UNIVERSITY OF PAPUA NEW GUINEA AND ITS CAPABILITIES IN FISHERIES TRAINING AND EDUCATION

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1. INTRODUCTION

Papua New Guinea has jurisdiction over a very large Declared Fishing Zone (DFZ) measuring 2.3 million square kilometers (Copes, 1990). Many Tropical waters are generally low in biological productivity, however, the Papua New Guinean DFZ is moderately productive. This productivity is attributed to the freshwater run-off inshore and the nutrient-rich upwellings offshore (Copes, 1990).

Papua New Guinea's marine fisheries resources has been under-utilized. Its overall domestic fish catch probably does not exceed 20,000 metric tonnes per year while foreign fleets operating in the offshore waters of the DFZ are taking between 50,000 and 100,000 metric tonnes of tuna (UNDP, 1989 - cited in Copes, 1990). This implies that the inshore fisheries resources are heavily under-ulilized and need development.

The fisheries sector in Papua New Guinea is divided into three sectors:

(i) the subsistence sector;
(ii) the artisanal sector;
(iii) the industrial sector

In order to develop these fisheries sectors it is necessary for sufficient financial input into the various activities associated with the fishing industry (fishing, processing, marketing and management) as well as the training of qualified manpower to execute these activities. The latter requires relevant formal and semi-formal training; institutions engaged in this training must have qualified staff and the necessary facilities.

2. FISHERIES TRAINING IN PAPUA NEW GUINEA

Formal training programmes and curricula for personnel to be employed for different activities in the fishing industry require different entry requirements and level of training. For example, fishermen should be sufficiently trained in aspects of using and maintaining different fishing gears and also know which species are best caught by what gear(s). On the other hand, the fisheries biologist must have the necessary skills and training to understand the population dynamics of any species in a fishery and also be able to advice relevant authorities to draw up resource development and management policies. It is apparent from the above examples that personnel engaged in the above two activities will need different specialist training. However, their relative importance to the fishing industry may not differ very much at all.

Fisheries training in Papua New Guinea, at present, is offered in two institutions. The Certificate in Tropical Fisheries programme is offered at the National Fisheries College (NFC) located in Kavieng, New Ireland Province. Established in 1977, the NFC offers a two year programme which is more practically oriented and teach subjects in broad areas such as fishing gear and methods, navigation and seamanship (Matsuoka, 1988). The entry requirement is grade 10 (fourth form) qualificaiton from high school. Training for the professional fisheries biologist is offered at the Biology Department, Faculty of Science, University of Papua New Guinea (UPNG). This is a four-year programme leading to a Bachelor of Science with major in Fisheries. The entry requirement is matriculation (sixth form) from National High School. The curriculum is largely geared towards providing a firm grounding in general biological sciences in the first two years with courses in the third and fourth years aimed more at marine biology and fisheries-related subjects. Those are subjects that treat the marine and freshwater environments in more detail as well as covering the biology and ecology of organisms that inhabit these environments. My paper will concentrate on the fisheries training offered at UPNG and UPNG's capabilities in teaching and research in this discipline.

3. FISHERIES TRAINING AT UPNG

3.1 Background: UPNG has three campuses: the Faculty of Medicine is located at the Taurama Campus near the Port Moresby General Hospital, National Capital District; the Faculties of Arts, Science, Education, Law and Creative Arts are located at the main campus at Waigani, also in the National Capital District; the Goroka Teachers' College campus offering the Diploma in Secondary Teaching is located at Goroka, in the Eastern Highlands Province of the central highlands of Papua New Guinea. Besides the three campuses, the University also has University Centres in most of the country's twenty provinces. These centres offer extension study and distant education programmes.

3.2 Bachelor of Science (Fisheries Major): The Bachelor of Science (B.Sc) programme, with major in Fisheries is offered by the Biology Department of the Faculty of Science at the main campus at Waigani, National Capital District. Much of the faculty's teaching is academically oriented and covers the traditional pure science disciplines of Mathematics, Physcis, Chemistry, Biology and Geology. In any of these disciplines the normal load of each semester is four courses.

As such, the B.Sc (Fisheries Major) has a curriculum that is largely academically oriented and has the first year (Foundation Year) designed to give a broad exposure to all the major science disciplines listed above, except Geology which is introduced in the second year. In the second year students intending to major in the B.Sc (Fisheries Major) stream into Biology and also take electives from other relevant science disciplines to make up their required load (four courses) for each semester. In the third and fourth years they become more specific about what courses they take; this is largely guided by the departmental course advisers, heads of departments or course co-ordinators.

The following are the courses currently offered by the Biology Department as listed in the 1992 Course Handbook. Courses not recommended for the B.Sc (Fisheries Major) are asterisked (*).

	Semester 1	Semester 2
Year 1	01.001 Foundation Yr. Biol.	01.001 Foundation Yr. Biol.
2	01.126 Quantitative Genetics	01.127 Evolution & Ecology
		02.238 Intro. to Aquatic Science
3	01.248 Cell Biology	01.244 Animal Physiology
	01.255 Plant Biology *	01.249 Microbiology
	01.256 Chordate Biology	01.254 Plant Systematics*
	01.257 Invertebrate Biology	01.261 Plant Form & Function*
	01.270 Capture Fisheries	01.271 Culture Fisheries
4	01.252 Biometry	01.241 Popul. & Quant. Ecol.
	01.262 Applied Microbiol.	01.247 Special Topics (Project)
	01.264 Tropical Taxonomy	01.250 Terrestrial Ecosystems*
	01.266 Marine Ecology	01.265 Entomology*
	01.272 Limnol. & Phys. Oceanogr.	01.273 Sea Food Technology*
	01.270 Fisheries Management	01.275 Fisheries Economics
	01.300 Selected Topics	01.300 Selected Topics

Note: Because four courses is the maximum load per semester, students make their selections by consulting advicers.

The B.Sc (Fisheries Major) programme is designed with reference to the particular needs of the country as well as the Pacific region as a whole. These needs encompass economic self-reliance, human nutrition and the need to understand the broader issues relating to the understanding of the marine and aquatic environments and the rich natural resources they contain. According to Hill (1989) the programme places emphasis on four major streams of study:

(i) capture fisheries - fishing and gear technology;

(ii) culture fisheries - aquaculture of fish, shellfish and marine and freshwater plants;

(iii) fish processing technology - post-harvest utilization of fish shellfish and fishery products;

(iv) aquatic resource management - assessment, management and conservation of aquatic resources.

This is also apparent from the list of courses offered by Biology Department and those courses relevant for the B.Sc. (Fisheries Major) programme indicated above.

3.3 Entry requirements: Entry into the programme is open to Papua New Guinea citizens as well overseas students from other Pacific Islands and elsewhere. Requirements for entry is matriculation with good grade averages (C grade or better) or only in very special circumstances, provisional admission is granted. Students who are provisionally admitted are required to pass courses at D grade or better in the first two semesters at the University, totalling 12 points.

3.4 Course and other fees: The course fee for Papua New Guinean nationals is:

Full-time - K150 per semester;
Part-time - K 75 per semester for one subject or
K150 for two or more subjects.

Rates for South Pacific & residential overseas students are:

Full-time - K1000

Other fees include:

Damage deposit - K30 (all students);
Board & lodging - K638 (all residential students);
SRC - K6 (all students).

Therefore, the total amounts paid by full time residential students in both categories are: Nationals (K824) and South Pacific Islands students and other expatriate students (K1674), respectively.

4. FISHERIES RESEARCH AND CONSULTANCY AT UPNG

4.1. Background: Research is a very essential activity within the Biology Department as well as the Faculty. It is vital because research keeps staff members active in their specialist fields by keeping them tuned to current developments in the subject as well as enabling them to contribute new ideas to the wider research community. The success and achievements of this often enhances and supplements courses with up-to-date information and concepts.

4.2. Research facilities: Integral to any research activity is both the research expertise and the availability of suitable facilities to carry out the research. The following is a list of some of the major facilities currently available to Biology and Fisheries staff, as noted from the 1988 Science Faculty Research Report:

(i) UPNG library - A very important facility for any research is a library. UPNG has one of the best libraries in the South Pacific. It contains 400,000 volumes and about 2,500 current journals. Nearly all of the major international journals on fisheries and marine biology are subscribed to;

(ii) Natural Science Resource Centre (NSRC) - The NSRC houses the Biology Department's botanical and zoological collections. The zoological collection comprises all the major vertebrate and invertebrate groups. A good collection of reference material for different local and regional fish species is included; they serve a great deal in teaching and research;

(iii) Science Workshop - The science workshop is an engineering workshop attached to the Science Faculty. It has machinery and personnel fully capable of assisting in design and production of specialized research equipment;

(iv) Computing - UPNG has the most sophisticated mainframe (PRIME) computer in the country. There is still a need for increasing the amount of core memory and the number of terminals, however, it is fully capable of meeting computing needs of research undertaken in the Faculty. Biology as well as many other UPNG departments have a good number of P.Cs for word processing requirements.

(v) Motupore Island Research Department (MIRD) - MIRD is a research department that has facilities largely suitable for research in marine biology subjects. It is a 19 ha island (Motupore Island) research facility with a shore base on the mainland (Tahira) that has a jetty and mooring and loading facilities. MIRD has 6 fibreglass boats, 1 small research vessel and wet and dry laboratory facilities. Scuba and snorkeling gear is also available. Accommodation facilities on the island to cater for visiting researchers as well as UPNG

students undertaking field courses on the island comprise of two large hostel buildings. Many interesting marine habitats are easily accessible from the island;

(vi) Publication - Science in New Guinea is a local journal produced by the Faculty. It serves well as a medium for the dissemination of research findings to the wider research community.

4.3. Research and consultancy: The research and consultancy expertise of the fisheries and marine biology staff include: community ecology, reproductive biology and ecology of marine and freshwater fishes; impact assessment of pollutants and environmental degradation on fish and other aquatic organisms; coral reef biology; marine ecology; aquaculture; fishing gear development and testing; seafood processing methods. Consultancy services are largely offered to Government departments and the private sector.

5. SUMMARY

Papua New Guinea's fisheries sector is still under-developed. This calls for the development of suitable training programmes to provide the necessary specialist manpower to engage in the various fisheries activities. Training offered by the Biology Department in the Faculty of Science of the University of Papua New Guinea is one such programme. It has the necessary staff and facilities to offer the required training towards a Bachelor of Science degree with major in Fisheries. The manpower needs of the fisheries sector are both technologically and academically oriented. Hence it must be appreciated that no one training programme can fulfil all the labour requirements of the fisheries sector.

REFERENCES

COPES, P. (1990). Fisheries Policy and Fisheries Development in Papua New Guinea. Institute of National Affairs, Port Moresby. 57pp.

HILL, L. (1989). Information note to the Second Technical Meeting, Forum Fisheries Committee, Majuro, Republic of Marshall Islands, 26-28 April, 1989.

MATSUOKA, T. (1988). Present status and problems of fisheries education in Papua New Guinea. Department of Fisheries Report, University of Papua New Guinea.

University of Papua New Guinea, Science Faculty Handbook, 1992.

University of Papua New Guinea, Science Faculty Research Report, 1988.