

# ENVIRONMENT NEWSLETTER

Quarterly Newsletter of the South Pacific Regional Environment Programme

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The South Pacific Commission's ENVIRONMENT NEWSLETTER commenced publication after having been in 'retirement' since issue No. 4 (March 1982). It is now produced on a quarterly basis commencing with No. 5 (April - June 1986). News articles and comments are welcomed for future issues.

**South Pacific Regional Environment Programme  
(SPREP)**

**South Pacific Commission**



The Environment Newsletter is produced by the South Pacific Regional Environment Programme, South Pacific Commission, Noumea, New Caledonia and reports on the various activities of the programme together with news of general environmental interest to readers in South Pacific countries.

SPREP's activities are co-ordinated by a group made up of the South Pacific Commission (SPC), the United Nations Environment Programme (UNEP), the South Pacific Bureau for Economic Co-operation (SPEC) and the Economic and Social Commission for Asia and the Pacific (ESCAP).

The United Nations Environment Programme, through its Oceans and Coastal Areas Programme Activity Centre (OCA/PAC) based in Nairobi, has, since SPREP's inception, given considerable financial support to the programme's activities.

Much of the work undertaken by SPREP and supported by UNEP involves utilising skills of the Universities and Training Institutions within the South Pacific, who have recently formed an Association of South Pacific Environmental Institutions (ASPEI) to facilitate this work.

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## NEWS IN AND AROUND THE REGION

### THE SPREP CO-ORDINATING GROUP HOLDS ITS FOURTEENTH MEETING

The Co-ordinating Group of SPREP, comprising representatives from the United Nations Environment Programme (UNEP), the Economic and Social Commission for Asia and the Pacific (ESCAP), the South Pacific Bureau for Economic Co-operation (SPEC) and the South Pacific Commission (SPC) met at SPC Headquarters in Noumea, New Caledonia from 2 to 4 September 1987. This was the fourteenth time the Group had met to discuss, review and update the activities of SPREP and to provide guidance to the Secretariat in the implementation of the SPREP Action Plan.

Besides reviewing progress in the implementation of the work programme of SPREP since its last meeting, the Co-ordinating Group also discussed other important matters relating to the Programme including the status of the SPREP Convention, the future of the Group itself and preparations made by the Secretariat for the next intergovernmental meeting on the SPREP Work Programme and the Fourth South Pacific Nature Conservation and Protected Area Conference to be held in 1988 and 1989 respectively.

**14th SPREP Co-ordinating Group Meeting. From left: Ms N. Wendt, Messrs. I. Reti (SPREP), L. Keke (SPEC Chairman), P. Tuiasosopo (SPC), S. Keckes (UNEP), K. Jalal (ESCAP)**

The meeting was opened for participation by governments of the region and three member governments were represented. The Association of South Pacific Environment Institutions (ASPEI) was also represented by its Chairman.

The report of the meeting has been distributed by the Secretariat to member governments and administrations.

### **INTERNATIONAL TRAINING COURSE FOR PROTECTED AREA MANAGERS**

On the August 19 the opening of the New Zealand International Training Course for Protected Area Managers was attended by Iosefatu Reti SPREP Co-ordinator and Peter Thomas our Protected Areas Management Officer, who were in New Zealand to attend a meeting of the ICUN Committee on National Parks and Protected Areas. The course, which is of sixteen weeks duration, has been organised by the New Zealand Department of Conservation and is a feature of New Zealand's celebration of its centennial of National Parks. New Zealand's magnificent national parks system which comprises twelve national parks, three Maritime Parks and twenty Forest Parks was begun in 1887 by the gift of the Tongariro National Park by Te Teuheu Tukino IV, paramount chief of the Tuwharetoa Maori people of the central North Island.

**International Park Managers Course Participants  
at the Opening Ceremony on the Turangi Marae**

In the fitting opening ceremony for the course, descendants of Te Heuheu Tukino welcomed the participants to the Turangi Marae of the Tuwharetoa tribe and into the local community for the duration of their stay. The participants come from seventeen countries in Africa, Asia, South America and the South Pacific. The South Pacific was represented by Paula Taufu, Tonga; Reklai Ngirmeku, Palau; Teariki Rongo, the Cook Islands; Solomon Alipet, Papua New Guinea; Toni Tipama, Western Samoa; Taulagi Sualevai, American Samoa and Ernest Bani, Vanuatu.

**Some of the Pacific Region Participants with the SPREP Co-ordinator.**

**From left: Ernest Bani (Vanuatu), Lester Kong (NZ Foreign Affairs),  
Joe Reti (SPREP), Solomon Alipet (Papua New Guinea, front row),  
Paula Taufu (Tonga), Toni Tipama (Western Samoa)**

Over the next sixteen weeks the participants will have a busy schedule of both classroom work and extensive field trips. Their schedule takes them the length and breadth of New Zealand's North and South Islands and strong emphasis is placed on studying at first hand the practical aspects of parks and reserves management within the New Zealand system. Some aspects of the course have been planned with the needs of the South Pacific students in mind, particularly the field trips to the Hauraki and Bay of Islands Maritime Parks where many of the coastal and island protected area management techniques will have applicability within the region.

The course is a valuable option in the range of protected area management training available to staff in the region responsible for the day to day management to protected areas. It offers the opportunity to learn a wide range of management techniques and skills and is aimed at countries like many in the region, which are just beginning their protected area systems. For this reason SPREP is hopeful that the course will be available on an annual basis in the future.

## IMPORTANT ENVIRONMENT SEMINAR IN VANUATU

On 24-25 September the Government of Vanuatu hosted with ESCAP support, a two-day seminar on Resources, Development and the Environment for senior public servants. Organised by the Environment Unit of the Ministry of Lands, Energy and Rural Water Supply the Seminar was opened by the Honourable Donald Kalpokas, Minister of Lands, Energy and Rural Water Supply who referred to the importance of the environment to the people of Vanuatu and the need to recognise that although environmental changes are inevitable, the nature of these changes must be recognised and minimised where possible.

The seminar was attended by over 50 people and seventeen papers were presented during the 5 sessions which covered:

- . The Physical Environment and Development of its Resources,
- . Agriculture, Forestry and Fisheries Resources,
- . Land Culture and Development,
- . Environment and Health,
- . Environmental Planning.

Each session concluded with a discussion period in which the presenters formed a panel and responded to questions.

Apart from providing important baseline information on the State of the Environment in Vanuatu, the seminar provided all present with a comprehensive picture of recent resource utilisation, research and development initiatives taking place in Vanuatu. It will also provide information on which to base the National Conservation Strategy for Vanuatu, which is due to be started in 1988.

**Dr Marcus Chambers of Vanuatu's Environmental Unit addressing  
some of the Participants at the Environmental Seminar**

## SPREP REPRESENTATIVES ATTEND IUCN CONFERENCE IN NEW ZEALAND

On a recent visit to New Zealand in August, the SPREP Co-ordinator, Iosefatu Reti and Protected Area Management Officer, Peter Thomas attended the 29th Working Session of the IUCN Commission of National Parks and Protected Areas (CNPPA) at Wairakei. Although the focus of the Session was on the Antarctic Realm which includes New Zealand, the Southern Islands (Insulantartic) and the Antarctic Continent, the morning session of the last day was given over to presentation and discussions on the Oceania Realm which includes the South Pacific.

This session was chaired by the IUCN Oceania Realm Vice-Chairman Mr Birandra Singh of the Fiji National Trust. Presentations by SPREP staff included the background to SPREP, a detailed review of the progress with the implementation of the Action Strategy for Protected Areas in the South Pacific and a slide show on environmental problems in the region. Mr Guy Salmon of the New Zealand non-government conservation organisation, the Royal Forest and Bird Protection Society, also presented his organisations plans to support an independent conservation officer's position in a Pacific island country to work on tropical forest conservation activities.

The review of the implementation of Action Strategy which is reported elsewhere in this issue was received favourably by the delegates present, many of whom expressed their interest in the conservation activities of SPREP and the countries and institutions of the region. Strong expressions of support for SPREP's activities were made by members of the Australian delegation and from senior members of the recently established New Zealand Department of Conservation.

IUCN (the International Union for the Conservation of Nature and Natural Resources) along with other global and regional environmental agencies such as UNEP and ESCAP has long been a supporter and partner in SPREP's work and was instrumental in the development of the Action Strategy at the Third South Pacific National Parks and Reserves Conference, held in Apia in June 1985.

### MEETINGS IN WELLINGTON

While in New Zealand for the CNPPA Conference Messers Reti and Thomas took the opportunity to visit Wellington and meet with the Department of Conservation, Ministry of Foreign Affairs and the Prime Ministers Advisory Group.

In the meeting with Messers Ken Piddington (Director-General), Alan Edmonds (Director of Conservation and Advocacy), Wren Green Asst. Director (External Relations) of the Department of Conservation discussion centered on the new departments future role in the South Pacific. With its extensive professional and technical resources and its strong commitment to the conservation of natural resources, the department is in a unique position to work with SPREP in assisting the countries of the region to realise their conservation goals. This potential is well recognised by Mr Piddington and his staff and the SPREP representatives welcomed their strong expressions of support and obvious desire to assist the Programme within the limitations of available resources. As a reflection of its desire to strengthen ties with the region and the international conservation community the Department has established an International Secretariat. A principal function of the secretariat will be liaison and co-ordination of activities with SPREP and the South Pacific region in general.

Extra budgetary assistance and the progress with New Zealand's ratification of the SPREP Convention were the main topics of discussion of the meeting with the Ministry of Foreign Affairs. Long one of SPREP's strongest supporters, New Zealand funded the meeting in November 1986 when the Convention was adopted by sixteen countries. New Zealand, like several other countries, may need to ammend or review existing legislation in order to ensure compliance with the provisions of the SPREP Convention although it was expected ratification would take place next year.

**The Director General of the Department of  
Conservation, New Zealand, Ken Piddington  
talking with Iosefatu Reti (SPREP Co-ordinator)**



At meeting with the Prime Ministers Advisory Group representative, the SPREP representatives were informed that the deeds for the formation of a Trust Fund for the Protection of the Environment and Peaceful Development of the South Pacific ('The South Pacific Trust Fund') using part of the funds paid to New Zealand by France in settlement of the Rainbow Warrior affair were completed. It was expected the Board of Trustees would be appointed by the end of September after which guidelines for the management of the Trust would be finalised.

In previous correspondence with the New Zealand Government SPREP has ascertained that together with IUCN it could expect to be a beneficiary of the Trust.

### LOU ELDREDGE RETIRES FROM UNIVERSITY OF GUAM

Dr Lucius G. Eldredge, Professor of Marine Biology at the University of Guam (UOG) Marine Biological Station and SPREP Focal Point for UOG has recently retired from the University. Lu, as he is know to his numerous colleagues and correspondents around the Pacific, has moved to FAO Headquarters in Rome to co-ordinate the Marine Directories and Bibliographies activities of UNEP's Regional Seas Programme for the next year.

While at the UOG, Lu was involved in SPREP activities in Micronesia, representing UOG at SPREP Consultative Meetings of Research and Training Institutions and personally continues to work on SPREP projects on introduced species in the Pacific, marine mammals in Micronesia. We look forward to his return to the Pacific after his sojourn in Europe, to continue his considerable efforts in compiling and communicating marine environmental science information in the region.

### THE COOK ISLANDS GOVERNMENT RATIFIES

#### THE SPREP CONVENTION

The Director of the South Pacific Bureau for Economic Co-operation who is depositary for the Convention for the Protection of the Natural Resources and Environment of the South Pacific Region (the SPREP Convention) and its two Protocols concerning Combating of Pollution Emergencies and the Prevention of Pollution by Dumping, has advised that on 9 September the Government of the Cook Islands ratified the Convention and both its Protocols.

This means that as of 9 September two countries, the Cook Islands and the Republic of the Marshall Islands have now ratified the Convention. Although eleven countries have signed, ten ratifications are required to bring the Convention into force. The SPREP Secretariat is optimistic that these will be obtained by mid 1988 at the latest and that it may be possible to hold the first meeting of the Parties to the Convention in conjunction with the Second Intergovernmental Technical Meeting on the SPREP Work Programme which is scheduled for June 1988.

## GIANT CLAM FARMING AT ICLARM'S NEW PACIFIC REGIONAL AQUACULTURE CENTRE

A pilot-scale giant clam hatchery is the first facility being developed at ICLARM's new Coastal Aquaculture Centre in the Solomon Islands.

The giant clam hatchery's main objective is to evolve economically viable hatchery, nursery and growout systems for tridacnid clams, principally Tridacna gigas. This species exhibits the fastest growth rates and is the largest of the giant clam species, attaining a shell length of up to 137cm and a weight over 300kg. The large sizes and rapid growth rates of giant clams are largely due to the relationship which the clams have with certain symbiotic algae called zooxanthellae which can provide the clams with all the food they require.

The development of mariculture systems for giant clams offers opportunities for the reversal of the trend of the larger species toward extinction by reef re-stocking and alleviation of commercial fishing pressures, and for the development of a new industry in the South Pacific based on cultivation of a traditional food resource, which would also provide exportable products.

The hatchery is located 25km west of Honiara, the capital of the Solomon Islands, and is now nearly completed with a laboratory building, various ferro-cement and fibreglass tanks, pumps, generators, as well as accommodation for all the project staff. With the recent collection of broodstock the hatchery can be expected to go on line in the very near future.

ICLARM (International Centre for Living Aquatic Resources Management) is currently developing the Coastal Aquaculture Centre in Guadalcanal, Solomon Islands in collaboration with the Solomon Islands Government and the Guadalcanal Provincial Government.

The objectives of the Aquaculture Centre are:

1. To investigate and demonstrate the cultivation of all stages of economically valuable aquatic organisms, including processing and marketing.
2. To investigate methods for the artificial improvement of natural fisheries.
3. To appraise the social and economic impacts of these developments in the region.
4. To publicly disseminate the results of these activities as well as to serve as a regional source of fisheries and aquaculture information and as an administrative base for ICLARM's activities in the South Pacific region.

(Source: Hugh Govan, ICLARM Coastal Aquaculture Centre, Box 438, Honiara, Solomon Islands.)

#### **SPREP PROVIDES ASSISTANCE TO MANAGEMENT OF COASTAL ZONES AND LAGOONS IN FRENCH POLYNESIA**

Two SPREP officers visited French Polynesia on request from the Government to assist in the development of management plans for the coastal and lagoon areas of Huahine and Taha's islands. The officers also provided advice on the setting up of the Atimaono Territorial Park on the island of Tahiti. This work is being undertaken jointly with the Ministry of Public Health and the Environment in French Polynesia. The plans for the two islands are expected to be completed by mid-1988.



**REPORT OF SOUTH PACIFIC REGIONAL  
ENVIRONMENTAL PROGRAMME WELL RECEIVED  
AT 16TH CONGRESS OF SOUTH PACIFIC SCIENCE  
ASSOCIATION, SEOUL, KOREA, AUGUST, 1987**



Following are reports of SPREP projects given by members of the Association of South Pacific Environmental Institutions (ASPEI) who work closely with SPREP on regional research projects. The overview was given by the SPREP Co-ordinator, Iosefatu Reti when he outlined the **ACHIEVEMENTS OF THE SOUTH PACIFIC REGIONAL ENVIRONMENT PROGRAMME.**

Iosefatu Reti said that to achieve any commendable success in a region encompassing 22 island states and territories sprawled across 29 million km<sup>2</sup> of ocean area will indeed be a major achievement. The Action Plan for Managing the Natural Resources and Environment of the South Pacific Region set the scene for a comprehensive environmental programme for the Region. It has, as its principal objective, "helping the countries of the South Pacific to maintain and improve their shared environment and to enhance their capacity to provide a present and future resource base to support the needs and maintain the quality of life of people". The Convention for the Protection of the Natural Resources and Environment of the South Pacific Region adopted by a Plenipotentiary Conference held in Noumea, New Caledonia, from 24 to 25 November 1986, will provide the legal framework for the implementation of the Action Plan. These two instruments will continue to contribute to raising the awareness of environmental problems in the Region and to meeting them through co-operation action. Although the full realisation of these objectives is still some distance away, the fact that the South Pacific Regional Environment Programme has already gained a high degree of support and co-operation from its island states as well as metropolitan countries such as France and the United States of America is considered a major step towards achieving a healthy environment for the region.

**The SPREP Co-ordinator,  
Iosefatu Reti at the  
South Pacific Congress**

## WATERSHED RESEARCH IN THE SOUTH PACIFIC ISLANDS

Harley L. Manner, Department of Anthropology/Geography, University of Guam, Mangilao, Guam.

Measurement of change in water quality and quantity in a watershed system is a tool for understanding the impacts of humans on their environments. A major focus of the South Pacific Regional Environment Programme (SPREP) watershed management programme is the impact of Pinus caribaea reforestation on the hydrology and nutrient cycling of grasslands in Fiji and Papua New Guinea.

In 1983, two adjacent 450 ha catchments, located on the leeward side of Viti Levu, Fiji, were equipped with automatic recording rain gauges, weirs, and stage recorders. One catchment is almost entirely in grass. The other, because of hurricane damage in 1983 and 1985, was replanted with pines in 1985. Data indicate that both catchments have comparable hydrological characteristics and soils. Similarly, two adjacent catchments in the Bulolo Valley of Papua New Guinea were selected, and will be equipped with instruments in 1987.

The paper presented the significance, goals, objectives, problems, and work to be done for both projects. Both studies will be conducted over a 20-year period. Results will provide a quantitative basis for evaluating the effects of planting and harvesting of Pinus caribaea on the soils, vegetation and hydrology of tropical Pacific island watersheds so that rational management decisions can be made.

Other watershed management research activities in the South Pacific region will be discussed.

## THE POTENTIAL FOR HEAVY METAL POLLUTION TO THE FLY RIVER OF PAPUA NEW GUINEA AS A RESULT OF MINING OPERATIONS

Ken M. Gawne, Department of Chemical Technology, University of Technology, Lae, Papua New Guinea

The Fly River is a major waterway, navigable by small ships from the Gulf of Papua to Kiunga (a distance of 850 km), which has as its two main tributaries the Ok Tedi and Strickland rivers. The potential for heavy metal pollution arises from the current operations of Ok Tedi Mining Ltd (OTML) and the future operations at Porgera.

**Ken Gawne, UNITECH Papua  
New Guinea. Reviewing  
research into Heavy Metal  
Pollution of the Fly River.**

OTML presently extracts gold using a cyanide leach/carbon in pulp process and discharges approximately 25000 tonnes of fine tailings into the Ok Tedi river system each day. Early in 1987 copper processing will commence with even larger quantities of waste being discharged directly into the river. A combination of plant problems and inefficient control procedures have resulted in excessive heavy metal concentrations being measured on many occasions.

Extraction of gold at Porgera will result in tailing discharge to a tributary of the Strickland river. Metals are carried vast distances either adsorbed on suspended solid matter or as complexed soluble species. No comprehensive monitoring of the water sediment system along the length of the Fly has yet been undertaken. It is certain that unless plant processing of waste material is carried out efficiently, and regulatory agencies carry out a full monitoring programme, Papua New Guinea could damage a resource which is of greater long term importance than the wealth generated by mining.

#### FISH-TRANSECT SURVEYS TO DETERMINE THE INFLUENCE OF NEIGHBORING HABITATS ON FISH COMMUNITY STRUCTURE

Charles E. Birkeland and Steven S. Amesbury, Marine Laboratory, University of Guam, Mangilao, Guam, and Spensin James, Lomongo Olter and Ehsor Endere, Department of Biology, Community College of Micronesia, Kolonia, Pohnpei, Federated States of America.

Fish communities were surveyed by visual counts along 50m transect lines on isolated coral reefs, on coral reefs bordered by seagrass beds, on coral reefs bordered by mangroves, on coral reefs bordered by both seagrass beds and mangroves, and also in seagrass beds and mangroves, each of the the latter two in four situations of bordering habitats analogous to the four situations of coral reefs surveyed. In all cases, patterns of replicate transects were heterogeneous for any family of fishes for any combination of habitats, i.e., no pattern of abundance was consistent for any set of replicates. Nevertheless, significant differences were found in fish communities under different combinations of habitats which implied that neighboring habitats were influential in determining the structure of fish communities. Each family of fishes showed a different pattern of influence by neighboring habitats. In order to manage tropical coastal marine fisheries effectively, we need to know more about the mechanisms of influence of habitat combinations on fish community structure.

#### EQUATORIAL PACIFIC OCEAN MONITORING

Christian Henin, Centre ORSTOM, Noumea, New Caledonia

The ORSTOM Centres in Noumea (New Caledonia) and Papeete (Tahiti) initiated monitoring of the intertropical Pacific Ocean using ships of opportunity. Surface temperature, salinity, chlorophyll, zooplankton since 1969 and temperature of the 0-400 m upper layer since 1979 are routinely measured allowing the description of seasonal as well as long term changes of these parameters. Major results concern the "El Nino" event which was shown to affect the whole Pacific Ocean.

In the framework of TOGA (Tropical Ocean and Global Atmosphere) for the 1985-1995 decade, this network was enlarged and ORSTOM started in addition, a programme consisting of bi-annual cruises along the 165°E meridian from 20°S to 10°N in the western equatorial Pacific. New data sets of current profiles (0-600m) and CTD hydrologic profiles (0-1000m) were used to improve the knowledge of the western Pacific current system. They also showed up severe limitations in the calculation of dynamic height from XBT and mean T/S curves alone, especially at the equator, because of the large variations below 400 m and in the salinity structure. However even at the equator, there is good agreement between the mean geostrophic and the mean directly measured currents.

#### PESTICIDES IN THE SOUTH PACIFIC

David L. Mowbray, Department of Biology, University of Papua New Guinea, Waigani, Papua New Guinea.

The report "Pesticide Use in the South Pacific" gives an extensive appraisal of the problems related to pesticide use in the region.

It lists kinds and quantities of pesticides used in agriculture, public health, home use, quarantine, forestry and timber conservation. It lists the pesticides used which are restricted or banned in other countries, or are rated as extremely or highly hazardous by WHO.

It gives information on major exporters to, and importers and distributors within the region. It lists decision-makers involved in pesticides, noting a regional lack of both expertise to evaluate pesticides and trained manpower to ensure safe and efficient use.

It discusses poisoning of humans, domestic animals, fish and wildlife. It outlines the present activities of the limited facilities in the region for conducting efficacy and residue trials, for residue analyses and toxicity studies. Pesticide legislation is reviewed, but most countries lack the expertise and infrastructure necessary for enforcement. Examples of enforcement problems are given. Controls on importation, sale, distribution, labelling, storage, transport and disposal are discussed, as well as requirements for protective clothing and health checks.

**David Mowbray, UPNG**  
**Reporting on Pesticide Use in**  
**the South Pacific**

A bibliography lists publications for the South Pacific and relevant publications from outside the region. It is proposed to establish a Regional Pesticide Information Centre, a Regional Pesticide Advisory Committee, and a Regional Pesticide Monitoring Network. The present status of these proposals is reviewed and future strategies suggested.

#### ENVIRONMENTAL EDUCATION AND TRAINING IN THE SOUTH PACIFIC: TOWARDS SUSTAINABLE DEVELOPMENT

Jennifer J. Bryant, School of Social and Economic Development, University of the South Pacific, Suva, Fiji.

In the South Pacific in recent years there have been a number of attempts to increase people's awareness of their surroundings and to build up a respect for the human and physical environment. These programmes have included increasing the number of environmental examples in a range of primary and secondary school subjects, formal courses in environmental planning at tertiary level, and conservation messages through the media.

The difficulty with environmental education in the South Pacific is the range of physical and cultural situations found in the twenty-two countries and the variety of interpretations placed on environmental education. Although there are common education systems for some of the countries, others resent the imposition of materials from the outside and a type of "subsistence development" in environmental education has occurred.

For environmental education to have any meaning in the South Pacific, the variety of physical and cultural environments must be taken into account. It is not possible, however, for each country to develop its own programme and thus a kind of "dependent development" which is sustainable can be undertaken by using the resources and expertise which are available within the region, particularly through institutions such as the University of the South Pacific and the South Pacific Regional Environment Programme.

**Jenny Bryant, USP, Fiji speaking on Environmental Education  
and Training in the South Pacific**



## FEATURE

### SPREP MAKES CONSIDERABLE PROGRESS WITH IMPLEMENTATION OF ACTION STRATEGY FOR PROTECTED AREAS

#### INTRODUCTION

The South Pacific is a vast region extending over 29 million sq km, of which only about 500 000 sq km is land. The island environments present special, often critical, problems for nature conservation. Geographical and ecological isolation have led to the evolution of unique species and communities of plants and animals, many of which are adapted to only one island or island group, and found nowhere else in the world. There are about 2 000 different types of ecosystems throughout the South Pacific, and on some islands 80% or more of the species are endemic. Limited space means that ecosystems are restricted, with small biological populations and this increases their vulnerability.

On many islands of the region the diminishing area of natural undisturbed environments has become critical. Relatively large numbers of native plant and animal species are endangered (or extinct). Indeed, there are about seven times more endangered bird species per capita in the South Pacific than in the Carribean, and one hundred times more than in North America or Africa, placing heavy responsibilities on the small island nations of the region.

To the people of the island countries the maintenance of environmental quality and the conservation of the vital natural resources which support their often subsistence lifestyle, is of paramount importance. It is therefore, with growing concern that they perceive the impacts of population growth, land and habitat destruction due to accelerated soil and coastal erosion, coastal reclamation, mining activities, excessive harvesting of native forests and of coastal fish resources, and pollution of both inland and coastal waters on their environment.

It was against this background that representatives of most of the countries in the region met at the Third South Pacific National Parks and Reserves Conference in Apia, Western Samoa in June/July 1985. The Conference examined the environmental problems and nature conservation needs of the region and in response, developed the principal Conference output, The Action Strategy for Protected Areas in the South Pacific Region. The Action Strategy was subsequently adopted by the Ministerial Meeting of the Conference and later that year, by the countries of the region at the twenty-fifth South Pacific Conference. In adopting the Action Strategy the Conference designated responsibility for its implementation to SPREP.

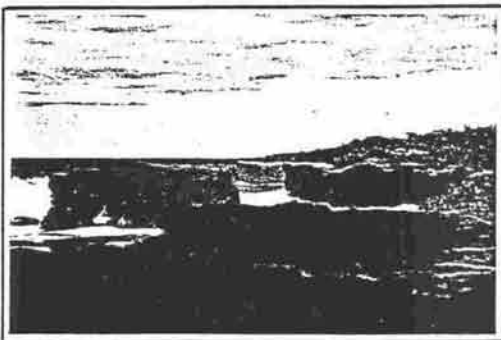
### THE ACTION STRATEGY

In broad terms the Action Strategy aims to provide a work programme to implement the conservation and protected areas objectives of the SPREP Action Plan in the four years leading up to the Fourth South Pacific Nature Conservation and Protected Areas Conference in 1989.

It recognises the particular value of protected areas to the region as a means of:

- . assisting in the maintenance of the main life support systems through enhancement and protection of the resource values of such systems;
- . protecting island biological diversity and genetic resources;
- . assisting in the maintenance of traditional customs and culture;
- . providing opportunities for economic development through tourism and recreation;
- . providing opportunities for education and research.

It also recognises that the establishment and effective management of protected areas in the region involves a complex range of social, cultural, legal and administrative considerations. Among these is the need to develop protected area categories which are sympathetic to



## **Action Strategy for Protected Areas in the South Pacific Region**

Prepared during the Third South Pacific National  
Parks and Reserves Conference, Apia, Western  
Samoa, 24 June - 3 July 1985

traditional resource use and customary practices and transcend the problems often associated with customary ownership of land and resources. An enforceable legal framework and a well supported management agency with trained personnel, together with a good working relationship with the community and other government agencies are also vital to the long-term viability of a protected area system. The Strategy recognises the need to promote environmental education throughout all levels of the community if the goal of the long-term maintenance and enhancement of the Pacific island's environment is to be achieved.

### ACTION STRATEGY GOALS, OBJECTIVES AND ACHIEVEMENTS

The Action Strategy has five goals relating to conservation education, conservation policy, the establishment of protected areas and regional and international co-operation. There are specific objectives relating to each goal and for each objective a list of national and regional/international activities is identified. The goals and a summary of progress to date follow.

**GOAL A: TO IMPLEMENT PROGRAMMES AND EXPAND EFFORTS IN CONSERVATION EDUCATION TO INCREASE PUBLIC AWARENESS OF THE VALUES AND BENEFITS OF ENVIRONMENTAL CONSERVATION INCLUDING PROTECTED AREAS.**

SPREP has been particularly active in the field of conservation education producing a wide range of appropriate education materials for use in schools and community extension work. These include videos, audio visual slide shows, a series of case studies, fact sheets and a Coral Reef Handbook. SPREP has also supported other regional environmental education and awareness activities including a photographic exhibition organised by the University of the South Pacific, publication of the regional environmental education journal PLES, the work of the Melanesian Environment Foundation and, in conjunction with the Government of Tonga a two-day seminar on the environment. The recent development of the proposed two-year programme of environmental education projects and its likely support by UNEP, together with SPREP's regular, on-going environmental education programme, should ensure momentum is maintained and the programme expanded in this priority field.

Several proposals for National Conservation Strategies are under investigation for the region although their completion and eventual implementation will be a medium to long-term goal. The support of the IUCN Conservation Development and Environmental Law Centres will be vital to the success of these initiatives, which offer important opportunities to ensure that national policy, legislation and administrative infrastructures are developed and orientated towards the conservation and sustainable development of the limited island resources.

Natural resource surveys and inventories, offer similar opportunities to promote conservation policies and in particular the establishment of protected areas. These will provide a valuable information base for the identification of conservation priorities and avoidance of habitat and species loss from development activities. The proposed inventories for Western Samoa and New Caledonia will be important initial steps towards the long-term goal of wider regional coverage. However, the surveys are expensive and it is beyond both the financial and technical resources of most island countries to undertake them. Thus, as with National Conservation Strategies, support from SPREP and outside the region particularly in the form of trained survey personnel, will need to be identified and harnessed if the above and other inventories are to be successfully completed.

GOAL B: TO DEVELOP CONSERVATION POLICIES WHICH PROMOTE PROTECTED AREA MANAGEMENT AS AN INTEGRAL PART OF NATURAL RESOURCE USE.

Activities related to this important goal include:

- Development of a two-week sub-regional course in coastal resource management and planning emphasising the role of protected areas in resource conservation. Courses in 1987 have been held in Tonga (with participation from Western Samoa and the Cook Islands) and the Federated States of Micronesia (with participation from Palau and the Solomon Islands). Two courses will be held each year until regional coverage is obtained.
- Preparation of a coastal resource management plan for Tahiti, French Polynesia with SPREP assistance. The plan will identify potential protected areas and formulate policies for the conservation and development of the coastal resources.
- Completion of a SPREP supported Mangrove Management Plan for Fiji and the provision of advice by SPREP on its national implementation. The plan zones primary mangrove areas on Viti Levu for protection and sustained use and is a model for further plans on Fiji and other islands.
- Completion of two SPREP funded studies in the Tokelau Islands on traditional knowledge; one on traditional tuna fishing management and techniques and the other of a more general nature. Both studies will assist with the retention of traditional resource conservation practices.
- Completion of a SPREP project to assess the potential environmental impact of Tourism in Western Samoa with emphasis on the protection of critical habitat, species and potential protected areas.

GOAL C: TO ESTABLISH A REPRESENTATIVE NETWORK OF PROTECTED AREAS IN THE SOUTH PACIFIC REGION.

Perhaps, the most important of the goals addressed in the Action Strategy is that relating to the establishment of a representative system of protected areas in the region. Unfortunately the past two years have seen only one protected area formally established in the region, Tonga's Vaomapa Nature Reserve. However, protection has been afforded the upper watershed areas of Pohnpei State, Federated States of Micronesia and there are an encouraging number of proposals for new protected areas at varying stages of completion. Their eventual establishment, and the promotion of further protected area and species conservation initiatives at the national level, depends on a number of considerations. Important among these are the availability of funds to compensate landowners for lost resource use rights and to finance lease arrangements or land swaps, the enthusiasm and commitment of the local staff negotiating the protection of an area, the degree of political sympathy to the project and existence of appropriate legislation and management structures to ensure the long-term viability of areas once established.

To a large extent SPREP's ability to assist at the national level in the development and implementation of Action Strategy related projects depends on the will and commitment of the governments concerned to develop and pursue their own initiatives. In this regard it has proved difficult to stimulate governments to follow-up with formal requests for assistance on the projects which have been proposed by their representatives at the Apia Conference and the subsequent SPREP Work Programme Meeting in 1986 where a number of Action Strategy related projects were also submitted for consideration.

Unfortunately, nature conservation and protected areas are still considered a low priority by the governments when allocating their scarce financial and manpower resources. Therefore, it is difficult to encourage government enthusiasm for projects requiring long-term commitments of staff and financial resources or those with high initial capital outlays. This applies in particular to protected area establishment where the potentially high costs of establishment and subsequent development, and the need to provide for on-going management, compound the problem.

In these circumstances the establishment and initial development of protected areas using funds provided by donor agencies is an important option. In some cases it may be the only way to get a proposal underway. Although it has several drawbacks, such an approach is particularly appropriate and desirable if it stimulates the establishment of a nucleus protected area system or achieves protection of ecosystems or rare species under immediate threat of destruction. However, it must be remembered that without a corresponding government commitment of resources for future management, the longer term viability of any area established in this manner must be doubtful.

The ability of SPREP, the governments of the region and donor agencies to fund protected area establishment and development to the extent envisaged in the Action Strategy is limited. There is therefore, a pressing need to investigate alternative strategies for securing lasting protection of conservation values which are appropriate for the region, limit the financial outlay involved and are viable over the long term. Such strategies should be flexible and should be based on recognition and respect for the communal nature of land ownership rather than seeking the alienation of protected areas in separate title. It should also provide for the reality of traditional patterns of resource ownership, use and control and for some economic return to the community. Initiation of an investigation and the development of such a concept will be a SPREP priority over the next two years. Another will be the fostering of closer interaction with countries aimed at winning support for protected areas as an essential component in the process of economic and social development and emphasising the vital role they play in the conservation of precious island resources.

GOAL D: TO DEVELOP AND MAINTAIN AN ADEQUATE CAPACITY FOR PROTECTED AREA MANAGEMENT IN THE REGION.

Also arising from the generally low priority given conservation and environmental management, is a relative scarcity of personnel working in these fields. Where these people exist, they are often over-worked and see the pressing problems of day-to-day field management as their immediate priority. Frequently they lack the seniority to make the decisions necessary for progress on projects and must seek this from higher levels. This can involve a lengthy process of referral, particularly if the Conservation Officer is only "attached" to, or works in isolation in a multi-functional ministry or department where other priorities dominate. Under these circumstances the protected area personnel face considerable difficulties when initiating new protected area proposals or pursuing the often protracted negotiations involved in their establishment.

Thus the need for more trained protected area staff working in the senior levels of government is vital to the achievement of the Action Strategy's protected area goals. With the strong support of the New Zealand Government encouraging progress has been made towards the provision of appropriate training opportunities for protected area personnel from the region.

The sixteen-week International Park Managers Training Course to be held at Turangi as part of the New Zealand National Park Centennial celebrations, coming as it does two years after the protected area management course held in conjunction with the Apia Conference, will provide recently recruited protected area personnel from the region with essential basic training in all facets of their chosen field. The two annual scholarships in protected area management jointly supported by New Zealand and SPREP complement the shorter course and provide more comprehensive training along with the potential to carry studies forward to the tertiary level. A training manual on protected area management in the South Pacific is also in print and will be distributed throughout the region.

Indications of interest in supporting training, particularly through in-service staff exchanges have been forthcoming from New Zealand and Australian Federal and State Governments and these will be followed up in the near future. The Australian National Parks and Wildlife Service has just announced support for two Pacific islanders to participate in a study tour of Western Australian Parks and Reserves. Similarly, the search for the extra-budgetary funding required to implement the recently developed SPREP three-year programme for environmental management and protected area training activities will be pursued vigorously. These initiatives, if developed fully, will ensure adequate training opportunities are available to meet the regions short to medium term protected area training needs.

**GOAL E: TO STRENGTHEN CO-OPERATION IN PROMOTING CONSERVATION IN THE REGION AND SUPPORT FROM INTERNATIONAL AGENCIES.**

The most significant event to take place in relation to this goal was the adoption by sixteen countries in November 1986, of the SPREP Convention and its subsequent signing by eleven countries. Progress with the Convention on the Conservation of Nature in the South Pacific (Apia Convention) has not been as satisfactory and this still requires one further ratification to bring it into force.

The establishment in August 1986 of the Protected Area Management Officer position within SPREP, supported by the New Zealand Government, WWF/IUCN and SPC has been instrumental in facilitating the implementation of the Strategy in general, and in promoting liaison necessary to strengthen international and regional support for SPREP and its Action Strategy related activities.

In the past SPREP has drawn financial support for its activities from the voluntary contributions of the countries of the region, the Regional Seas Programme of the UNEP and other international non-government organisations such as the IUCN and WWF International. The South Pacific regional education and research institutions such as the Universities of the South Pacific and of Papua New Guinea have also been a source of strong support and co-operation as have extra-budgetary contributions from New Zealand and Australia.

Acceptance of responsibility for the implementation of the Action Strategy has increased the pressure on SPREP's limited resources. Its assistance is being sought on an increasingly frequent basis, particularly for Action Strategy related projects in the fields of resource survey and inventory development, species conservation, protected areas establishment and development and manpower training. It has become increasingly obvious that it is necessary for SPREP to look beyond its traditional sources of support if it is to meet the requests of the countries and build upon the progress made in the past two years. Accordingly, initiatives aimed at establishing liaison with potential support organisations which have been a feature of SPREP's activities this past year will continue to be a priority. Some of the organisations with which stronger ties have been developed include:

- . The New Zealand Department of Conservation;
- . the Australian Government, specifically the Australian National Parks and Wildlife Service together with the State National Parks and Wildlife and Conservation Services;
- . The United States National Parks Service, International and Pacific Area Divisions;
- . The United States Fish and Wildlife Service, Office of Environmental Services, Hawaii;

- . WWF International, Australia and Japan;
- . Asian Development Bank;
- . East-West Centre Environment and Policy Unit and the Sea Grant Extension Service, University of Hawaii.

### CONCLUSION

The activities described above indicate solid progress has been made by SPREP, other regional and international organisations and the governments of the region in the implementation of the Action Strategy during two years since the Third South Pacific National Parks and Reserves Conference in 1985. Clearly there are difficulties facing SPREP and its member countries in the achievement of nature conservation goals. However, with the continued support of governments and the international conservation community there is every reason to be optimistic the progress of the past two years will be continued and significant progress will be reported to the 4th South Pacific Conference on Nature Conservation and Protected Areas to be held in Papua New Guinea in 1989.



## COURSES IN ENVIRONMENTAL SUBJECTS

### LIZARD ISLAND RESEARCH STATION DOCTORAL FELLOWSHIPS FOR 1988

The Australian Museum, in conjunction with the Lizard Island Reef Research Foundation, is offering a three-year fellowship to a PhD student to support field work on the Great Barrier Reef, based at Lizard Island Research Station.

The Fellowship is available to any student enrolled, or about to be enrolled, in a PhD programme. It is expected that the recipient will carry out significant long-term field studies in a scientific discipline relevant to the Barrier Reef.

The Fellowship includes two return air fares from the participant's University to Lizard Island, bench fees and accommodation at the Lizard Island Research Station for approximately four months per annum for a maximum of three years. A limited amount of money is also available for equipment. The total value of the Fellowship is about Aust. \$ 12 000 (\$ 4 000) per annum for three years), and is not a stipend.

#### INFORMATION

For further details regarding research facilities at Lizard Island, please contact Drs. B. Kojis and N. Quinn, Co-Directors, Lizard Island Research Station, PMB 37, Cairns, QLD 4870, and the information about the grant please contact The Director, 'LIRS' Fellowships, The Australian Museum, P.O. Box A285, Sydney South, NSW, 2000.

Closing Date: 15th December 1987

### PROPOSED REGIONAL WORKSHOP ON TROPICAL FOREST ECOLOGY AND MANAGEMENT IN THE ASIA-PACIFIC REGION

This CSC/UNESCO-MAB workshop is scheduled to be held in Lae, Papua New Guinea, 26 June - 10 July 1988. However, these dates are still tentative. The workshop aims to discuss recent advances in tropical forest ecological research and particularly forest regeneration dynamics and their application to forestry agricultural and landscape management in the tropics. It will involve discussion of current forestry and land resource management systems in the Asia-Pacific region, field exercises to illustrate recently developed ecological principles and elaboration on the project framework for an ecosystem approach to land resource management. Further information is available from:

Dr. Simon Saulei  
Biology Department  
University of Papua New Guinea  
Box 320 University P.O.  
Papua New Guinea  
Telephone: 25 3900  
Telex : NE 22366

Prof. J. Johns  
Department of Forestry  
PNG University of Technology  
PMB Lae, Morobe Province  
Papua New Guinea.  
Telephone: 424 999  
Telex : 42 428

## CALENDAR OF EVENTS

8TH AUSTRALIAN CONFERENCE ON COASTAL  
AND OCEAN ENGINEERING, Launceston,  
Tasmania, Australia

1 - 4 December 1987

The Conference aims to bring together engineers, scientists, planners and managers who, between them, must find solutions to the wide range of problems affecting the coastal and offshore zone.

Contact:

The Conference Manager,  
8th Australian Conference on Coastal and Ocean  
Engineering 1987  
The Australian Institute of Engineers  
11 National Circuit  
BARTON ACT 2600  
Australia.

NGA MAHI MAORI TE WAO NUI A TANE,  
Workshop on Ethnobotany,  
Christchurch, New Zealand

22 - 26 February 1988



This workshop is organised by the New Zealand Department of Scientific and Industrial Research in conjunction with the Commonwealth Science Council as part of the International Scientific Programme on Biological Diversity and Genetic Resources. It will be held on the Rehua Marae, Christchurch and will focus on New Zealand and the South Pacific. It aims to bring together scientists and Maori and Pacific island people who have both traditional and scientific knowledge of plants to share their knowledge and explore ways of recording this knowledge and developing the use of plants for traditional cultural and economic benefits.

Some funding may be available from the Commonwealth Science Council for Pacific island participants. For further information contact: Dr Warwick Harris Director, Botany Division, DSIR, Lincoln College New Zealand or Mr Geoff Walls, Botany Division, DSIR, Private Bag, Havelock North, New Zealand or SPREP.

THIRD PACIFIC CONGRESS ON  
MARINE SCIENCE AND TECHNOLOGY  
(PACON 88)

16 - 20 May 1988

## Contact:

Pacific Congress  
c/- Sea Grant College Program  
University of Hawaii  
1000 Pope Road  
HONOLULU  
HI 96822.

INTERNATIONAL CONFERENCE ON  
MARINE DISPOSAL OF WASTE WATER  
Wellington, New Zealand

23 - 25 May 1988

## Contact:

The Programme Secretary  
Mr Keith Davis  
Wellington Regional Council  
P.O. Box 11-646  
WELLINGTON  
New Zealand.

THIRD INTERNATIONAL SYMPOSIUM ON  
MARINE BIOGEOGRAPHY AND EVOLUTION IN  
THE PACIFIC  
University of Hong Kong

26 June - 3 July 1988

## Contact:

Professor D.H. Montgomery  
Biological Sciences Department  
CAL POLY STATE UNIVERSITY  
SAN LUIS OBISPO, CA. 93407

VII ANNUAL CONFERENCE OF THE INTERNATIONAL  
ASSOCIATION FOR IMPACT ASSESSMENT,  
Brisbane, Australia

5 - 8 July 1988

## Contact:

Secretary,  
VII Annual Conference of the International  
Association for Impact Assessment  
Conventions Department  
P.O. Box 489, G.P.O.  
SYDNEY, NSW 2001  
Australia.

6TH INTERNATIONAL CORAL REEF SYMPOSIUM  
James Cook University, Townsville,  
Australia

8 - 12 August 1988

Contact:

6th International Coral Reef Symposium  
ACTS  
G.P.O. Box 1929  
CANBERRA, A.C.T. 2601  
Australia.

INTERNATIONAL GEOGRAPHICAL UNION-  
GEOGRAPHICAL EDUCATION COMMISSION  
GEOGRAPHICAL EDUCATION SYMPOSIUM,  
Brisbane, Australia

14 - 20 August 1988

Contact:

Dr Rod Gerber  
Brisbane College of Advanced Education  
Victoria Park Road  
KELVIN GROVE, Brisbane, QLD. 4059  
Australia.

ASIA AND PACIFIC REGIONAL CONFERENCE:  
POLLUTION IN THE URBAN ENVIRONMENT  
'POLMET' 88

28 November - 2 December 1988

Papers are being called for now.  
Please contact.

POLMET 88 Secretariat  
c/- Hong Kong Institution of Engineers  
9/F, Island Centre  
No. 1 Great George Street  
CAUSEWAY BAY  
Hong Kong.

## PUBLICATIONS

Following is a list of recently produced SPREP publications as well as documents published by other organisations and individuals which have come to our notice as being of potential interest to you.

### SPREP



PLES, published by the University of Papua New Guinea (UPNG) in association with SPREP, is calling for articles for its next issue. Please contact Dr Peter Eaton, or Dr. Philip Hughes, UPNG, Box 320, University Post Office, Papua New Guinea if you have an article relating to formal or non-formal environmental education or dissemination of information in the South Pacific Region.

ENVIRONMENTAL CASE STUDY LEAFLETS in English and French. New off the press during July on the subjects of:

- No.1     The Effects of Mining on the Environment of High Islands: A Case Study of Nickel Mining in New Caledonia.
- No.2     Wallis and Futuna: Man Against the Forest.
- No.3     Atolls and the Cyclone Hazards: A Case Study of the Tuamotu Islands.

SPREP PRELIMINARY ANNOTATED BIBLIOGRAPHY OF PACIFIC ENVIRONMENTAL EDUCATION MATERIALS, SEPTEMBER 1985.

SPREP has reprinted the above volume which is now available.

The Environment Newsletter is produced by the South Pacific Regional Environment Programme, South Pacific Commission, Noumea, New Caledonia and reports on the various activities of the programme together with news of general environmental interest to readers in South Pacific countries.

SPREP's activities are co-ordinated by a group made up of the South Pacific Commission (SPC), the United Nations Environment Programme (UNEP), the South Pacific Bureau for Economic Co-operation (SPEC) and the Economic and Social Commission for Asia and the Pacific (ESCAP).

The United Nations Environment Programme, through its Oceans and Coastal Areas Programme Activity Centre (OCA/PAC) based in Nairobi, has, since SPREP's inception, given considerable financial support to the programme's activities.

Much of the work undertaken by SPREP and supported by UNEP involves utilising skills of the Universities and Training Institutions within the South Pacific, who have recently formed an Association of South Pacific Environmental Institutions (ASPEI) to facilitate this work.

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