University of Waterloo, Canada; Dr Jan Kolhmeyer and Dr Brigitte Kohlmeier, from the Institute of Marine Sciences, University of North Carolina; Dr Leon Zann from FAO, Western Samoa, and Dr Derek Ellis of the University of Victoria, Canada.

Staff changes have caused some disruptions, and we were sorry to see Veikila Vuki and Iliave Tuwai leave us; we wish them both success in their studies in the U.K. Ron Hume departed in July, but not without doing a great deal to improve IMR during his short stay; we wish him and family well in their new life in Canada. Hur Begum left us early in the year for Vancouver, Canada.

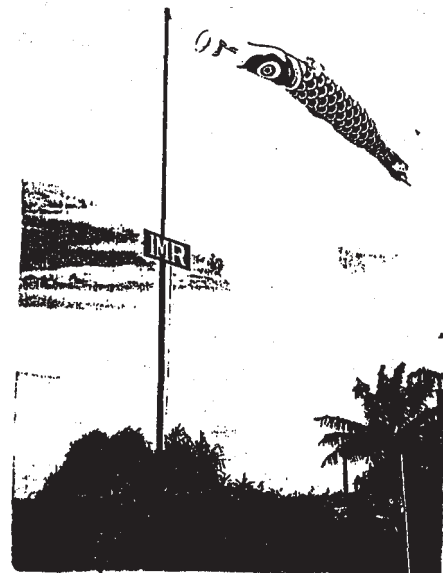
We have enjoyed the continued support of Fiji Fisheries during the past year, and of regional agencies (the Forum Fisheries Agency, the South

Pacific Commission and the South Pacific Applied Geoscience Commission). Regional and other agencies have participated as members of the Marine Studies Coordinating Committee, and have also assisted through many interchanges during the year. Nick Willoughby, BDDP, gave part of his time to assist us in the revision of the Diploma in Tropical Fisheries. I also want to thank Tim Adams and his staff (Fiji Fisheries), Alastair Robertson, Steve Roberts, Garry Preston and Barney Smith (SPC); Russell Howorth (SOPAC); Andrew Wright and Peniasi Kunatuba (FFA); and Vili Fuavao (SPREP) for their interest and support.

1990 saw IMR well and truly launched into the electronic age, with the installation of computers (thanks to ICOD funding) and a complete overhaul of our telephone system (thanks to Fiji Post and Tel). The joy of being able to pick up a telephone and hold an uninterrupted conversation (or even hold one at all) will only be appreciated by IMR staff who had endured the old telephone system for so long. We now anxiously await the installation of our own facsimile machine.

Staff were involved in a number of social events (some associated with departures and arrivals): these certainly added to the fun of working at IMR. On the sporting front, IMR fared well in USP sports, coming 2nd in the Men's, and 3rd in the Women's volleyball tournament.

We are all looking to 1991 with intrigue, and perhaps some trepidation. Who knows what will be contained in the Five-Year Plan, and what it will portend for the future of IMR?



TEACHING AND TRAINING PROGRAMMES

The Institute provides teaching assistance for credit courses at all levels of the regular University Programmes (i.e. postgraduate, undergraduate, and certificate) and mounts short specialist courses when need arises. Its principal teaching activity centres on the Diploma in Tropical Fisheries.

POSTGRADUATE

MSc Studies

- (a) L K Bolton - "Biology of the Marine Clam, Anadara maculosa, in Kiribati".
- (b) Postgraduate Certificate in Applied Science
Lui Bell - W Samoa

BSc Courses

IMR staff in the past taught Marine Biology (BI305) and Fish and Fisheries Biology (BI307) in the BSc Programme. However for the past four years these have been primarily taught by SPAS Staff, with assistance in teaching, supplying specimens and field trips facilitated by IMR.

Ocean Resources Management Programme (ORMP), SSED

IMR staff members Mrs V. Vuki and Mrs Vina Ram were involved in teaching parts of the UU201 course (Introduction to Ocean Resource Management).

DIPLOMA IN TROPICAL FISHERIES

The Institute has been providing this programme since 1978. The Diploma was suspended in 1984 as man-power requirements for the major client, the Fiji Government were satisfied. At the request of Regional Governments, the Diploma was offered again from 1986 with the addition of 5 new preliminary practically-oriented courses replacing the six-month period previously spent at the Fiji Fisheries. This was rather unfortunate as the Fiji Government had re-instituted Scholarships for this

course for the first time in 8 years. Dr Nick Willoughby (seconded on a part-time basis to IMR from BDDP) assisted in the implementation of the recommendations of the Clift Report. In 1990 there were thirteen students registered in the year II courses and eighteen students registered in the year III courses. The majority of the students were from Micronesia.

DTF STUDENTS LIST 1990

<u>Names</u>	<u>DTF II</u>	<u>Country</u>
Theofanes	ISAMU	Palau
Clyde	JAMES	Marshall
Glen	JOSEPH	Marshall
Lionel	LUDA	Solomons
Siola'a	MALIMALI	Tonga
Beckwin	MECHOL	Palau
Patrick	MESIAH	Solomons
Tong	NALU	Tuvalu
Audrie	NGIRA-MOLAU	Palau
Wesley	OBED	Vanuatu
Fereti	PUE	Tokelau
Tekata	TOAISI	Fiji

DTF III

Kelesoma	SALOA	Tuvalu
Simpson	ABRAHAM	FSM
Felix	ALEFAIO	Tuvalu
Ribanataake	AWIRA	Kiribati
Bennie	BUGA	Solomons
Siosifa	FUKOFUKA	Tonga/Cooks
Raumea	KOROA	Cooks
Metusela	KOROA	Cooks
Valentin	MARTIN	FSM
John	MATANGI	Solomons
Dorothy	MUNRO	Cooks
Alsen	OBED	Vanuatu
Kerat	RIKIM	FSM
Samuelu	TELI	Tuvalu
Venantius	MEEYOG	FSM
Clay	EDSON	FSM
Mason	TIMOTHY	FSM
Etupati	ROPETI	Samoa

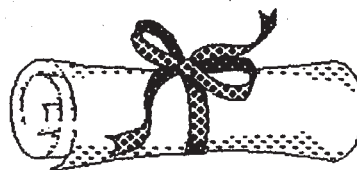


TABLE I : The Number of Graduating Diplomates by Year and Their Countries of Origin.

YEAR	1975	1976	1977	1978	1979	1980	1981	1982	1983	1987	1988	1989	1990	TOTAL
COUNTRY														
Fiji	8	11	10	8	6	8	6	4	9	1	0	0	0	71
Tonga		1	1	0	1	1	0	0	0	0	0	0	1	5
Kiribati			1	1	1	0	2	1	3	0	0	0	1	10
Solomons					3	1	0	0	4	2	3	1	2	16
Tuvalu				1	0	2	0	0	0	0	2	2	3	10
Vanuatu								2	0	0	1	0	1	4
Tokelau								1	0	0	2	0	0	3
Cook Is										1	0	1	1	3
FSM												1	5	6
W.Samoa													1	1
	8	12	12	10	11	12	8	8	16	4	8	5	15	129

15 students will graduate this year; with 5 from FSM, 3 from Tuvalu, 2 from Solomons and 1 each from Kiribati, Vanuatu, Samoa, Cook Islands and Tonga. We will have our first Western Samoa graduate from the programme.

Professor South instituted the most outstanding graduating DTF student award this year. The winner of the award was Ms Dorothy Munro (Cook Islands), who received \$200 and a letter of commendation.

EXTRA-CURRICULAR TRAINING

The DTF II students did a St John Red Cross First Aid Course in Basic Radio Telephone Usage conducted by the Post and Telecommunications department.

During the mid-semester break (from September 12-16) ten DTF students passed a scuba dive course conducted by NAUI Instructor Ms Leslie Farnel of Maui, Hawaii. The course was conducted at the USP pool and the open water dives were conducted at the Fish Patch. IMR funded the course. Each of the ten students graduated as Open Water Diver I (NauI Certification).

One DTF II student, Mr Thoefanes Isamu from Palau attended three day long course from 12-DTF students spent 2 weeks at the Fiji Fisheries Makogai Research Station during semester break. They were trained in all aspects of giant clam culture, spawning and upkeep. The station Manager Mr. E. Ledua conducted the training. These extra curricular activities are not part of the regular DTF programme but IMR staff members have organised them to benefit the DTF students.

PROFESSIONAL DEVELOPMENT

Workshops

1) A Scuba Gear Maintenance Workshop was held at IMR from May 16th to May 18th. It was conducted by NAUI Instructor Ms Leslie Farnel. It was funded by FAO South Pacific Aquaculture Development Programme.

The course was attended by representatives from the region. Four IMR staff members attended the course. They were Fiu Manueli, Iliavi Tuwai, Ron Hume and Veikila Vuki. Each of the participants were awarded a Certificate at the end of the course.

2) **The SPC Nelson Polytechnic Pacific Island Fisheries Officers Training Course**

The Practical Fishing module of the SPC/Nelson Polytechnic Pacific Islands Fisheries Officers course was organised by the Fisheries Education Training Adviser (FETA) and Fisheries Training Associate (FTA), SPC, who supervise the course with joint effort of IMR Fisheries Training Officer and boat crew. The IMR Field Station Dravuni was the venue and both IMR Vessels were used. 12 South Pacific Island participants (Fiji 2, PNG 2, Cooks 1, Tuvalu 1, Kiribati 1, Vanuatu 1, Tonga 1, Wallis & Futuna 1, W/Samoa 1, and Solomons 1) took part. The course was funded by the South Pacific Commission.

Each vessel has set fishing methods ie. Aphareus, horizontal pelagic longline, hydraulic reel deepsea snapper fishing and bottom long line, Hawksbill vertical longline, manual reel (deepsea snapper fishing) and trolling. The participants were rostered on a rotating basis in three groups with changes after every second day and the catch was sold in Suva to meet the cost.

This course, (from 11th June - 12th July 1990) has successfully achieved its objectives of introducing the participants to a variety of methods, all of which were thoroughly demonstrated and all of which caught fish (approximately 2,600 kilograms).

Training

1) Mr Fiu Manueli, IMR Dive Officer, completed a PADI Rescue Diver Certificate. The course was held from May 1st to May 17th at Scuba Hire. Funding was provided from the Earth Science and Marine Geology Certificate course. Mr Manueli's continued training in scuba diving is part of IMR's commitment to training.

2) Mr Fiu Manueli attended a training cruise on board the RV Sonne to the Lau Basin/Tonga Trench.

Observing on board equipment; involved in geological resource assessment and core sampling. The cruise ran from March 11-20th. The trip was funded by the Federal Republic of Germany. The Pacific Is participants were funded by E.C.

3) Ms Vina Ram attended a follow-up workshop on Fisheries Extension Development (Stage 3) held at ISAS, USP from 28 Feb to 7 March. The Workshop was funded by ICOD and organised by SPC. Fisheries Extension Officers and Administrators from the region attended.

4) Mr Mahendra Prasad completed the FNTC training course in Carpentry Stage II. He was funded by USP.

5) On the 20th September, Mr Johnson Seeto attended a one-day proposal writing workshop conducted by the UNESCO head in the Pacific Mr P. Higginson. The workshop was held at USP and was attended by various USP staff members including the Pro V.C., Head of SOH, various IOE staff and IPS staff members.

Visits

1) Mrs Veikila Vuki visited Fisheries Institutions and Aquaculture Stations in Tasmania, and visited James Cook University to complete her data evaluation of research projects with Ms Sue Mildner in July for 2 weeks. The trip was funded by IDP.

2) Mr Jone Maiwelagi visited MAF Headquarters at Greta Point, Wellington, NZ to meet with Dr Malbot and other staff members. Mr Maiwelagi also visited Nelson Polytechnic to meet the staff and also to observe the SPC/Nelson Polytechnic Pacific Island fisheries Officers Training Course (Part I). Jone was away for 2 weeks from April 24th-May 8th. The trip was funded by the NZ Government.

3) Mr Johnson Seeto and Mrs Vina Ram visited New Caledonia, New Zealand, and Japan as part of the joint Kagoshima University - USP 3 years research programme on "The Study on social Ecology and Regional Planning for Lagoon Areas in the South Pacific". This is funded by the International Scientific Research Programme, Ministry of Education, Science & Culture Japan.

4) Mr Johnson Seeto and Mrs Vina Ram visited Kagoshima University from January 9-18th to discuss results and present a seminar on their research trip to W. Samoa and Solomon Islands. This is part of the joint Kagoshima University - USP project mentioned above.

5) Mr Seeto and Mrs Ram also visited various aquaculture stations, fisheries centres, markets, and the Kagoshima University.

PACIFIC WEEK 1990

Pacific Week 1990 was organised by Institutes. The week long even was from 24 February - 2nd March.

IMR organised 2 out of the 5 Pacific Week lectures. The first lecture was entitled "The Development of the Tuna Industry in the Pacific" was presented by Mr Peniasi Kunatuba, fisheries Development Officer of the Forum Fisheries Agency. (24 February) The second lecture was entitled "Environmental Laws in Fiji". This was presented by Mrs Clare Manuel of the Attorney-General's Chambers, Fiji. (27 February) An aquarium with live fish and a display of fishing gear was put up by IMR staff in the foyer of the main library.

Unfortunately most of the events of Pacific Week were boycotted by students. Since Pacific Week was held in the first week of Semester I, the students felt that they were not given adequate time to prepare.

MEETINGS, WORKSHOPS AND CONFERENCES

IMR Staff attended the following meetings, workshops and conferences during the year.

- | | |
|---------------------|---|
| 27 April -
1 May | Forum Fisheries Committee, 18th Technical Meeting. Republic of Nauru (G.R. South) |
| 10-14 June | World Aquaculture '90, Halifax Nova Scotia, Canada (G.R. South) |

20-21 June	UNESCO Marine Science Curriculum Materials for Western Pacific Schools. Planning Workshop. James Cook University, Townsville, Australia (J. Seeto)
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16-20 July	PACON '90. Nihon University, Tokyo, Japan (G.R. South). A workshop on the Asia-Pacific Network proposal was convened as part of the PACON '90 meeting.
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11-14 August	South Pacific Commission 22nd Regional Technical Meeting on Fisheries, Noumea, New Caledonia (G.R. South)
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17-18 Sept.	Commonwealth of Learning, Vancouver, B.C., Canada. (G.R. South)
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19-20 Sept.	Association of Universities and Colleges of Canada. Vancouver, B.C., Canada (G.R. South)
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20 September	Proposal writing workshop, UNESCO. USP, Suva, Fiji. (J. Seeto)
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1-5 October	South Pacific Applied Geosciences Commission Technical Meeting. Tarawa, Republic of Kiribati. (G.R. South)
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13-15 Nov.	Pacific Islands 2000. Suva, Fiji (G.R. South)
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Funding in support of staff participation in these meetings, workshops and conferences was provided by the International Centre for Ocean Development, The Commonwealth of Learning, PACON '90, The Natural Sciences and Engineering Research Council of Canada, UNESCO, and the University of the South Pacific.



FACILITIES

BOATS

APHAREUS : is of fishing boat design and has been used mainly for trips to Dravuni during the year (1990). The Marine Pollution Group and the South Pacific Commission have also used the vessel for either research or Practical Fishing exercises. DTF practical fishing exercises employ the Aphareus, utilising the gear that is available for the variety of fishing methods required for modern commercial fishing industries. Subjects like Navigation and exercises in the use of electronic navigational aids have been practiced on board by the Lecturers for DTF students.

Aphareus has also been very useful for obtaining the marine specimens for biological classes for DTF and for other departments in the University.

At the moment Aphareus takes approximately half a day to travel from IMR to Dravuni. If the speed could be improved time taken for travelling to and fro will take less than a day. Submissions have been made for the purchase and installation of an engine bigger than the existing one.

New hydraulic pipings using high pressure hoses have been installed by the Aphareus engineer with the assistance and guidance of the ENZED FLUID representative. These new hoses will sustain the effect of weather exposure longer than the steel pipings they replaced.

The annual slipping of the boat is scheduled for January 14th - 19th, 1991.

At the beginning of November a new SSB radio was installed on board by Tec Air with funds donated by the International Centre for Ocean Development; the old radio that it replaced will be used at base (IMR).

NAUTILUS : After 12 years of service, the Nautilus, donated by CIDA, was decommissioned in 1989, and was auctioned off in 1990. Funds acquired through the sale will be used to purchase and install a new engine in the Aphareus in 1991.

HAWKSBILL : This Launch provided through US-

AID is fitted with hydraulic haulers, and provides a good back-up to the Aphareus. Renovations are currently being made to improve the realibility and ses worthiness of the Hawksbill.

Recommendations for the renovation and repair to the superstructure, and fuel storage and delivery use were made by Captain Alastair Robertson, Fisheries Training Officer, SPC.

PUNTS AND ZODIAC : The fibreglass punt and aluminium dinghy have been used extensively throughout the year. They both serve mainly for transport in mooring at base and away on the trips to the field station and various other field trips taken by the Earth Science Course and Oceanography.

Punts were used by the Chemistry department for collecting water samples within the harbour, carried out by IMR staff members, once a week during the second semester. DTF courses have used the punt on class specimen collection at the reef or otherwise used by the technician, for the class. Researchers have also made use of them throughout the year mainly around the Suva Reef, collecting specimens.

For diving mainly, a rubber dinghy (ZODIAC) donated by the Japanese Government, has been in use for a few years it has reached the state where it is now unrepairable. In fact, for diving, groups of more than five have been using the fibreglass punt, yet it is still not as ideal as the ZODIAC for such activities.

Fibreglass punts are not as durable as some aluminium ones, and with continuous usage, this punt may need to be replaced after three years. It is already showing wear and tear from reasonably long hours of usage.

By the beginning of next year 1991 the hull will need some very effective and serious repairs done to it.

BUILDINGS/GROUNDS

The IMR Building complex accommodates all the staff offices, a library, computer room, fisheries teaching laboratory, a research laboratory, general stores for consumables and stationaries, geology laboratory, staff unions office, lecture room,

oceanography laboratory, mechanical workshop, boat shed for woodwork and a shed adjoining the two main buildings used for rigging and storing fishing gears.

The buildings were part of the Royal New Zealand Air Force Complex, and were renovated, more than ten years ago. Most of the timber walls are very much intact but the frame work inside the double walls may need to be looked into by the maintenance department. Signs of termites and insects existing in the walls and ceilings have been noticed for the past several years. Covers for the computers and accessories have to be purchased to protect them from termite droppings during the night.

Access for rain water in the yard needs to be improved. During heavy rain, accumulation of water around the building can be above ankle deep. When such a situation arises it is very much inconvenient not only to staff members but to students as well when they want to get to lecture rooms or laboratories.

Requests to improve the grounds profile within the area have been submitted to the maintenance unit and a verbal reply from the Director of Grounds and Maintenance is that the work will be carried out in 1991, simultaneous to the road upgrading project.

Speed retarders will be included in this scheme to ensure minimum speed is made by vehicles inside this lower campus, especially around the corner of the IMR building nearer to the waterside.

Marine reference collections are kept in a room of very appalling condition. These collections are very important to the Institute. It is a result of years of hardwork and if neglected will simply mean starting all over again.

The chemical store may be air conditioned but the risk of explosion still exists and it requires the relevant type of enclosures.

The Institute has five laboratory facilities in addition to the three classrooms currently being used by the students. Two of these classrooms can also be used as laboratories if required.

Earth Science & Marine Geology Lab/Classroom

This has been annually used, for a period of three months each year since 1983, by the Earth Science and Marine Geology Certificate Course, a programme funded and run by SOPAC. Technical and facilities support is provided by IMR.

The laboratory is divided into two sections, 2/3's of which accommodates students' desks, chairs and tutor's table and blackboard, while 1/3 is being used as a thin sectioning laboratory. This section has a sink bench, a rock cutting saw, a lapping bench and a hot plate/mounting bench. The equipment was supplied by Victoria University of Wellington, New Zealand.

A section of the classroom has a wall bench around half of which is used by the students to set up microscopes for their thin section analysis and identification work.

In addition to this laboratory/classroom, the Earth Science Course has two offices upstairs, one of which is the Course Coordinator/tutor's office and the other is used to store rock samples, maps and other course equipment.

Toxicology Lab

The toxicology lab is used for analysing and carrying out various experiments on fish and other marine species, which may be, or are known to be poisonous. The lab has 2 rotovapours used in the extraction of toxins, a fumigator for chemical mixing, sinks, a precision refrigerated incubator and a dry oven. There is also a large range of beakers, flasks, test tubes and scales as well as work benches and other miscellaneous apparatus.

Adjoining the Toxicology lab is the freezer room which contains four deep freezers, a generator and an ice making machine. Specimens are kept here for future research projects as well as for class demonstrations. Bait and ice are also stored for fishing expeditions. Both rooms are cooled by overhead fans.

Phycology Research Laboratory

This air-conditioned laboratory is presently being used by Professor South for his research. It

has a fixed wall bench, and a wash basin and tap. There are two cabinets for storage, one of which is heated. Two dehumidifiers, recently obtained from French Aid funds, are being used in the lab. There are several different types of microscopes used in the lab, including a Zeiss Photoscope III and 2 other Zeiss microscopes purchased with research funds from the Natural Sciences and Engineering Research Council of Canada. These microscopes are on loan from Memorial University of Newfoundland, Canada.

Fisheries Laboratory

This laboratory, situated between the Oceanography room and the Captain's room is used mainly by visiting scientists and researchers. It has a fixed wall bench along the walls with several wash basins and taps. Most of the preserved fish used for the students classes are stored in this lab, including a few of the larger aquaria and display cabinets.

DTF student Lab/Classroom

This laboratory is used mainly by DTF students for their classes. It also has facilities for overhead projection and slide viewing (screen & dark curtains). Most of the microscopes are kept in heated cupboards at the back of the room. Lab equipment (specimen bottles, test tubes, flasks etc.) are kept in a smaller room adjoining the lab where most of the lab and oceanography instruments are stored (pH meters, balances, projectors).

DRAVUNI

The Dravuni Field Station has continued to serve its purpose. IMR training and activities related to the Marine Pollution Group Researchers and Astrolabe, Inc. have made use of the premises and the marine environment off Dravuni Island, during the past years.

The Apollo Sports Co. Ltd., Japan, donated US\$40,000 value of diving equipment to Astrolabe, Inc. and USP during 1990. Astrolabe Inc. have developed a Facilities Plan and Research Plan for the Dravuni Field Station, and a small Management Group has been formed and met in early October. It is expected that research activities at Dravuni will greatly increase during the coming year.

VEHICLES AND OTHER MOTORS

IMR operates an old Land Rover and a Toyota pick-up. The Land Rover is very expensive to maintain, but both vehicles are essential for day-to-day activities. The Land Rover will need replacing in the near future.

A 30 Horse power Suzuki outboard has been purchased recently from ICOD aid to support a similar size Mariner used only on the fibreglass punt.

LIBRARY

With the departure of Mr David Russell (NZ Aided position) as IMR Information Officer, the post remains unfilled. PIMRIS has provided support to the resource centre by helping to add references to the INFO database. Mr Sosefo Farapapau and Ms Louisa Finiasi of PIMRIS have also trained IMR Clerk/Typist, Ms Fulori Uluiburotu to input references into the INFO database. In 1990, over 100 references and 1 video have been added to the database. Work is continuing on updating the master file on all IMR reports collated so far.

The IMR library continue to provide information to PIMRIS on request and on new publications. Requests are continually being received for information on marine subjects from school teachers, students, members of the public and the press. There is an increased use of the library by USP students involved in BSc, ORMP, Public Health, and Post Graduate programmes. There have been requests from the University of Virginia to buy various IMR publications.

As part of the information dissemination activity, several displays were set up. These include a section for the Careers Expo at the Civic Centre (as part of the USP display) and a display in the USP library foyer.

In order to have more control over materials and to make them more readily available, publications will no longer be lent to non-IMR staff unless specific requests are made. Most of the articles are one-off and often hard to replace.

COOPERATION

I. Cooperation between the Fiji Fisheries Department and IMR. This has involved projects, help, vessels, and cooperation.

a) DTF students have visited various Fisheries Department including The Naduruloulou Research Station, Fisheries Department Headquarters, Boat building section, Data analysis section and the extension section. Different sectional heads gave a brief run down on their operations.

b) Selected DTF students spent 2 weeks at the Makogai research station to learn about giant clam culture and spawning.

c) As part of the DTF fisheries technology course, Fish Aggregating Devices (FADs) were deployed off the Suva Barrier Reef. This provided the Suva Fishermen with a close trolling area for skipjack and yellowfin tuna. The materials for the FAD was supplied by Fiji Fisheries and IMR provided the manpower and the deployment vessel.

d) 2 IMR staff are expected to participate informally in the Fiji fisheries Dept. Fish Census Project supported by ACIAR. This project is conducted as a research project for transfer of scientific skills to individual officers.

e) The Post Harvest Project of The Fiji Fisheries Dept was originally proposed as a joint Fiji fisheries, Ministry of Energy, Rabi Donker and IMR project. DTF students and staff have participated in some aspects of the project. Staff members have also been asked to evaluate the finished products.

II. SPC - IMR

a) The use of the IMR classrooms at Laucala Bay, the IMR vessels, and the Dravuni Field Station for the SPC/Nelson Polytechnic Pacific Island fisheries course.

b) Proposed Post Harvest Facility.

III. SOPAC - IMR

a) The Certificate in Earth Science and Marine Geology.

b) The meeting between SOPAC and IMR/INR to set up a network of information activity to keep each organisation aware of common matters of importance.

IV. FAO - IMR

a) Training Programmes

b) Trochus introduction into Samoa with L. Zann, IMR & Bob Gillett.

STAFF RESEARCH

Vina Ram

- The Seaweed Industry in Fiji
- Women's Role in Fisheries in the South Pacific.

Johnson Seeto

- Checklist of the Fishes of Fiji (previously with W. Baldwin of the Hawaii Institute of Marine Biology & B. Carlson, Director, Waikiki Aquarium, Honolulu, Hawaii).
- Biology of burrowing gobioid fishes (with W. Kenchington, SPAS, USP).
- Sponges and their compounds (with S. Ali, SPAS, USP).
- Identification of deep-sea invertebrates.
- Two new species of flashlight fishes (Anomalopidae).

Johnson Seeto & Vina Ram

- Study on social Ecology and Regional Planning for Lagoon Areas in the South Pacific. Third and final year of the programme with Kagoshima University -

1990 studies were conducted in Noumea, New Caledonia and in New Zealand, with a final session in Japan.

G Robin South

- Ecological survey of reef biota of the Republic of Nauru (with S. Yen, EVAAM, Papeete, Tahiti).
- Checklist of the benthic algae of Fiji (with Hitoshi Kasahara, Japan).

Veikila Vuki

- Mass Coral spawning on Fijian reefs (with S. Mildner, James Cook University, Australia & Fiu Manueli, IMR, USP).
- Shrinkage and Weight loss of Commercial holothurians (with F. Viala).
- Crown of thorns population and recruitment studies (with L. Zann).
- Reef surveys.



CONSULTING

Mr Fiu Manueli was involved in an Environmental Impact Assessment of the Bua Irrigation Rice Scheme, Vanua Levu as part of larger INR coordinated team. The consultancy was an E.I.A. and conducted over 1 week in January. The Drainage and Irrigation Board of M.P.I.

commissioned the study as part of a larger feasibility study.

Johnson Seeto of IMR continued to act as a consultant to the Philatelic Bureau, Post & Telecommunication Ltd on marine subjects for the issue of Fiji Stamps.

Mr Max Volau and Mr Ian Anderson of Mainland Marketing Pty requested an E.I.A. for the Marina project at Namoli Lautoka. This consultancy is expected to be completed in January next year.

Nautilus were supplied to Waikiki Aquarium via Bruce Carlson, the Director.

PUBLICATIONS AND REPORTS, 1990

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- GREEN, D.J., MORRISON, J., WATLING, D., WILLAT, S., RATUVA, S., NAQASIMA, M., MANUELI, F., VODONAIVALU, S., TUISAWAU, A. & LLOYD, C.R. Environmental Impact of the Bua Irrigation project. INR Technical Report. For Drainage & Industries, Fiji.
- KEATS, D.W., SOUTH, G.R. AND STEELE, D.H. 1990. The effect of an experimental reduction in grazing by Green Sea Urchins on a benthic macro-algal community in eastern Newfoundland. Mar. Ecol. Progr. Ser.
- RAM, V. 1990. Customary marine tenure and fisheries resources management in the Solomon Islands. Report, Joint USP Kagoshima Research Project.
- RAM, V. 1990. The Samoan village and marine resource use and management. Report, Joint USP-Kagoshima Research Project.
- SEETO, J. 1990. A brief report on an Eastern village, Fourda and a Western village, Kwariekwa from the North Malaita Asia, Solomon Islands. Report, Joint USP-Kagoshima Research Project.
- SOUTH, G.R. 1990. Occurrence of Wittrockiella paradoxa Wille (Chlorophyta, Cladophoraceae) in northeastern North America. Rhodera
- SOUTH, G.R. 1990.. University of the South Pacific, Marine Studies Programme 5-year plan. Interim Report, International Centre for Ocean Development, Halifax, Canada.
- SOUTH, G.R. 1990. Marine Resources Management Needs Assessment Meeting, Commonwealth of Learning, Vancouver, Canada, 17-19 September, 1990. Report of ICOD.
- SOUTH, G.R. and SEETO, J. 1990. Marine Resources Development at the University of the South Pacific, Suva, Fiji. Prospects for a Sub-Regional Headquarters, Pacific-Asia Marine Science Technology Network. PACON '90, Tokyo, Japan. July, 1990.
- SOUTH, G.R., and WHITTICK, A. 1990. Introduction to Phycology. [Russian Edition]. Mir Publishers, Moscow. 595 pp.
- TERI, J.M. 1990. Report on a research trip to Mana'abu Community, North Malaita, Solomon Islands, 16-18 July 1989. 17 pp., 3 figs.
- TITTLE, I., PATERSON, G.Z.J. LAMBSHEAD, P.J.D. & SOUTH, G.R. 1990. Algal provinces in the North Atlantic - do they exist? pp. 291-322. In Garbary, D.J. & South, G.R. (Eds.) Evolutionary Biogeography of the marine algae of the North Atlantic. NATO ASI Series Vol. G. 22. Springer - Verlag, Berlin.
- VUKI, V.C., MILDNER, S. & MANUELI, F. 1990 Mass Coral Spawning on Fijian reefs. IMR Technical Report.
- VUKI, V. & VIALA, F. 1990. Shrinkage and weight loss of nine commercial holothurian species from Fijian waters. IMR Technical Report.
- VUKI, V. & VIALA, F. 1990. A preliminary survey of Silana funging reef, Dawasamu, Tailevu, Fiji. IMR Technical Report.

FUNDING PROJECTS ON-GOING IN 1990

PROJECTS	TOTAL GRANT
	\$F
1. ICOD	
(i) IMR Program Review	13,225.00
(ii) Technical Support for Training Program	94,640.00
(iii) IMR Institutional Enhancement	127,400.00
(iv) Marine Studies Development Program	364,000.00
2. USAID	
Vessel Hawksbill	12,186.88
3. UNESCO	
Marine Education Workshop	12,070.01
4. FRANCE	
(i) Equipment	60,000.00
(ii) Hureau Support	5,426.38
5. JAPAN	
Seagrass Research Team	6,210.66
6. SPC	
SPC/IMR Fisheries Training Course	5,836.00
TOTAL	700,994.93

SUMMARY OF IMR VISITORS, 1990

Month	Names	Affiliation	Activity
February	K. McDonald	McDonald Cottages	EIA for hotel development
	K. Swain & B. Greenough	ICOD/CIDA	Assessment
	Mr. Kana	Wood & Jepson Consultants Ltd.	1985 Valuni Islands EIA
	E. Lovell		Underwater Photography
	B.N. de Reyes	FAO/Thailand	Aquaculture Integrated Farm Systems in Fiji
	K. Mutton	Fiji Hatcheries Association Ltd.	Information on dolphins
March	C. Campbell	Marine Institute St. John's, Canada	Familiarization
	Simione Meara	Vanuatu Fisheries Training Officer	Information on Vanuatu deep sea fisheries
	Eiichi Hayashi	Nippon Suisan Kaisha Ltd., Japan. WTR Environmental Consultants (Australia)	Information on Fanga'uta Lagoon, Tonga.
	B. Kirkbride	Teacher, Naitauba Island	Information on Marine Science curriculum.
	J. Goodman	Fiji Dept. Energy	IMR-Fiji Fisheries Dept. Fish Smoking project
	J. Salita	Secretary for Education Solomon Islands	Information on DTF
	Mr. Kenz	Naitauba Island	Wave surges during Cyclone Rae.

Month	Names	Affiliation	Activity
April	R. Uwate	US-AID	Fisheries Development Proposals
	A. Laore	Minister of Education Solomon Islands	IMR Relocation
		Naitauba Island, Physician	Information on jellyfish stings
	S. Moutia	ISAS, USP	Information on <u>Trochus</u> and Green snail
	C. Tisdell & B. Thomas	Queensland University, Dept. Economics	Research Cooperation, Giant Clam project
May	G. Skoutarides	Triple F Corporation Fiji.	Fishing Industry in Fiji
	J.P. Kieran	Advanced Maritime Technologies (AdMaTec), Tasmania.	Vessels & Maritime Affairs
	A. Wright	FFA, Honiara	Cooperation
	R. Kitching	University of New England, Armidale, Australia.	Programme Review
	P. Flewwelling	ICOD/CIDA, Canada	C-SPODP Review
	M. Beaudry-Somcynsky	"	"
	W. Young	"	"
	G. LeBlanc	"	"
	M. Pickett		
June	B. Carlson	Director, Wailiki Aquarium, Honolulu, Hawaii	Collection of <u>Nautilus</u>
	R. Zingmark	Baruch Institute, University South Carolina, USA.	Collaboration of Astrolabe Lagoon project
	J. Moon	USIS, American Embassy, Suva	Support, R. Zingmark
	G. Power	University of Waterloo, Canada	Artisanal Fisheries & Aquaculture

Month	Names	Affiliation	Activity
June (cont.)	M. Chambers	EEC Consultant	Assessment
	J. Swan	Oceans Institute of Canada	Cooperation, ORMP
	D. Vander Zwaag	Marine Affairs Program, Dalhousie University, Halifax, Canada	Cooperation, ORMP
	D. Day	Marine Affairs Program, Dalhousie University, Halifax, Canada	Cooperation, ORMP
July	J.C. Caries	LESE, Papeete, Tahiti	Research <u>Trochus</u>
	S. Mario	Fisheries Division, Fiji	Seaweed aquaculture
	J. Prakash	Fisheries Division, Fiji	Seaweed aquaculture
	H. Tanaka	FAO S. Pacific Aquaculture Development Project, Suva	Project Development
	G. Preston	SPC, Noumea, New Caledonia	Project Development
	M. Furuyawa	Sasakawa Peace Foundation, Tokyo, Japan	Aquaculture project development
	S. Nand Lal	Naduruloulou Fisheries Nausori, Fiji	<u>Tilapia</u> project
	B. Tikomainiusiladi	Fiji Fisheries	Fish Smoking project
	L. Halfyard	Marine Institute, St. John's, Canada.	Aquaculture
August	J. Koven	Astrolabe, Inc., Washington DC	Field work at Dravuni Island
	W.J. Magruder	" "	" " "
	R. Nakojima	Brown University, Providence RI, USA	Research on fisheries in Fiji
	C. Allen	WHO, Suva	Supporting R. Nakojima
	R. Clarke	NMFS, Honolulu, Hawaii	Familiarization

Month	Names	Affiliation	Activity
August (cont.)	S. Tuilaucala	Fisheries Division, Fiji	Discussion of DTF review
	B. Skaarup	University Copenhagen Denmark	Marine Turtles, prospects for research.
	T. Collier	Cousteau Society	Savuvu Course
	E. Villouta	Universidad Austral de Chile, Valdivia, Chile	Prospects for graduate work in phycology.
	B. McMahon	Queensland University of Technology, Brisbane, Australia	Familiarization
	B. Holden	SOPAC, Suva.	Collaboration with coastal group
	W. Collins	SOPAC, Suva	" " "
	R. Gillie	SOPAC, Suva	" " "
September	N. Poulton	Purdue University/Astrolabe Inc., USA.	Astrolabe, Inc. meetings
	J.F. Koven	Astrolabe, Inc., USA	" " "
	G.E. Hesseman	University Wisconsin, USA	Familiarization
	F.X. Pelletier	French Television	TV Programme
	P. Walsh	INR/USP	Familiarization
	L. Zann	FAO, Western Samoa Fisheries Division	<u>Trochus</u> research
	S. Zann	AIDAB, Western Samoa	" "
	P. Knudsen	Dept. Marine Wildlife Res., American Samoa	
October	J. Kohlmeyer	University of N. Carolina, Institute of Marine Sciences, USA	Marine Fungi
	B. Kohlmeyer	" " "	" "
	R. Gillie	SOPAC, Suva	Information on Kiribati

Month	Names	Affiliation	Activity
October (cont.)	S. Ismail	Kuala Lumpur, Malaysia	Familiarization
	R.H. Cook	Director, Biological Station, St. Andrews, Canada	Familiarization
November	M. Capra	Queensland University of Technology, Brisbane, Australia	Ciguatera project
	D.J. Brinn	La Jolla, California, USA	Peregrine fund
	R.M. Brinn	La Jolla, California, USA	Peregrine fund
	N. Taylor	IOE/USP	Public Education project development
	I. Goudie	Canadian Wildlife Service, St. John's, Canada	Familiarization
	T. Daniel	Natural Energy Lab., Honolulu, Hawaii	Prospects for collaboration
	M.T. Cruickshank	Marine Minerals Tech. Center, Honolulu, Hawaii.	" "
	M. Takayanagi	Toshiba Corporation, Japan	OTECA project
	T. Yasue	NKK Corporation, Japan	OTECA project
	S. Kurihara	Tokyo Electric Power Sciences Co. Ltd	OTECA project
	M. Inui	Suidosha Co., Ltd Japan	OTECA project
	T. Sugihara	Tokyo Electric Power Company, Japan	OTECA project
	Lu Eldredge	Bernice P. Bishop Museum Honolulu, US	Collaboration
	D. Hudak	University of Toronto, Canada	Tropical rain project
	S. Chape	Environment Unit, Dept. Town & Country Planning, Suva.	EIA - Lautoka
P. Watkinson	" " "	" "	

Month	Names	Affiliation	Activity
November (cont.)	Tony Anderson	Mainland Marketing Co. Fiji.	" "
December	S. Roberts	SPC, Noumea, New Caledonia	Post-Harvest Fisheries Facility
	B. Smith	" "	" " " "
	Teeakabu Tikai	Kiribati Dept. Fisheries	" " " "
	T. Adams	Director, Fiji Fisheries	Post-Harvest Fisheries Facility
	P. Collotte	Remote Sensing Specialist, Authevernes, France	SPC Remote Sensing Survey
	J.C. de Meyere	Dept. Land Resource Surveys & Rural Development, Enschede, The Netherlands.	SPC Remote Sensing Survey
January - December	A. Robertson	SPC, Suva	Cooperation
	R. Howorth	SOPAC, Suva	Cooperation/Teaching