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Training in Marine Resources Management in the South Pacific : Role of the University of the South Pacific's Ocean Resources Management Programme

Joeli Veitayaki
Ocean Resources Management Programme
University of the South Pacific
Suva, Fiji

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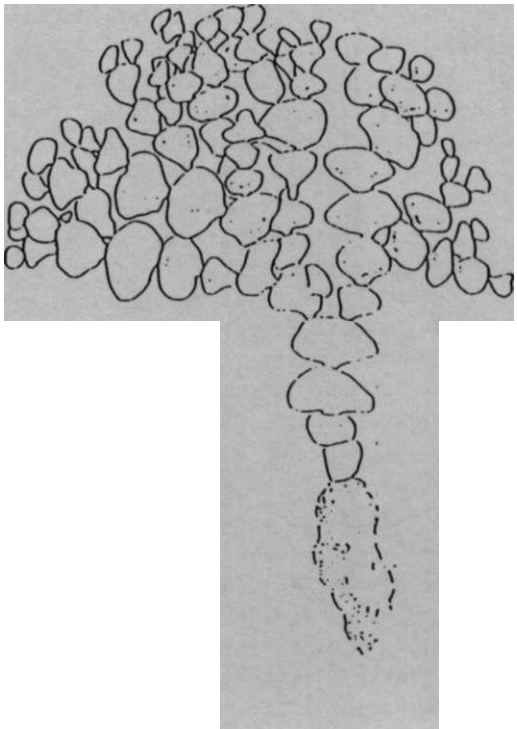

Training in Marine Resources Management in the South Pacific: Role of the University of the South Pacific's Ocean Resources Management Programme.[1,2]

by

Joeli Veitayaki
Ocean Resources Management Programme
University of the South Pacific
Suva
FIJI

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CONTENTS

Training in Marine Resources Management in the South Pacific: Role of the University of the South Pacific's Ocean Resources Management Programme.

Joeli Veitayaki

Training in marine resources management is critical to the future development of maritime areas in the South Pacific. Training programmes which enable better understanding and use of marine resources, is required to allow appropriate management of ocean resources. This will be a major challenge because the nature of ocean resources is still fairly unknown and requires high technology and investment which is beyond the capability of many nations. This situation is serious in the Pacific due to the large resources that is under the sovereignty and sovereign rights of these small developing nations most of which are bound to lose out on the exploitation of these resources unless they are provided appropriate training. In addition, training entitlement, is expensive and is accounting for huge portions of national budgets because of the high costs involved. The Secretary General of the UN, in addressing this issue, noted that what was needed most to address the problem was closer cooperation and coordination among States and international organisations to promote and facilitate research, the dissemination of knowledge, information and data, and the development of the human resources required by the States (United Nation 1990-A/45/563).

The nature of marine resources demand cooperation at various levels and require a basic minimum level of common understanding. Ideally, we would have on a global basis, starting from the local and national levels, consistent stewardship policies in which the uses of ocean resources clearly address their diverse and complex interrelationships. This, unfortunately, cannot be further from reality. Nations are rich or poor, industrially advanced or backward and are scrambling for the resources from the oceans. Contradictions and conflicts are common resulting ultimately in the degradation of the resource base. Illustrating the outcome with the fisheries sector, the UN Secretary General explains how the state of world marine fisheries are now characterised by qualitative decreases in catches of the most valuable species, lesser quality as catches transfer to less valuable species, excessive costs from over-investments in boats and gear, low income for fishers, conflict among small-scale and large-scale fisheries, and change in the geography of fisheries (United Nations 1991-A/46/724:26)[3].

Training programmes should enable Pacific Islanders to understand the constraints on effective ocean resources management. First, is the unknown qualities of hidden resources for which estimations are being used to draw conclusions. Although well based, given our restricted position, such estimates may be unreliable and may affect us dearly in years to come. Ocean resources management is difficult because of the common property nature of the resources combined with human selfish nature. The resources of the sea are available to everyone and the thought that what is managed may not be there for those people that

3 Report of the Secretary General on Developments Relating to the United Nations Convention on th

saved them is a challenge that must be convincingly addressed. Ocean resources management is also difficult in that it would require people to willingly abide by the rules and regulations to reduce efficiency and productivity and increase costs and inconvenience to ensure sustenance of the resource base. Training in ocean resources development is needed to facilitate the incorporation of the policy objectives and national and international priorities for ocean development with national and international policies for food, energy, raw materials, industrial expansion, technological advancement, human resource development and environmental matters (United Nations 1991-A/46/722:9).[4]

The nations in the South Pacific, in an attempt to attain maximum benefit from the Law of the Sea Convention, are cooperating in their effort to adopt a consistently intricate system of ocean resource use. Given their small, isolated and economically vulnerable positions, these nations decided long ago to have organisations that will represent and address their interest in a collective manner. Through these organisations, these nations also hope to benefit from the international training organisations that the Convention encourages them to work with. For instance, the establishment and operation of the World Maritime University in Sweden, the International Maritime Academy in Italy and the International Ocean Institute worldwide, is hoped will greatly enhance the advancement of education in the maritime field in the region (United Nations, 1991-A/46/722:45).

This paper discusses the importance of training in marine resources use in the South Pacific and the role of the University of the South Pacific's Ocean Resource Management Programme (ORMP). The discussion starts with an overview of the region and a brief review of the training provisions in the Convention. It then addresses existing training needs and ends with an analysis of the programme. The objective in this exercise is to illustrate the reasons why collective work is vital in an area as important as training, in a predominately developing region where only cooperative work can provide the desired instant results.

THE SOUTH PACIFIC REGION - AN OVERVIEW

The South Pacific, bordered by Papua New Guinea to the west, the Marianas and Guam to the north west, the Marshall islands to the north, French Polynesia to the south east and New Caledonia and Tonga to the south, is a unique and diverse region. The region covers 12 per cent of surface of the globe and is home to less than 0.1 of a per cent of the world's population, who are charged with its management. The world of Pacific Islanders is dominated by the sea which has a ratio of 100:1 over land, 80 per cent of which is in a single country (Fig. I)[5]. The nations, some of which lie to the north of the equator, are all striving for economic development and self-determination.

[4] Report of the Secretary General on the Realisation of Benefits Under the United Nations Convention on the law of the Sea: Measures Undertaken in Response to the Needs of States in Regard to Development and Management of Ocean resources, and Approaches for Further Action.

[5] In the Appendix.

The Pacific nations are common in their traditional history, their smallness, and their setting within the vast stretches of Pacific ocean. They, however, differ in size, physical nature, resource endowment, social and cultural features. The western Pacific nations such as Papua New Guinea (PNG) and the other island states of Melanesia are older, larger and richer in agricultural lands and mineral resources. In the islands of Micronesia to the north and Polynesia to the east, are found smaller, lower islands and atoll chains. Resources are generally poor. In most of the islands, water is a major resource of life-limiting capability. The small size of islands is a constraint on development. For some, such as Tuvalu, Kiribati, Tokelau and the Marshall Islands, the islands are so low that any rise in sea level is expected to cause extensive inundation.

All the countries in the Pacific today exhibit evidence of socio-economic activities that have been conducted in them. Indeed, the export of beche-der-mer, timber, plantation products, and minerals and the alteration of the physical surrounding have caused serious environmental problems that are now necessitating the need to organise sustainable development which effectively limits development options. There are evidences in the Pacific to show the serious environmental consequences of inappropriate development which have made Pacific Island communities and their leaders more aware of the inextricable link between environmental management and economic development.

The previously isolated, subsistence and independent communities in the Pacific were first integrated as part of the global system with the arrival of the European explorers after 1521. Socio-economic changes including village sites, food intake, diseases, plantations, urban settlements, education and the use of money took place through time, culminating in the attainment of political independence beginning in the region in the 1960s (Connell 1988:256). Through colonisation, which resulted in the subdivision of the region by the world powers such as Great Britain, Australia, New Zealand, France and the United States, the Pacific countries provided the sources of raw materials for the industries and the markets for processed goods. Through time, Pacific nations slowly became integrated into the world system which subsequently resulted in the formation of a single Australia and New Zealand dominated regional economy (Hau'ofa, 1987).

The 22 Pacific Island nations, territories and dependencies are currently at varying stages of development and are doing their utmost, using all their available means, in a continuing effort to achieve respectable levels of economic self-reliance and determination (Fairbairn 1985). The progress, however, has been inevitably slow and excruciating; the result of their many disadvantageous. Political independence, which has resulted in the breakdown of colonial empires and stirred the emergence of small independent states, has not resulted in economic self-reliance and determination.

The nations of the south Pacific are remote in terms of their location within the world's economic system. They are on the periphery; isolated from the major core nations of Japan, Europe and North America which are the main markets for exported goods and the main suppliers of imported products. PNG is 14,469 km away from Britain while Guam is 16,000 km away from USA, Suva is 7,231 km away from Japan and Vanuatu is 16,739 km away from France. The Pacific Islands, thus, are remote in the remotest part of the world.

Within the Pacific, the countries are far from each other and are separated by vast stretches of ocean. Fiji is 2,244 km away from Kiribati and 3,505 km from PNG which is 4,224 km from Tonga. The Cook Islands is 3,657 km from Vanuatu while Western Samoa is 3,320 km from New Zealand. The extreme case of remoteness is experienced in Kiribati where travel visas are required by people travelling from Tarawa to Christmas Island because they need to go through Fiji or the Marshalls to Honolulu and then to the Line Islands. Time and distances cost money and this situations illustrate the grave difficulties that have to be overcome by these island nations trying to achieve economic development within the periphery.

Remoteness is also a notable disadvantage because of the high cost of transporting locally produced goods to distant markets (Wace 1980:87). The problem is serious because the production level is not big enough to bear on the pricing system. Furthermore, the local situation is such that all of the nations rely on overseas markets. The problem is worse because the goods from and for the smaller nations such as Tuvalu, Kiribati, Tokelau, Tonga and Western Samoa are transhipped through the main ports such as Suva in Fiji and Port Moresby in PNG. In addition, the supply and demand for shipment from these nations are too low to allow economically viable regular shipping services within and between them. Containerisation and bulk carriers have actually hampered export from small Pacific nations which do not have the volume of trade that justifies the investment and the re-organisation necessary (Connell 1988:4). The Pacific Forum Line services these routes only because of the heavy subsidy by Australia, New Zealand and the European Economic Community.

A small country has a small economy, and we have a lot of that in the Pacific region. The biggest countries PNG, Solomon Islands, New Caledonia and Fiji have areas 462,243; 27,556; 19,103; and 18,272 sq km respectively while the smallest ones include Pitcairn (5 sq km), Tokelau (10 sq km), Nauru (21 sq km) and Tuvalu (26 sq km). The supply of goods and services in such states is so limited that it is insignificant in the world market. In addition, the restricted nature of natural resources in the small countries render them vulnerable to changes in taste, technology and competition from larger and more efficient competitors (Benedict 1967:32).

The size and quality of the local labour resource is important to the country's economic development because it influences the investment decisions and options taken by a particular country. Imagine for instance, the difference in labour resources between PNG, with an estimated population of 3.75 million people in 1990 and Pitcairn Island with 52 residents during the same period. The situation is worsened still by the percentage of this population who are not part of the formal sector because they are too young or too old, still residing in traditional semi-subsistence settlements or are illiterate or simply unskilled and cannot be part of the labour market. Although manufacturing is cheaper initially, it is often hindered by poor quality production and escalating costs as the labour demand better conditions. The labour resource in Pacific islands is also continually impoverished by the departure of the best trained labour. Through time, the trained manpower become part of the global system of labour exchange and eventually are lost to the metropolitan systems where they are better supported and accommodated.

The dependence by Pacific states on few commodities for export has been predetermined because of their colonial history. The situation is now forcibly enforced by the protectionist laws of trade practised by the nations of the world and trading blocks such as the European Economic Community. To sell a product in a new market, a nation has to displace other producers in the world market arena and to do so despite the possible existence of preferential and protectionist policies of the other producers (UNCTAD 1985:135). This is a major difficulty in the Pacific because they export the same commodities of sugar, root crops, copra, frozen fish, timber and logs, gold and palm oil and thus compete at the world markets. Furthermore, as small producers, they can not influence world market trends but are sensitive to fluctuations of the world economy (Benedict 1967:2).

Small nations cannot push specialisation as far as is economically advantageous for fear that tariffs or other changes elsewhere within the world system may deprive them of their markets. The problem is compounded in the Pacific region by their similar historical experience and presently identical motives. Imagine American Samoa if the fish canneries close down or Fiji if the garment factories collapse. Both cases show how specialisation has resulted in serious vulnerability.

The significance of ocean resources to Pacific islands should be considered within this background. Put simply, it is within the oceans that the main hope of Pacific States lie. Pacific Islanders however, need to be trained to manage their ocean resources in a manner that will allow maximum sustainable benefit to them. Unless this is done, the countries of the Pacific would not be fully aware of their rights and responsibilities under the Law of the Sea and consequently would lose a lot of the potential benefit they expected of their greatest resource base.

UNCLOS III

The United Nations Convention on the Law of the Sea emphasises the need for States to cooperate to promote the development and transfer of marine science and marine technology on a fair and equitable basis. States, therefore, are obliged to promote programmes of scientific, educational and technical assistance to developing nations in relation to the protection, preservation and the management of the marine environments. Specific reference is made to the training of scientific personnel and the development of facilities for research, monitoring and educational programmes. Article 62 (4)j highlights the requirements for the training of personnel and the transfer of fishers technology, including enhancement of the coastal States capability of undertaking fisheries research. Fisheries research should also allow for the participation of coastal States. Furthermore, there shall be cooperation amongst States on conducting scientific research in enclosed and semi-enclosed areas (Article 123 (c). Article 202 (a) specifies how nations shall promote programmes of scientific, educational, technical and other assistance to developing countries for the protection and preservation of the marine environment and the prevention, reduction and control of marine pollution.

Article 248 outlines how the coastal State should be provided information prior to the conducting of research in its EEZ and continental shelf. Information on proposed programmes, objectives and knowledge relating to marine scientific research should be

made available through publications and appropriate dissemination channels (Article 244). Furthermore, States individually and collectively should promote the flow of scientific data and information, transfer of technology to developing countries, strengthen the marine research capability and provide education and training of technical and scientific personnel. States and international organisations undertaking research in the exclusive economic zone or the continental shelf of coastal State must on request from the host State provide an assessment of the data, samples and research results or provide assistance in their assessment or interpretation (Article 249, para. 1 (d).

The development and transfer of marine science and technology are addressed under the sections on resource conservation and development, ocean research and the protection and preservation of the marine environment. Article 266, for instance, highlights the necessity and importance of cooperation to ensure the social and economic development of nations through the development of ocean resources. Article 268 places emphasis on the acquisition, evaluation and dissemination of marine technological knowledge and facilitating access to such information and data. Furthermore, it covers the development through training and education of human resources in developing countries through regional and international cooperation. In addition States are encouraged to expand on existing arrangements and implement new programmes that will facilitate marine scientific research, the transfer of marine technology and appropriate international funding for ocean resources research and development (Article 270).

Part XIV of the Convention emphasises the development and transfer of marine technology. In the Area, States are required to promote international cooperation in marine scientific research and ensure that programmes are developed for the benefit of developing nations with a view to strengthening their research capabilities (Article 143). This opportunity should be taken seriously by developing nations particularly when the Preparatory Commission has specified that training be part of the development of offshore marine resources. The time span it takes before commercial exploitation is conducted would be beneficial in allowing developing nations to improve their research and technological capability through appropriate training. Article 274 (c) outlines as one of the objectives of the International Seabed Authority the involvement of nationals of developing States in the training process as part of the development of the Area. The objectives and ways and means of cooperation are specifically outlined in Articles 268, 270 and 278 while Articles 275, 276 and 277 have provisions for the establishment of national and regional centres and their specific functions. In Articles 275 and 276, States are required to promote the establishment preferably in developing countries, of national and regional marine scientific and technological research centres and the strengthening of existing ones.

To enhance the preferred training process, the Convention encourages cooperation and provides for funding through notable international organisations such as the Food and Agriculture Organisation (FAO), United Nations Environment Programme (UNEP), United Nations Conference on Trade and Development (UNCTAD), United Nations Development Programme (UNDP), International Labour Organisation (ILO), International Maritime Organisation, Intergovernmental Ocean Commission (IOC) and the Global Environment Facility (GEF).

Resource Potential

Ocean resources include non-living and living resources as well as the many uses of the sea. Apart from ocean mining and fishing, other resources of the sea include the harnessing of energy and the generation of power from waves and thermal sources, the development of suitable shipping and port services, and the exploitation and promotion of marine resources for tourism purposes. Given this broad definition, it is obvious that marine resources would be very important and yet highly varied throughout the Pacific. Nations, thus, will need to identify their main resources and the best way of developing them.

The sea is a source of almost limitless amount of all the minerals and metals. One cubic mile of sea water, and there are 324 million cubic miles of sea water in the world's ocean, is estimated to contain 125 million tons of sodium chloride, 6.5 million tons of magnesium, 300,000 tons of bromine, 38,000 tons of strontium, 280 tons of iodine, 14 tons of arsenic acid, one ton of silver, 0.02 tons of gold, and 14 tons of uranium. The red clay covering 50 per cent of the Pacific Ocean floor and 25 per cent of the Atlantic and Indian Oceans is believed to contain 920 trillion tons of aluminium, 650 trillion tons of iron, 73 trillion tons of titanium and more than 1.5 million of vanadium, cobalt, nickel, copper lead and ziroconum. It must however, be remembered that in an environment where so little is known, and where technology is elementary, it is difficult to give any long-range and accurate prediction (Anand 1976).

Ocean mineral resources are associated with the greatest economic importance. The most common minerals are sand and gravel for construction and phosphorite for fertilizers. These are found in near-shore areas and may be used without processing. Phosphate prospects is best in the Lau ridge south of Fiji. Placer minerals which are still to be fully explored, are important in areas where large hinterlands are present and heavy minerals have been disseminated through the rocks and which because of erosion over time, free the heavy metals for concentration by the wave and current energy. Corrallium and black coral are found in the south west Pacific and offer a possible source of income while garnets and shells and reef detritus are present in Malaita, Solomon Islands and may be developed in the future.

Offshore manganese nodules is richest between the Hawaiian Islands and Baja California within the Clarion-Clipperton fracture zone (Johnson 1988). This area which covers 4 million sq km and contains extensive nodule deposits is where all pioneering activities will take place when submarine mineral exploitation begins. Rich deposits are also found in the Cook Islands and Kiribati. Since 1980, crusts and sulphides instead of nodules have become the mineral resources of scientific and commercial significance. The highest grade crust are anticipated to occur between 15 deg. S and 20 deg. N in the Pacific Basin with the best deposits in the Exclusive Economic Zones of one or more Pacific States. This includes the richest deposits discovered so far south of Johnson Island. Sulphide deposits found near ocean floor spreading centres, volcanic seamount and back arc basins are still being explored. An estimated 4.5 million tons of chromite is found south of Lae in PNG. Magnitites are found in south eastern PNG and Fiji and may become exploitable if resources elsewhere are exhausted.

Polymetallic sulphides with major components of iron, copper and zinc are abundant in the Lau Basin, the North Fiji Basin, Woodlark Basin in the Solomon Islands and PNG and the Manus Basin in PNG. Gold is found in the northern part of Guadalcanal in Solomon Islands. Further exploration is being done on the gold enriched basin from Fiji through Vanuatu and PNG into Japan and China (FFA,IO and IMR 1983).

The Pacific is the most productive of all the worlds oceans providing 72 per cent of the tuna production worth between US$1.6 and $1.7 billion at the wharf in 1981. The richness of the sea as a source of marine life depends on factors such as water depth, current, temperature and other physical processes such as upwelling which determine the concentration of phytoplankton and zooplankton, the basis of the marine food webs. The main fishing areas of the world, containing 90 per cent of all fish, are shallow and close to the continental margins and can easily be affected by pollution and other destructive fishing methods. The middle of the oceans are less productive and are more like deserts. The inshore and near-shore fisheries in the Pacific are important in providing protein food for local communities allowing for some of them fish annual consumption per capita up to 50 kg.

Unlike most of the fisheries in the northern Pacific that are now overexploited, the tuna species of tropical central and western Pacific are under-utilised. The Pacific Ocean has upwelling around the equator in the western part and is responsible for important tuna fisheries in the EEZ of PNG, Solomon Islands, Kiribati and Nauru. The present stock of skipjack is around 3 million tons compared with a catch of 250,000 tonnes. Yellowfin stock is presently around 600,000 tonnes with an annual catch of between 60,000 to 90,000 tonnes. Albacore and big-eye are also under-utilised. The future of tuna fishing is bright in this region, provided reasonable management procedures are adopted (Kearney 1984). Careful research-based management is vital to ensure the continued existence of presently over-exploited species and depleting fish stock.

The harnessing of ocean energy is expected in future because of the great potential in the Pacific and the development of appropriate technology. Thermal energy from volcanic-related activities can be a notable source of power if the technology is developed. Shipping concerns are paramount and need to be addressed. Shipping is a main challenge because even though the Pacific is predominantly a region of small nations for which shipping is very important, the region is geographically ideally located in the centre between the trade centres of Asia, North America, Europe, and Australia, New Zealand and the rest of the countries in the southern hemisphere. In a region characterised by vast stretches of oceans, properly planned shipping can be a major economic activity while the escalating costs of operations, handling terminal and capital equipment in a port are some of the main challenges that need to be addressed. Pacific nations can also take advantage of their island exuberant coastal areas to promote tourism and cruise tours. Such development of cruises can stimulate the development of port and shipping facilities and boost the growth of tourism without excessively pressurising coastal States to provide the necessary tourist infrastructure.

Regional Cooperation

Regional cooperation contribute significantly to national ocean development through the sharing of expertise, experience, facilities and infrastructure, and the pooling of resources and markets. Regional cooperation is also effective to address the trans-boundary nature of marine environmental issues, data and information collection, marine scientific and technological advancement, and human resource development. It also facilitate conservation and management of living resources, assessment of non-living resources and efficient conduct of maritime transport (United Nations 1991-A/46/722):10). Regional initiatives have resulted in greater success in gaining access to international assistance as it enhance the cost-effectiveness of donor assistance.

Regional cooperation in the South Pacific is advanced because the small island nations had realised their interest under UNCLOS and regarded regional cooperation as their means of protecting their interests and attaining maximum benefit. The oldest of the regional organisations, the South Pacific Commission (SPC) was established in 1947 by the colonial powers in the region. The SPC meets annually to discuss issues, problems and the needs and ideas common to the Pacific. In 1970, the University of the South Pacific was established to serve the governments in the region in the provision of trained manpower, research and consultancy services geared to the need of the region. In 1971, the South Pacific Forum was set up to provide an opportunity for the Heads of Governments to discuss common issues and problems. A year later in 1972, the South Pacific Bureau for Economic Cooperation (SPEC and later the Forum Secretariat) was set up to promote and encourage regional cooperation and consultation on trade, economic development, transport, tourism and other related matters. 1977 was important with the establishment of the South Pacific Forum Fisheries Agency (FFA) to coordinate cooperation and mutual assistance among members nations regarding fishery policies, fishing limits and the maximisation of benefit from the exploitation of marine resources; and the Pacific Forum Line which was a joint venture to provide shipping services in the region and solve common transport problems.

1980 saw the establishment of the South Pacific Regional Environment Programme (SPREP) to develop regional cooperation and technical support on all aspects of the environment. Then, in 1984, the South Pacific Applied Geoscience Commission (SOPAC) was set up to conduct mineral exploratory work in the near-shore and offshore areas. It is obvious that regional cooperation is working in the Pacific and should be encouraged to continue.

In establishing ORMP, the regional countries, realising their shortcomings and convinced of the need to provide appropriate training, decided on a collective approach through the regional institutions. In a field as diverse as ocean resources management, this was the only logical choice available.

Training Needs

Training is so highly regarded in the Pacific that often Islanders are told that nothing has a higher priority in their development strategies than the education and training of young people (SPREP 1992: 19). This together with the global realisation that natural resources are finite combined with the human attempt to better understand the resources so they can be better utilised, have necessitated the desire to understand the environment and the implementation of appropriate training programmes. The need to understand the changes in the physical, chemical and biological characteristics of the marine environment has prompted the expansion of existing measures, in particular the improvement in education system, in the fields of marine science and ocean management (United Nations 1991-A/46/722:25). The task is difficult because no management programme can be successful unless policy makers, administrators and users are convinced of the need for regulations and proper management. Therefore, there is the need for an education programme to increase the awareness of the need to conserve resources which will then bring greater support for management effort.

In introducing training programmes, developing countries, should start with sectors where marine expertise exist, adopt it as a core, then strengthen and broaden it through the incorporation of other skills. Emphasis should be in the fields of law, economics, fundamental and applied sciences, oceanography, geography, anthropology and sociology. There is the need to promote integrated study approach to allow holistic perspectives. Lawyers need to understand oceanographic and physical processes while biologists need to appreciate the legal issues and social consequence of biological changes and acquire the skills of effective diplomacy. There is also the challenge to promote sustainable training. Training courses and programmes must use available expertise to understand the interrelated physical, biological and social changes that characterise the use of marine resources and must continue to keep up to date with newly evolving trends. This requires trainers to be well versed with the developments in the integrated fields which is difficult because of the nature of information and the costs. As Howard Clark, President of Dalhousie University pointed out, training programmes need to become sustainable while they evolve in new directions, or they will perish (Dalhousie News, June 3 1992).

EXISTING TRAINING FACILITIES

Nature

To achieve the objective of attaining maximum benefit, decision making involving ocean resource development and management need to be realistic, pragmatic and be based on a flow of information arid data including substantive descriptive propositions which may be used to make projections. The information must be accurate, comprehensive and based on current scientific data. This is easier said than done because although a lot of information may be available, there is a training need to allow for proper management of information (United Nations 1991-A/46/722:17).

Training needs are unique and necessitate cooperation to allow the fastest and best results. Technical and financial assistance and the provision of facilities and equipment in the organisation and implementation of training courses and workshops in marine matters is

very important (United Nations 1991-A/46/722:24). For instance, the yearly training programmes conducted by the International Ocean Institute and the training on the provision of low-cost methods of conducting preliminary marine mineral resource assessments conducted by Canada through two week regional training courses, have been invaluable in this regard. Cooperative regional approach is beneficial as nations benefit from economies of scale in utilising regional facilities and expertise, and from interaction and exchange among the regional participants.

In the South Pacific, Canada's International Centre for Ocean Development (ICOD) had supported SOPAC in providing training to member countries nationals in coastal erosion surveying techniques, and in the operation of a computerised geological data and information management system (United Nations 1991-A/46/722:19). ICOD has also provided financial assistance so that a near-shore mineral geologist could work with SOPAC. SOPAC supports its mapping programme merely by coordinating the activities of foreign research vessels ensuring that member countries are informed of the activities, data collected and the results of cruises in their waters (United Nations 1991-A/46/722:41). Japanese, French, German and Soviet vessels have been involved in surveys to investigate cobalt-rich crusts, polyMetalic nodules and polymetalic sulphide deposits in the EEZ of member states of SOPAC.

Apart from SOPAC, SPC, FFA and SPREP all receive notable financial assistance from international donor agencies, and conduct regular training workshops and seminars on various aspects of marine resources management. For instance, marketing information is kept up to date and shared through the existing network of SPC, UNDP, FFA and SOPAC. Also significant is the training effort of national governments' divisions and departments dealing with marine resources because it is at this level that individuals are trained. The interaction of participants and the sharing of expertise is beneficial and cost productive and should fasten the training process.

Research work from the regions universities and institutions should be disseminated in an effective manner. Research results often remain unpublished and is available only to those directly involved. Available information sometimes are locked away in ministerial and departmental libraries and are duplicated by others in search of the same information. Earlier studies results are often not available in situ as they were published outside the country or region. This difficult situation can be corrected if the people responsible ensure a wider distribution of available information. For example, a lot of invaluable research knowledge is presently in French in the French speaking nations. The Institut Francais De Recherche Scientifique Pour Le Developpement En Cooperation (ORSTOM), among others, has conducted a lot of ocean-related research in the region, but the results remain unavailable to non French speakers. The translation of these information would allow others to learn from them and improve on their understanding of marine resources. The establishment of the Pacific Islands Marine Resources Information System (PIMRIS) is a positive step towards a coordinated regional marine information database. Such effort should allow Pacific Islanders to benefit from experts who work or have worked in the region or with regional organisations in any field relevant to the management of ocean resources.

Training Problems

Training is a long term process nurtured over time. It requires long absences from work which in most bureaucracies is not possible. Training problems faced in the Pacific include the compartmentalisation of responsibility and the duplication of effort. Responsibility is split between various departments of government, often resulting in the duplication of effort. Owing to the diversity of agencies involved in marine activities (fisheries, mariculture, ports and harbours, navy, transport, tourism, marine research, oil explorations/extraction and refining), the data is very extensive and wide ranging. Training is expensive and continuous and needs to be followed up. Necessary modern equipment such as remote sensing and other computer mapping technologies are expensive and can only be economically introduced through regional and international cooperation. The necessary infrastructure must be set up to allow exchange of information and ideas either in the form of workshops or newsletters and bulletins. Building a nation's marine science and technology capacity is also lengthy because it takes time to train people, acquire mature experience and accumulate knowledge and data on the local marine situations. High-level training may require extended periods of overseas study, implementation of in-country training programmes considered effective because of the reality of work opportunities, and on-the-job training (United Nations 1991-A/46/722:25). The organisation of successive training programmes is challenging because while one has to keep updating information in their respective fields, conduct follow-up actions to provide new knowledge and techniques, provide educational materials, disseminate marine scientific knowledge and use microcomputers and other new technology such as remote sensing imagery, distance teaching and multi-media learning packages; one must also provide linkages with the present as well as the past.

BACKGROUND TO THE OCEAN RESOURCES MANAGEMENT PROGRAMME (ORMP)

The ORMP was first set up at the University of the South Pacific (USP) in 1986 after a coordinated and consultative effort by the FFA and USP with financial support from the Canadian International Development Assistance (CIDA). The programme, which sought to address training issues relating to the utilisation of marine resources in the Pacific, was under this joint arrangement until 1991. The USP acquired total control of the programme in 1992 and is continuing on expanding the programme so that it serves the existing regional and global need to educate people of the dynamism of ocean resources management. The establishment of the programme illustrates the South Pacific region's commitment to the optimum sustainable use of its marine resources and the maximisation of benefit to them. Furthermore, it illustrates how from a humble beginning important regional training effort can evolve using existing facilities and framework, provided the necessary support to meet the regional training requirements is forthcoming.

Earlier years

The establishment of the USP's ORMP illustrates clearly how international cooperation can hasten what can be a very expensive and demanding process. It is a model to the rest of the developing world that partnership with countries and institutions based on interests

in achieving common objectives on training, education or in fostering the transfer of scientific and technological knowledge can quickly reduce the scientific and technological gap between developing and industrialised countries.

Following a course on EEZ management held in June 1983 at the USP's Institute of Marine Resources (IMR), there was a meeting of representatives of the CIDA, the FFA and the USP to discuss follow up action on the recently completed course. USP indicated its interest in offering a programme of courses in the area of ocean resources management while CIDA promised financial support through the FFA.

Against that background, the FFA engaged a consultant, Ms Vanderbilt to study the needs and priorities of FFA countries and regional institutions with regard to a programme of courses in ocean resources management; and if appropriate, prepare a proposal for the implementation of the programme. The Vanderbilt Report, funded by the United Nations Development Programme (UNDP) and the Food and Agriculture Organisation (FAO), and written after extensive discussion throughout the region at the end of 1983 and early 1984, proposed a programme in ocean resources management and recommended two types of courses. The objectives of the programme were to broaden the awareness of governments of their ocean's potential and constraints, to enhance the skills of those public servants who are charged with the duty to manage this area of national jurisdiction, and to train a cadre of people who, in the near future, will be responsible for developing the policies and making the decisions to reflect an understanding of the nature of the resources of the oceans so that they maximise the benefits for individual countries and for the region.

The two types of courses were to include, courses at degree level which should be one-semester, broadly based, interdisciplinary and be taken by students who will in the cause of their career take up decision-making and advisory roles in areas relating to marine resources development, management and conservation. Secondly, there should be short intensive courses or workshops for in-service personnel in managerial and administrative positions in departments that have on occasion to deal with marine affairs. It was also recommended that the programme be based either at USP or the University of Papua New Guinea (UPNG) rather than in any of the established institutions in Australia, New Zealand or Hawaii; and that the intensive courses or workshops be conducted throughout the FFA region. The Vanderbilt Report also recommended the possibilities for the expansion of the programme to increase the number of courses at degree level, the development of a two-year programme, the provision of a project-focused course of study that would lead to a certificate, a full degree major in marine affairs and post-graduate study.

The Vanderbilt Report was presented to the Forum Fisheries Committee (FFC), the governing body of FFA at its annual meeting in Port Vila in 1984. The meeting accepted the recommendation of the report and nominated USP because of its central and more accessible position, to host the programme in cooperation with UPNG. The USP agreed to host the programme on the basis of full funding from CIDA through the FFA.

The USP, as the host institution, then organised a working group which gave recommendations on the nature, level and length of the courses to be offered; the sort of

person to direct the programme; the section of the university to be responsible for which of the courses; and the section in which the programme was to be located. The working group agreed with the consultant report and recommended that the initial course be a broadly based, 2nd year degree (200-level)), multi-disciplinary one available to both BA and BSc students. In adopting this approach, the working group addressed two important considerations. It gave the region the time to reflect upon and evaluate its special needs, which could then be accommodated in future degree courses of more specialised nature. Furthermore, it assumed that the programme is not a training area for scientists or fisheries officers but rather is for managers so that they better understand the inter-disciplinary nature of marine affairs.

The syllabus that was adopted was the same as the one proposed by the consultant but was re-arranged to accommodate USP's 14-week semester instead of Vanderbilt's 16; and revised to emphasise the current inshore developmental activities in the region which was more important than the offshore sector. The course was to be offered by the School of Social and Economic Development (SSED) but was to be available to students from all disciplines. The courses were also to be prepared for Extension and Summer Schools. At the same time, the short courses were to provide a burst of specialised training or refresher courses to in-service personnel in the various aspects of marine affairs. The goal of the courses was to improve ocean resources management at all levels. To ensure the attainment of the desired standards, a system of continuing consultation and review with the FFA on the nature of the courses was recommended while governments and regional agencies were encouraged to request and provide inputs into the programme's direction and content.

The ORMP started offering courses at USP in 1986 and today continues to meet the regional training needs in the areas of marine resources management. The first course to be offered, a 3rd year degree (300-level) course had an enrolment of 28 student in that year (Table 1). In 1988, minor reshuffles were made to accommodate a newly developed 2nd year degree (200-level) course. Since then, enrolments in both courses have been stable at around 30. Content evaluations and continuous student assessment suggest the popularity of the courses. To date, 167 students have taken the 200-level course while 227 have taken the 300-level course. The 200-level course is also offered through the Extension Services to allow the people in the region to take it from home. Post graduate courses are available and have been taken by three students.

The in-service has been conducted in 5 previous sessions in Tonga, Kiribati, Vanuatu, Cook Islands and the Marshall Islands. A total of 106 participants have attended these courses.

Ocean Resources Management Programme Courses Enrolment 1986 - 1992

Year	200-level*	300-level	400-level	In-service
1986		28		22 (Tonga)
1987		34		
1988	25	35	1	22 (Kiribati)
				26 (Vanuatu)
1989	42	43	1	20 (Cook Islands)
1990	30	28		
1991	29	28		16 (Marshalls)
1992	41	31	1	
Total	167	227	3	106

* offered through extension.

Problems and Potential

The establishment of the training programme was not event-free as there were problems that needed to be addressed. For instance, some countries faced difficulties in finding sufficient number of high school graduates, who were ready to enter professional training courses. Others, faced with recurrent government operating budget, were not prepared to send students for training because they can not appoint the resultant graduates to suitable positions. There were also other countries that were faced with the shortage of manpower because of the better conditions available overseas as well as in the private sector. As a consequent, the smaller administrations found it difficult to release staff for anything other that short courses.

The nature of the programme to involve lecture inputs from a whole range of experts and organisations was regarded a problem. This arrangement was expensive and disruptive on the students. The 14-week semester was barely enough to cover the wide ranging topics which meant that there was the need to make the linkages. Unfortunately, this was unlikely because of the course's tight and varied schedule. Furthermore, the lecture schedule was rigidly followed because of the many people involved for the various subject areas. However, given the early involvement of CIDA, the other problems were mostly minor operational ones that were solved through internal consultation. Disagreement on the type of courses to be offered, its level, and the location of the programme, were all solved with reference to the consultant's report which provided a systematic plan for setting up the institutional framework that ensured the establishment of the appropriate programme.

From the beginning, there was no doubt at all regarding the potential of a marine resources training programme in the Pacific. The demand was obvious and it was just a

question of how and what to start with. The implementation of the programme was appropriate because the island governments were involved from the outset. This ensured their continued support and gave them a feeling that the USP, a regional training institution was attempting to provide for their necessary manpower requirement. The complimentary short courses and workshops are suitable as they aim at the in-service personnel who would otherwise have little chance of attending the university courses. Similarly, the offering of the courses through the Extension mode, ensured that the courses were widely available particularly for those that can not attend USP.

THE PRESENT SITUATION

The ORMP, at the end of 1991, became a wholly USP programme after the funding by CIDA through the FFA lapsed. The USP, in 1992, made its first ORMP lecturer's appointment and intends to fully integrate the programme into its curriculum and to expand the programme's course offering so as to continue to address the very important ocean resources management needs in the USP region.

The ORMP now has a Coordinator, a programme lecturer and a secretary. The unit is part of the USP's Marine Studies Programme under the Professor of Marine Studies and comes under the joint supervision of the Head of SSED and the School of Pure and Applied Sciences (SPAS). The Coordinator is responsible for the overall development of the programme and makes recommendations regarding changes to the USP Marine Studies Coordinating Committee which is a USP Senate committee that includes the Vice Chancellor (or nominee), Pro Vice Chancellor, Professor of Marine Studies, ORMP Coordinator, USP Director of Development, the Director of the Institute of Marine Resources (IMR) and a secretary. Outside members include representatives from SOPAC, FFA, SPC and SPREP.

At present, ORMP continues to offer the two undergraduate courses, the 2nd year degree level introductory ocean resources management course and an advanced 3rd year degree level course that address specific issues relating to the management of ocean resources in the South Pacific. Attempts are presently being made to provide greater integration between the modules of the academic and in-service courses and to broaden the scope and volume of the course materials. Work is now progressing on the preparation of the 300-level course for Extension studies.

Work is also continuing on the preparation of new courses. A 100-Level course on the Introduction to Marine Science is being prepared while work is expected to be completed in the next two years on additional 300-level courses in Fisheries Resources and Economics and Management, Fisheries in Coastal Areas and Artisanal Fisheries and the Law of the Sea and Ocean Policy in the South Pacific. These courses should well compliment the existing courses and strengthen the nature of the Marine Studies Programmes which now include Certificate in Ocean Resources Management, Certificate in Tropical Fisheries, Diploma in Ocean Resources Management Policy, Diploma in Fisheries Economics and Management and Diploma in Tropical Fisheries. These certificates and diplomas which will be available by extension, should enhance the quality of regional qualifications in Ocean Resources Management and Tropical Fisheries.

There are presently two post graduate courses on offer. These are Selected Studies on Regional Management of Marine Resources in the South Pacific and Selected Studies on the Statutory Management of Marine Living Resources in the South Pacific. Both courses are specialised and aimed at addressing wider and more wide ranging ocean resources management issues. The ORMP, is an active participant in PIMRIS and continues to provide ocean-related background texts, journals and other documents to the on-campus students as well as to those Extension students out in the national USP centres.

The annually rotating in-service courses are expected to continue but will depend greatly on the demand from regional governments. The ORMP and its umbrella Marine Studies Programme plan to maintain and improve communication with technical agencies such as SOPAC, SPREP, and the Forum Secretariat to identify and design training to meet specific needs in the ocean resources management fields in individual countries. The ORMP staff like others at USP are available for limited consultancy services in their areas of expertise.

Challenges and Prospects

The USP, as the sole administrator of ORMP, is now expected to fund all of its activities. Given the nature of the activities, as we have discussed, this can be demanding on USP. Therefore, international support is still very much welcomed. For instance, the in-service courses and the supply of literature materials can only be continued through external financial support. This is where the association with the technical, regional and international organisations can contribute. Cooperation and consultation between these organisation can assist in the prioritisation of needs, and the maximisation of available opportunities.

The Marine Studies Programme (MSP) must continue to evolve to address new needs. To do this it must be abreast with new developments in marine affairs and at the same time liaise with regional governments and training institutions. Acquiring the necessary expertise to provide training can be difficult but is not impossible because it has already been done. At the moment, there is a definite lack of marine biologist in the region. This is a challenge that will have to be rectified. Public education is also a major hurdle because the people have to be convinced that unlike in the old days, the environment resources now need management. The MSP is ideally located to make a significant contribution in the field of ocean resources management. The USP, as the main university in the South Pacific, must address the many issues that are related to the management of marine resources and are specifically applicable to the region. After all, the USP belongs to the South Pacific which is its home and so should be its laboratory where it conducts research.

Given the fact that it has gone through its weaning period, ORMP should now plan for future areas that it will proceed towards. Mineral resources are important and will be even more so in time. Studies in oceanography, port and shipping, tourism, resources appraisal, inventory and evaluation, traditional management practices and the Law of the Sea can all be worthwhile for the future. Training can be expensive but this expenditure

can easily be justified if the training is allowing the people to do the desired tasks to ensure maximisation of benefit to the Pacific countries and region.

FUTURE OUTLOOK

Because of the dependence of its peoples on the sea, nowhere in the world is the wise management of ocean resources more important than in the South Pacific. The sustainable utilisation of marine resources is a critical factor in determining the pathways and limits of social and economic development in many countries in the Pacific. For this reason, the continuation of a South Pacific marine resources education programme focusing on regional circumstances and issues, is regarded an important need. The ORMP and the MSP, however, have to meet the evolving training needs in the region to justify their continuation into the future.

Direction and Role

The ORMP's future with USP's Marine Studies Programme is bright. The programme has expanded along the direction that was proposed in the Vanderbilt's Report and continues to meet an important need in the region. In addition, the Marine Studies Programme should become more important as marine resources exploitation become better developed and understood. Given the time and a little more support, the programme should become very important in the South Pacific region as well as globally.

The USP as the umbrella institution, however, has to decide on the types and content of the courses it provides. This decision is to be reviewed regularly to allow for a positive correlation between the existing situation in the region and the courses offered. The MSP must decide on whether it places more emphasis on planning and coordinating training or on actually conducting them. It also must decide on whether it should associate with science or with support services. Furthermore, it will need to decide on whether the training effort is concentrated on fundamental science or on applied science. Decision must also be made on whether the training reflect the practice now or what it should be; on whether research training should be short and/or small scale or long and/or large scale; and if it continues to be client driven. Based on the decisions relating to these considerations, the programme's future direction should be mapped out in a Training Management Plan which should specify the merit of each component to ensure that the prevailing issues are adequately addressed. These plans should also emphasise the case study approach to allow for the privilege of learning from the success and failures of those that attempted similar methods in the past.

Future Challenges

The future challenges facing ORMP and the MSP depend on their definitions of ocean resources and the regional demand for appropriate training programmes. Meanwhile, the MSP must continue to work towards a database for ocean resources in the Pacific. The data should be holistic and cover historical development, current trends and the future

evolution of ideas and concepts relevant to the utilisation of marine resources. The MSP should consider becoming a better adapted training and research institution.

Probable training areas that can be developed through the MSP are varied and include Integrated Coastal Area Management. The MSP courses are already multi-disciplinary and will require only slight re-adjustment to allow for a course in Integrated Coastal Area Management which is essential to enable people to see the coastal area as the system that it is. With the region's concern for remedial action to prepare for the impacts of climate change and sea level rise, this course should really be a popular choice. The need of Pacific countries is special and is not being properly addressed in the courses being offered today. This course which can also include aspects of resource evaluation, inventory and assessment, can be regarded a part of the United Nations Conference on Environment and Development's (UNCED) Agenda 21 and should be supported through the Global Environment Facility (GEF), put together by the World Bank, UNDP and UNEP to assist developing countries to carry out programmes to relieve pressures of the global ecosystems.

Oceanography continues to evolve in new areas which can easily constitute an important course. With the availability of the latest technology and information, the study of oceanography should become necessary. Cooperation with SOPAC and ORSTOM can assist in the formulation of this course. A great deal of research has been conducted in the Pacific that mounting such a course will not be as difficult and expensive as it may look. Depending on how the arrangements stand, work can be done to introduce communication technology and remote sensing components.

An ocean resources management research courses can also be a better way of promoting public awareness. Outstanding senior students can be given financial support to encourage them to conduct marine resources research on topics of relevance to the region. Research results can be published so that they add to the existing literature. For instance, studies on the management practices in traditional societies in the Pacific needs to be urgently documented. The older fishers who possess the knowledge are dying out and there is the need to record their information. Furthermore, the Pacific Islanders are rich in this aspect and should offer science an important contribution which can be useful for fisheries development such as aquaculture. A course on marine pollution will also be worthwhile. Often, the coastal zone is the dumping ground because the people fail to appreciate the importance of mangrove ecosystems and swampy areas and don't realise that interference within this ecosystems is similar to pouring tonnes of waste materials into the oceans. The importance and development of the other uses of the sea in the Pacific can also be an interesting topic.

The short courses and workshops should be the MSP's best means of providing the required specialised training. Ocean resources managers not only need specialised courses but also demand the associated short refresher courses and review training to allow course evaluations. The short courses offered should enable specialised training to complement the general foundation provided through the university degree courses. These courses should be arranged by the MSP to utilise the expertise in the region. Themes for the short courses are again variable but should include issues most important to Pacific Island countries. These can include a course for policy makers and senior government officials

which must be censored to be sensitive to the standing of the participants while introducing new developments that is necessary for their consideration. For instance, a course on the Management of Non-Living Resources of the Clarion-Clipperton Fracture Zone, that seabed mineral-rich part of the Pacific Ocean, should introduce the policy makers to the vast implications for Pacific nations. The course, covering the discovery of the minerals, its development and its influence on global events, can address issues such as joint venture between Pacific nations and the International Seabed Authority in the development of the Area.

A lot of work has been done on seabed mineral exploitation justifying short training courses on cobalt and sulphide deposits discovery, exploitation and the feasibility of economic recovery. An important point for Pacific Islanders to remember is that while UNCLOS III sufficiently protects and regulates the exploitation of manganese nodules within the Area, there is no such assurance for cobalt crust which at present looks to be the mineral type most likely to be exploited first.

While both the above courses prepare policy makers for future decision making, there are also lessons to be learnt from past regional experiences. The Pacific is a model to the world in the tuna fishing access agreement the FFA signed with the USA. This course could cover the reasons why the agreement is important to the Pacific and the ways in which future agreement may be formulated to ensure maximum benefit to the countries of the region.

Given all these possible areas of study, the ORMP and the MSP have a good chance of becoming leading programmes in this area in the region. Working closely with IOI which is opening an office in Suva soon, the MSP should expand its courses while attempting always to addressing the regions pressing training needs.

CONCLUSION

The establishment of ORMP illustrates how through cooperation and international consultation essential training programmes can be established. International cooperation and consultation was influential from the beginning of ORMP and should be allowed to continue to play a major role. Of course, ORMP's consolidation over time and its incorporation into USP's Marine Studies Programme is necessary for its mature development and future evolution.

The ORMP has grown and expanded because of its niche and function of providing the training required for proper ocean resources management in the Pacific. As part of the 'MSP, the ORMP is expected to become even more suited to the training needs in the Pacific because it understands the resources, environment, and the social, economic, legal and political situations. The programme is expected to become more important as the nature of ocean resources become better developed and understood.

There, however, are challenges and problems that should be addressed. These will require hard decisions which should take into account the regional training needs as determined by the regional governments and the developments in these areas. The profitable use of training resources will be essential and should continue to be balanced against the need to

provide appropriate training. This is the best way of maximising the benefits from the exploitation of marine resources while allowing the MSP reasonable autonomy.

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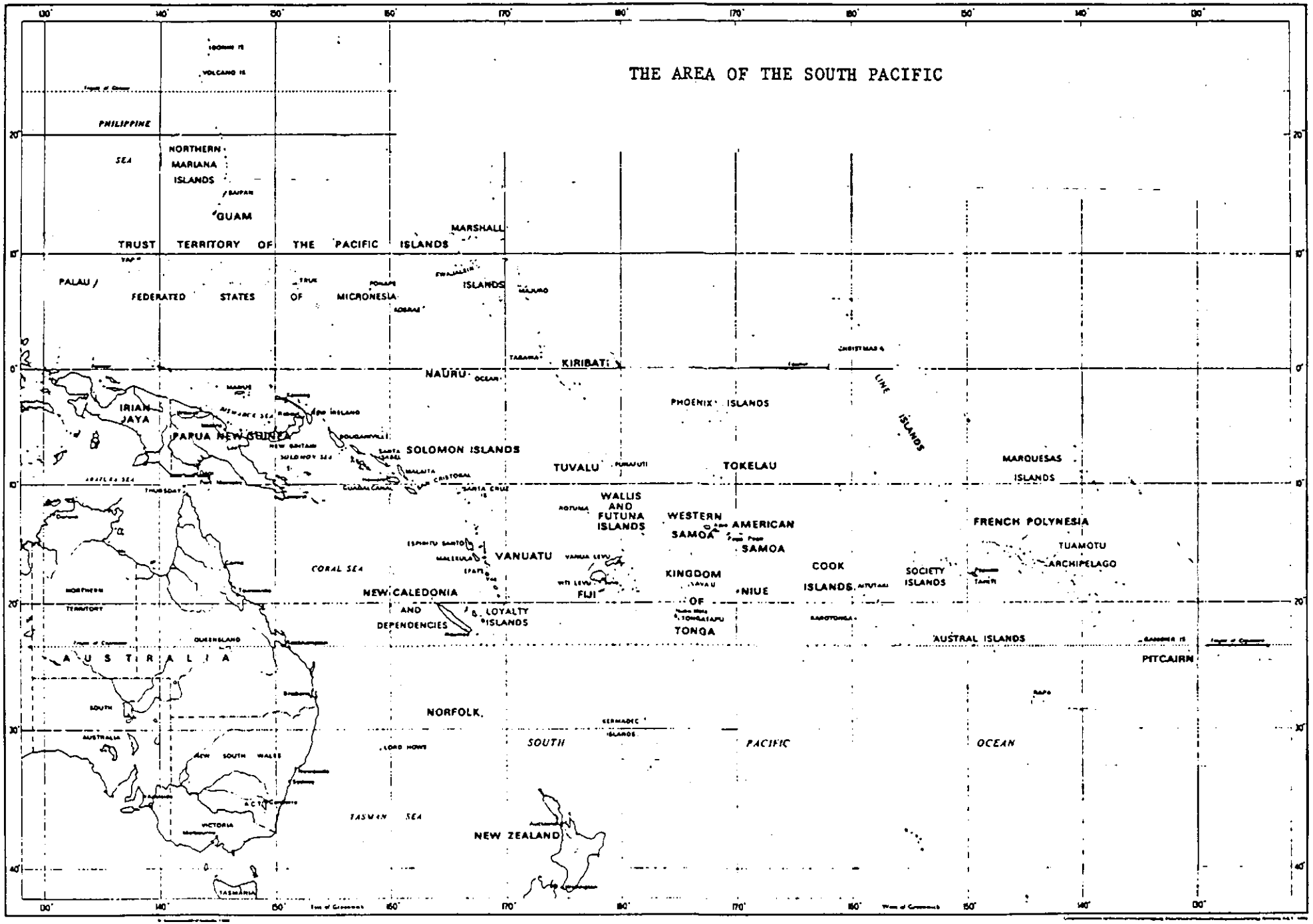
THE AREA OF THE SOUTH PACIFIC
PHILIPPINE SEA
NORTHERN MARIANA ISLANDS
GUAM
TRUST TERRITORY OF THE PACIFIC ISLANDS
MARSHALL ISLANDS
PALAU
FEDERATED STATES OF MICRONESIA
NAURU
KIRIBATI
IRIAN JAYA
PAPUA NEW GUINEA
SOLOMON ISLANDS
TUVALU
TOKELAU
PHOENIX ISLANDS
LINE ISLANDS
MARQUESAS ISLANDS
WALLIS AND FUTUNA ISLANDS
WESTERN SAMOA
AMERICAN SAMOA
FRENCH POLYNESIA
TUAMOTU ARCHIPELAGO
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CORAL SEA
NEW CALEDONIA AND DEPENDENCIES
LOYALTY ISLANDS
FIJI
KINGDOM OF TONGA
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COOK ISLANDS
SOCIETY ISLANDS
AUSTRAL ISLANDS
PITCAIRN
AUSTRALIA
NORFOLK
SOUTH PACIFIC OCEAN
TASMAN SEA
NEW ZEALAND

APPENDIX