

ENVIRONMENT NEWSLETTER

Quarterly Newsletter of the South Pacific Regional Environment Programme

Contents:

NUMBER 7

OCTOBER - DECEMBER 1986

	Page
. News In and Around the Region	1
. Features	12
. Courses in Environmental Subjects	18
. Calendar of Events	20
. Publications	22

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

South Pacific Regional Environment Programme

(SPREP)

South Pacific Commission



© Copyright South Pacific Commission, 1986.

The South Pacific Commission authorises the reproduction of this material, whole or in part, in any form, provided appropriate acknowledgement is given.

Original text: English

NEWS IN AND AROUND THE REGION

ENVIRONMENTAL TREATY FOR THE REGION

On 25 November 1986 sixteen countries, including France and the United States, approved the

CONVENTION FOR THE PROTECTION OF THE NATURAL RESOURCES AND ENVIRONMENT OF THE SOUTH PACIFIC REGION

They pledged to "prevent, reduce and control pollution (in the South Pacific)" and in particular, to prevent, reduce and control pollution in the treaty area from vessels, air or land sources, and pollution which might result from the testing of nuclear devices. The treaty also includes a prohibition on the dumping at sea of radioactive waste. All 16 adopted the Final Act of the meeting of Plenipotentiaries. These were Australia, Cook Islands, Federated States of Micronesia, Fiji, France, Kiribati, Marshall Islands, Nauru, New Zealand, Palau, Papua New Guinea, Tonga, Tuvalu, United States of America, Vanuatu and Western Samoa. Seven countries signed the "Convention for the Protection of the Natural Resources and Environment of the South Pacific Region" on the spot. These States were Cook Islands, France, Marshall Islands, New Zealand, Palau, United States of America and Western Samoa. Two associated agreements were also adopted by the 16 participating countries. One Protocol concerns "Co-operation in Combatting Pollution Emergencies in the South Pacific Region", while the other deals with "the Prevention of Pollution of the South Pacific Region by Dumping."



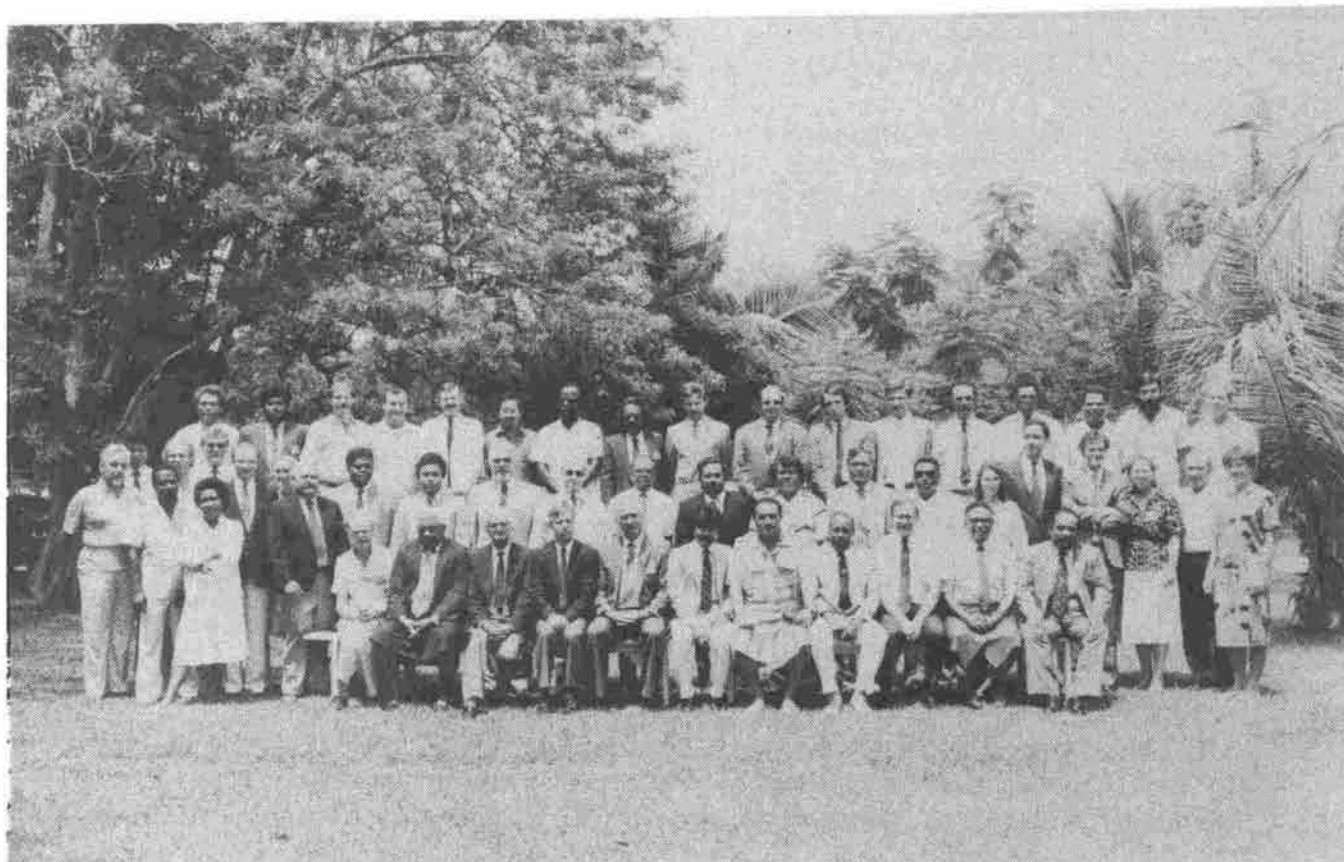
The Honourable Dr Terepai Maoate, Deputy Prime Minister and Minister of Conservation of the Cook Islands signing the SPREP Convention.

The Convention will enter into force as soon as 10 States ratify it. The Conference expressed the hope that other countries outside the region would be interested in it, notably Japan, and would become parties to the Convention and Protocols. Such prospective parties will require the prior approval of three-quarters of the initial ratifiers.

A seven-day meeting of senior officials, chaired by Mr Feturi Elisaia, Deputy Secretary for Foreign Affairs of Western Samoa, prepared the way for the Plenipotentiaries meeting which was attended by 22 States and territories of the 27 in the region. This impressive "turn-out" reflected the widespread and keen interest of the governments and peoples of the South Pacific in their environment.

In commenting on the importance of the Convention to the Pacific region the Honourable Dr Terepai Maoate, Deputy Prime Minister and Minister of Conservation of the Cook Islands and Chairman of the Plenipotentiaries meeting, said:

"Pollution in the South Pacific Ocean recognises no boundaries, so any activities causing pollution in our own waters will eventually pollute that of our neighbours. Likewise, their polluting activities will be transported to our waters. Therefore, we place great importance and value on this Convention because we believe it will assist all our efforts to protect our Pacific region marine environment."

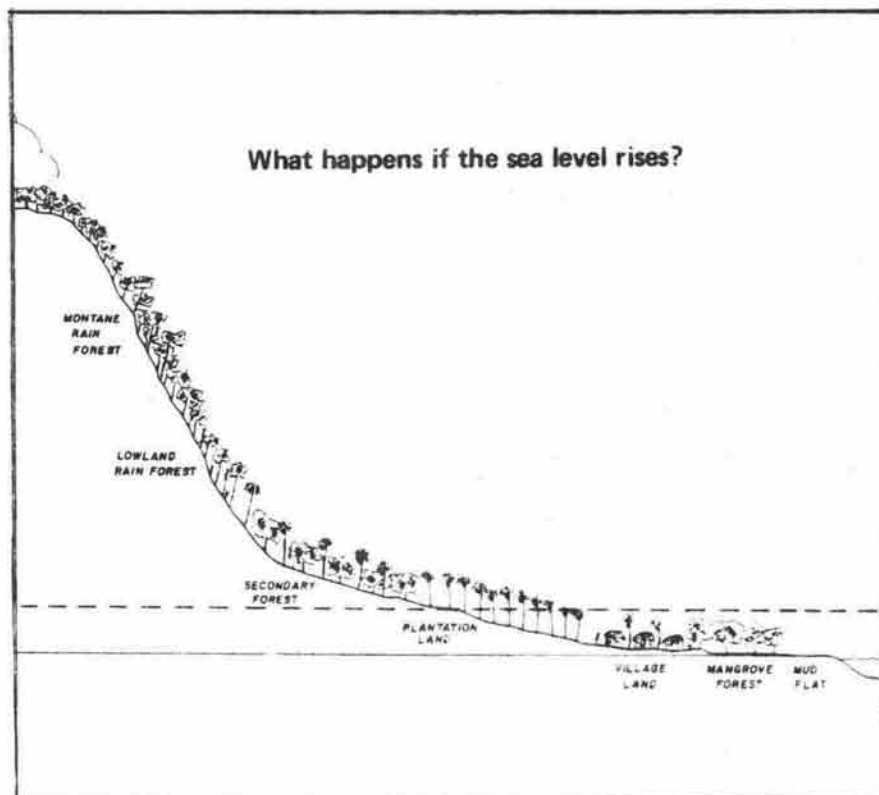


Delegates to the Plenipotentiaries Meeting, Noumea, New Caledonia,
25 November 1986.

SEA-LEVEL RISE:
IMPACT ON SOUTH PACIFIC ISLANDS

Universities and research institutions of the South Pacific region, under the auspices of SPREP with support from the United Nations Environment Programme (UNEP), propose to undertake a regional review of potential impact of sea-level changes to small island countries of the South Pacific.

Scientific consensus has been reached regarding increased concentrations of carbon dioxide and other atmospheric constituents with similar properties, causing significant changes to the earth's biosphere (in a so-called "Greenhouse Effect") within the next few decades. It is argued that if present trends continue, the change in level of greenhouse gases in the atmosphere would be equivalent to a doubling of pre-industrial carbon dioxide levels by around the year 2030. This is predicted to cause a warming of global average temperatures by between 1.5 and 4.5 degrees centigrade which in turn will lead to sea-level rises through a combination of factors. Although scientific estimates of the amount of rise vary considerably, it is recognised that even quite small changes in existing sea-levels could have a potentially enormous environmental, social and economic impact particularly on small island countries.



Many countries have now established national programmes to examine and evaluate potential impacts on coastal systems and to plan accordingly. Cognizant of the inability through lack of trained manpower and facilities, in most South Pacific island countries, the SPREP-associated Association of South Pacific Environmental Institutions (ASPEI) proposes to undertake a regional review of potential impacts.

This regional review, which will be presented to SPREP and to the UNEP Oceans and Coastal Areas Programme Activity Centre by December 1987, will involve investigators from the University of Papua New Guinea (UPNG), Office de la Recherche et Technique Outre Mer (ORSTOM), the University of the South Pacific (USP) and the University of Guam (UOG).

The group will:

- 1) examine, on a regional basis, the potential effects of sea-level changes on the coastal ecosystems, including reefs, lagoons, mangroves, and coastal river flood plains;
- 2) examine the possible effects of climatic change (particularly temperature elevations) on the terrestrial and aquatic ecosystems, with special reference to effects on economically important species;
- 3) examine the potential effects of climatic, physiographic and ecological changes on the socio-economic structures and activities; and
- 4) identify primary areas of need in terms of further research and contingency planning.

AMERICAN SAMOA - SURVEY OF FOREST BIRDS AND FRUIT BATS

Recent field surveys in American Samoa show that most forest birds (identified in baseline surveys 10 years ago) were either common or abundant. However, at least one wetland bird, the gray duck, found in low numbers in the earlier survey, may no longer exist in American Samoa. As well two introduced species, the common myna and the jungle myna, which could compete with or otherwise damage native bird populations, have now appeared.



The primary purpose of the Samoa survey was to determine the status of the Samoan fruit bat, which was recently petitioned to be listed as endangered. For several years, large numbers of the bat have been commercially harvested and exported from American Samoa to the Mariana Islands; thus, the concern for this species.

Although it was found that the fruit bat was fairly common in native forests, in certain areas the forest was being rapidly removed and the biologists conducting the survey thus recommended a ban on commercial harvesting.

(Source: US Govt. Fish and Wildlife Service,
FY86 End-of-Year Annual Report - Honolulu Office)

ASPEI

Association of South Pacific Environmental Institutions

What is ASPEI?

Since 1983 SPREP has worked closely with the Universities and other Research and Training Institutions within the South Pacific Region. In fact a very valuable co-operative arrangement has been established with the United Nations Environment Programme (UNEP) providing funding for activities, many of which are undertaken by staff and research trainees at these institutions working on a joint university network basis.

The benefits to the environment of the South Pacific are many-fold. The Institutions provide their staff consultancy services free of charge, project expenditure thus only involving travel costs, equipment, training and consumables. A wide range of expertise is, in this way, made available to the region through SPREP. Most projects involve a training component, enabling the universities to train South Pacific researchers thus increasing the trained manpower component of the region. By facilitating joint projects between the institutions, the capacity of the region to undertake environmental protection activities itself is enhanced and co-operation of the region's research and training institutions increased so that the past practices of looking outside the region for expertise is now decreasing.

All of these Institutions have already demonstrated strong commitment to supporting the work of SPREP and financial support for this programme, through the provision of in-kind assistance and services by the Institutions, totaled some 1.1 million dollars US between 1984-1986. Projections for Institutional support during 1987 total half a million US dollars.

Each year since 1983 the Universities and other Research and Training Institutions have come together at a Consultative Meeting organised by SPREP to discuss the scope of projects that can be put to a later Work Programme meeting of government representatives at which governments decide what projects will be undertaken on their behalf by SPREP.

At the Third Consultative Meeting of Research and Training Institutions held at the University of Guam in June 1985, it was decided that the Institutions co-operating in SPREP should form an Association. Thus ASPEI, the Association of South Pacific Environmental Institutions, was born with Dr John Pernetta of the University of Papua New Guinea as its first Chairman.

The Association is made up of representatives of the Papua New Guinea University of Technology (UNITECH), the University of Guam (UOG), the University of Hawaii (UH), the University of Papua New Guinea (UPNG), the University of the South Pacific (USP), the East-West Center (EWC), Guam Environmental Protection Agency (GEPA), Office de la recherche Scientifique et Technique Outre-Mer (ORSTOM), Laboratoire d'Etude et de Surveillance de l'Environnement (LESE) and the Committee for Co-ordination of Joint Prospecting for Mineral Resources in South Pacific Offshore Areas (CCOP/SOPAC).

SINCE ASPEI'S BIRTH

Following the SPREP Work Programme Meeting in September at which governments approved the activities to be undertaken by the Institutions, ASPEI has been actively continuing various projects under the broad headings of Watershed Management, Inland and Coastal Water Quality Monitoring, Ecological Interactions Among Tropical Coastal Ecosystems, Oceanography, Pesticide Use Hazards, Management of Natural Resources, Waste Management and Pollution Control, Environmental Education, Regional Review of State of the Marine Environment and Impact of Projected Sea-Level Rise.



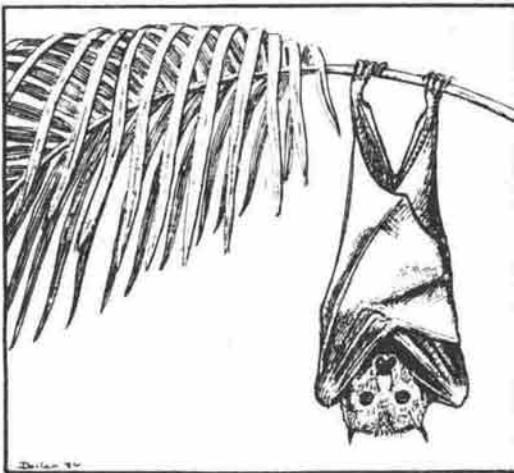
ASPEI members at SPREP's Third Consultative Meeting,
Guam, June 1986.

FRUIT BATS SURVEYED ON ULITHI ATOLL AND YAP

The US Fish and Wildlife Service reports that Fruit Bats were the subject of a survey in Micronesia. Fruit Bats of Yap had been severely depleted due to commercial hunting in the 1970's, and in 1981 all hunting was banned.



Populations began to increase, and the Yap Department of Natural Resources has come under increasing pressure from the private sector to once again open the hunting season. However, it was felt that surveys were needed before informed management decisions could be made. Surveys were completed in March in co-operation with the US Forest Service and the Yap Institute of Natural Science. Bats were found in high densities on Ulithi Atoll, but populations are low because of the limited land area available there. On Yap, the bat population appears to be growing slowly. Recommendations based on the survey include: 1) legalise a subsistence harvest only; and 2) allow only air guns or traditional methods (nets) of harvest. More liberal regulations could be considered in future years once the effects of subsistence take are assessed.

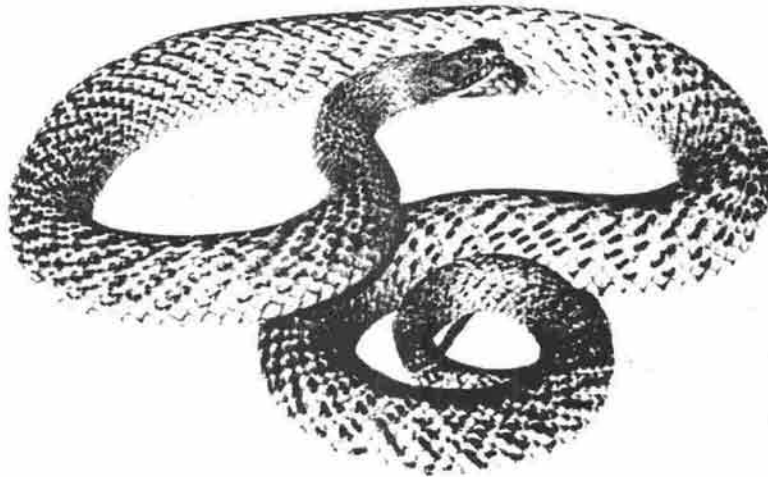


It is further reported that informal discussions have been held with key resource management staff on Guam, Saipan, American Samoa, and Yap regarding the need for a Pacific Islands perspective on fruit bat management, particularly in light of expressions of interest in exporting from places as far away as Singapore.

(Source: US Govt. Fish and Wildlife Service,
FY86 End-of-Year Annual Report - Honolulu Office)

SNAKE PROBLEM ATTACKED IN MARIANA ISLANDS

The Brown Tree Snake (*Boiga irregularis*), accidentally introduced to Guam most likely in the mid-1950s, is believed to be causing a dramatic decrease, and extinction, of many of Guam's native avifauna (birds). Killing of birds, however, is not its only activity detrimental to the island. It is believed that substantial increase in the number and duration of electrical power breakdowns is the result of the snake causing electrical shorts in high-tension lines and transformers. Unofficial estimates by the Guam Power Authority link the snake to a monetary loss of several hundred thousand dollars annually. The military, too, is concerned about the snake doing similar damage to vital and expensive equipment used by the Strategic Air Command and the Navy at the bases on Guam. Fears are also held that the snake will spread to other snake-free islands.



Measures are being taken to "attack" this problem by trapping, public education, gathering of information on the snake's habitat, and investigation of control measures (pheromonal attractants, natural predators and biological controls).

In a major effort to help prevent accidental introduction of the snake to other islands, brochures and posters warning of this danger are being produced in 9 different Micronesian languages and are being widely disseminated.

(Source: US Govt. Fish and Wildlife Services,
FY86 End-of-Year Annual Report - Honolulu Office)

OIL SPILL RESPONSE WORKSHOP

Representatives of governments and administrations of the South Pacific Region recently attended a Pacific Regional Workshop on Oil Spill Response organised with technical assistance provided by the Australian Federal Department of Transport, the International Maritime Organisation (IMO), the South Pacific Regional Environment Programme (SPREP) and the United States Coast Guard.

The workshop held in Cairns, Australia from 13 to 17 October, 1986 had 23 participants from inside the South Pacific region and its near neighbours, Malaysia and the Philippines.

The workshop covered:

- Marine Pollution Incidents,
- Fate and Effects of Oil in the Marine Environment,
- Containment Methods and Use of Oil Booms,
- Shoreline Clean-up,
- Training in Oil Spill Equipment Use,
- Local, National and International Contingency Plans for Oil Spills,
- Reporting Systems Under Regional and International Conventions.
- Liability and Compensation for Oil Pollution Damage,
- Implications for Response to Oil Spill under the SPREP Convention,
- Technical Assistance and Training in Oil Spill Response,
- Maritime Accidents and Salvage.

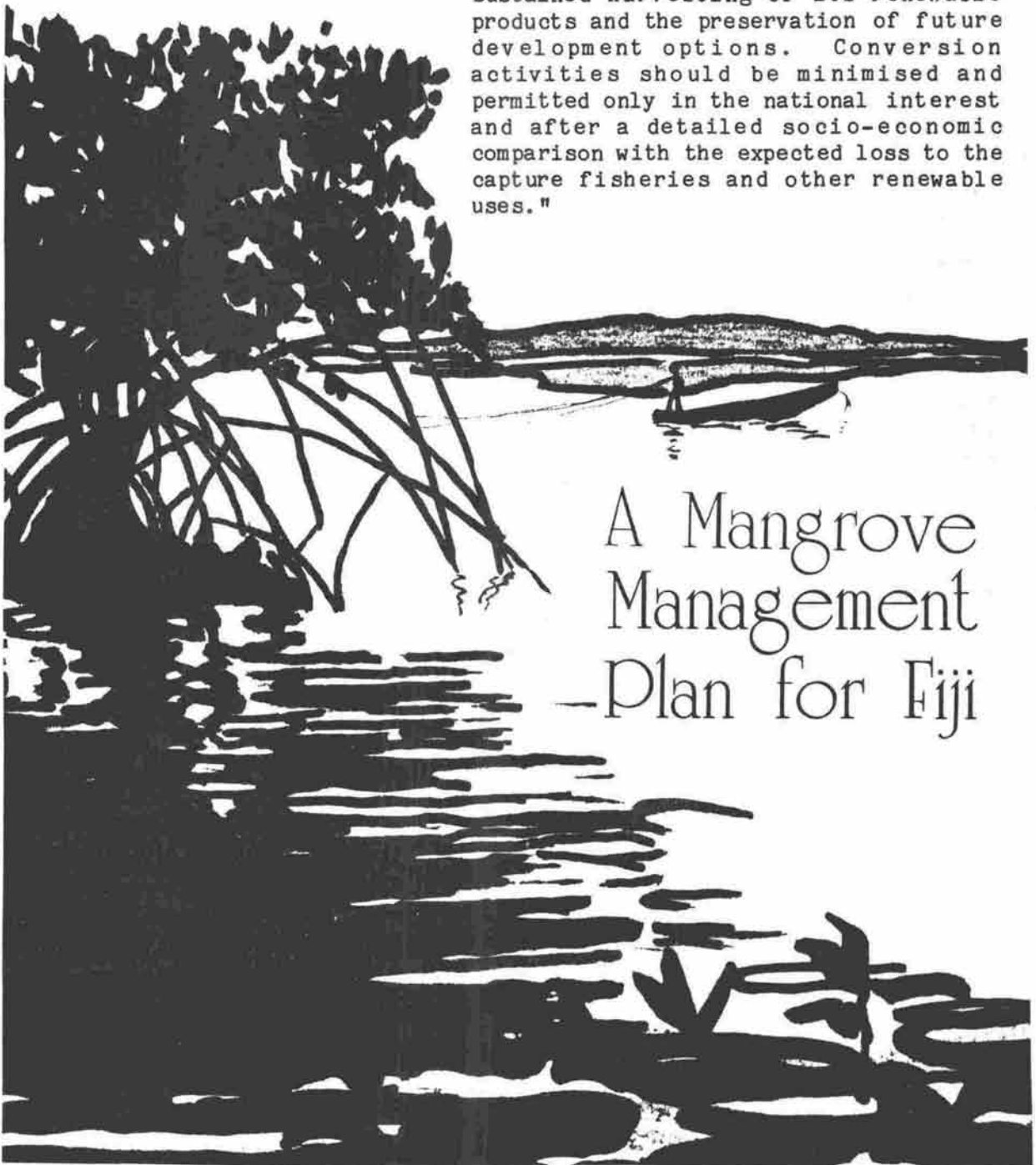
The comprehensive coverage of this workshop gave a valuable grounding to representatives from countries in our region to respond in the future to oil spill pollution problems and thus help to collectively protect the Pacific Ocean.



FIJI RECOGNISES IMPORTANCE OF MANGROVES

Following a joint project involving work undertaken by Dr Dick Watling for the Fiji Government's Mangrove Management Committee and South Pacific Regional Environment Programme. Cabinet of the government of Fiji has stated its recognition of mangroves as "an important national asset - primarily as a resource base for capture fisheries and secondarily as a renewable source of products which contribute significantly to the quality of life of associated coastal communities - and that the natural processes of the ecosystem should be preserved wherever possible thereby allowing the

sustained harvesting of its renewable products and the preservation of future development options. Conversion activities should be minimised and permitted only in the national interest and after a detailed socio-economic comparison with the expected loss to the capture fisheries and other renewable uses."



A Mangrove
Management
Plan for Fiji

FEATURES

MINING ACTIVITIES IN THE SOUTH PACIFIC

One normally associates our South Pacific islands with coconut palms, crystal clear water, tranquility and coral reefs. However, in parts of our region mining activities, of considerable dimension, exist with associated earth-moving equipment, open-cut techniques and noise and have a large, and often detrimental, impact on the environment.

The results of studies by three scientists working in the region attest to environmental degradation associated with such activities. These are the work of Dr David Mowbray of the University of Papua New Guinea (Pollution Problems in Papua New Guinea); Professor J-F. Dupon of Office de la Recherche Scientifique et Technique d'Outre Mer (The Effects of Mining on the Environment of High Islands: A Case Study of Nickel Mining in New Caledonia) and Drs Harley Manner, Randolph Thaman and David Hassell (Phosphate Mining Induced Vegetation Changes on Nauru Island).

Mining activities in the region commenced with the advent of European settlement last century and have continued actively ever since. Resources such as copper, nickel, iron, manganese and gold have been extracted from the high islands of continental and volcanic origin. For example mining has been undertaken in Papua New Guinea, New Caledonia, Fiji, and to a lesser extent in the Solomon Islands and Vanuatu. While, on the coral islands, which have a less diversified geological and mineralogical structure, mining has been confined to phosphates. Nauru is the most striking example with smaller phosphate extraction activities on Banaba (Ocean Island) and on Makatea in French Polynesia.

Most mining in the region has been carried out by the open-cut technique which usually has resulted in various types of environmental damage.



Bougainville Mine, Papua New Guinea

Papua New Guinea

Two of the world's largest mines are found in Papua New Guinea; namely Bougainville Copper Limited which commenced extracting copper in 1971 and OK TEDI Mining Limited which commenced extraction of gold in 1984 and hopes to extract copper later in 1986. As David Mowbray's study shows, whilst much of the capital required to finance PNG's economic development programmes has been provided by Bougainville Copper, environmental damage has occurred due to earlier lack of environmental impact assessment procedures. Much of the waste from this mine has been dumped directly into the nearby Jaba River resulting in a dead river and dead river mouth, both full of solids, high in heavy metals and unable to support life.

Environmental legislation had been enacted in PNG by the time OK TEDI commenced gold production in 1984 thus requiring the company to submit a detailed environmental impact study. The OK Tedi river flows into the large Fly River which, at its delta and the Gulf of Papua that it enters, forms a major breeding ground for barramundi and other commercial fish and crustacea. To minimise pollution to the Fly River system the government required the construction of a tailings dam but unfortunately, in January 1984, a massive landslide destroyed the proposed site of this dam. The government then agreed that mining could proceed using an interim tailings disposal scheme and that a permanent tailings dam be built as quickly as possible. Only finer tailings were to be discharged into the Fly River System and monitoring of residues of heavy metals, cyanides, and water quality is proceeding.

Cyanide spills have also plagued OK TEDI. The first when 1 700 sixty-litre drums of sodium cyanide were lost at the mouth of the Fly River, when the barge carrying them capsized. Only 138 drums were recovered. In the second accident, 1 080 cubic metres of free cyanide was released into the river system resulting in hundreds of dead fish and prawns and disruption to the way of life of the people for many weeks.



Measuring Pollution in Jaba River

As well an unexpectedly large amount of copper was found in the gold cap and hence much more cyanide and hydrogen peroxide need to be used in the processing, resulting in larger amounts of heavy metals and complex cyanides being released into the river system.

Monitoring has shown regular high levels of suspended solids and occasional high levels of heavy metals and cyanides. Toxicity tests have also shown the tailings to be very toxic.

There is no easy solution to the problem of tailings disposal and, as the government has now agreed that a permanent tailings dam need not be built till January 1990, the problem will continue. As Mowbray concludes, even if a permanent dam was built, there is no guarantee against further problems. The area has one of the highest rainfalls in the world (up to 12 000 millimetres per year) and the terrain and stability of the soil is such that dam failure is possible. Another landslide or a dam failure could have a catastrophic impact, releasing millions of tonnes of heavy metals into the OK Tedi and Fly River ecosystems.

Further details are contained in the report Biological Impact of OK Tedi Mine Tailings, Cyanide and Heavy Metals on the OK Tedi Fly River Ecosystems in Papua New Guinea by David Lindsay Mowbray, Biology Department, University of Papua New Guinea.

Nauru

More than 70 years of opencut phosphate mining has severely modified the vegetation and environment of the small 22 km² isolated, tropical Pacific Island of Nauru.



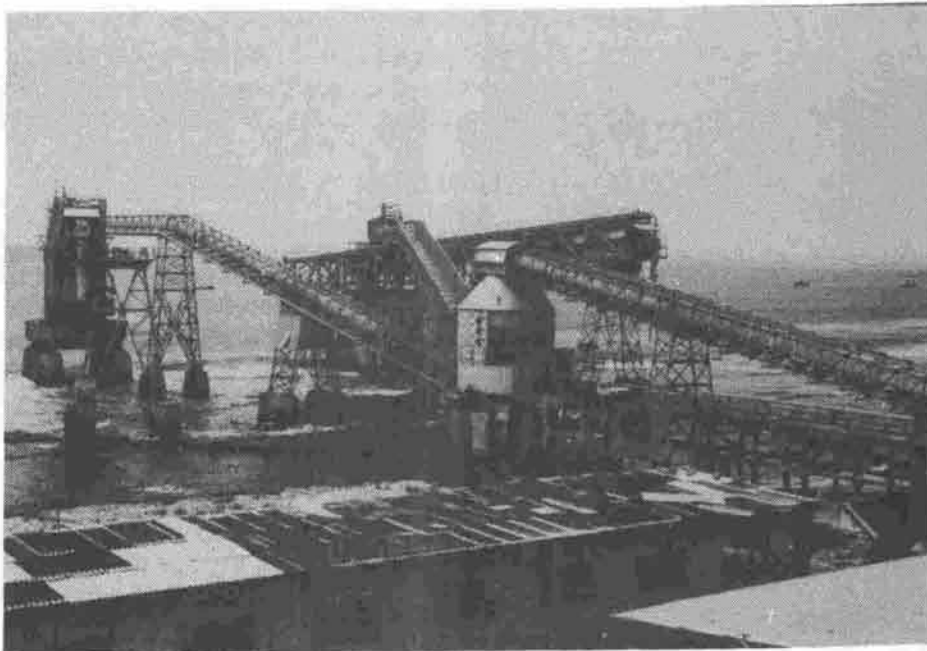
Phosphate Mining, Nauru

This history of human disturbance, coupled with the introduction of exotic plant species during the past absence of quarantine regulations, provided Manner, Thaman and Hassall with an excellent opportunity to examine the vulnerability of the indigenous island flora to degradation or extinction, the competitive abilities of nature and exotic species, the ecological adaptability of species and the postmining potential natural vegetation.

Near the beginning of this century, Nauru was discovered to have very extensive deposits of tricalcium diphosphate rock that were the second richest in the world (the richest being on neighbouring Ocean Island). Since 1906, with brief interruptions during World Wars I and II, mining has been carried out continuously, the phosphate mostly going to farming areas in Australia and New Zealand.

The mining process on Nauru involves the removal of the vegetation and the topsoil, the latter of which is stockpiled but not replaced after mining. As the phosphate is normally found between coral-limestone pinnacles, it has to be extracted using "grab buckets", resulting in a dramatic change to the landscape. After mining, exposed pinnacles varying between 4 and 8 m high remain giving the area the appearance of a "lunar" surface. The phosphate deposits will probably be exhausted by around the year 2000, resulting in four-fifths of the land being transformed into a barren wasteland.

Manner, Thaman and Hassall concluded that phosphate mining on Nauru has so drastically altered the topography of the former, gently undulating plateau surface that the structure of the resultant forest will undoubtedly differ from the pre-mining forest. They suggest that, instead of a forest dominated by C. inophyllum, with Guettarda speciosa, Morinda citrifolia, Terminalia catappa, and others as infrequent secondary canopy species, there will be a



Phosphate loader, Nauru

very slow succession toward a plagioclimatic forest composed primarily of native coastal strand trees, with C. inophyllum in the pit bottoms and Ficus prolixa on the exposed pinnacles. Casuarina litorea and Muntingia calabura, which are locally dominant and aggressive in some of the revegetated sites, could also become more widely distributed.

For the pre-mining forest to reestablish itself, even in a modified form, will almost certainly take centuries. Even then, the Pandanus groves and many of the more culturally valuable plants, formerly part of the pre-mining plateau forest, will be absent. The only alternative, if Nauruans hope to remain on this upraised coral-limestone island, is to use some of the capital derived from phosphate mining to artificially alter and accelerate the revegetation of the central plateau. This may be achieved through leveling and crushing the coral-limestone pinnacles, importing soil, and purposely planting appropriate indigenous and exotic species. In the event of such a programme, it would, however, be of critical scientific and cultural importance to ensure that examples of unmined forest vegetation and pit and pinnacle topography are preserved for posterity."

Further details are available from an article titled "Phosphate Mining Induced Vegetation Changes on Nauru Island" by Harley I. Manner, Randolph R. Thaman and David C. Hassall in Ecology, 65 (5), 1984, pp. 1454-1465.

New Caledonia

The main island of New Caledonia contains 40% of the world's known nickel deposits and 20% of the oxidised ore deposits, the nickel ore having been exploited for over a century. Large-scale extraction on the mountain ridges and plateaux is done by scraping off the surface layer of weathered material which can be up to 30 metres thick. Extraction has increased with the progress of machinery and in less than 100 years 110 million tonnes of ore have been taken, resulting in a vast amount of waste.

Nickel mining has not always proceeded at the same pace. In 1981, there were only about thirty operational mines compared with over 130 ten years earlier, out of the approximately 330 mines opened since the beginning of mining activity in New Caledonia.

The present slump in the country's nickel industry started at the beginning of the 70's, after a short period of intensive and uncontrolled exploitation which was triggered by the high market price of nickel. This boom considerably aggravated the most visible impacts of mining activity on the environment.

The closing down of a large number of mines over the past few years has slowed down the progress of stripping, the destruction of the vegetation and reduced the production of the loose waste. Erosion is nevertheless continuing on the extensive stripped areas resulting from open-cut mining which, within just a few decades, has transformed many high-altitude sites that used to be remarkable for their original flora into absolutely desolate areas often extending down through the river valleys right to the lagoon of the main island.

Dupon quotes a 1984 report by Bird, Dubois and Iltis which states that no fewer than forty streams whose valleys, in the middle and/or lower reaches of the streams, below formations where mining has been carried on, have been modified to various extents by deposits of mining waste. More than half of the bays into which these streams run, or their own estuaries, have also undergone alterations as a result of mining activity in the upper reaches.

J.-F. Dupon's study, The Effects of Mining on the Environment of High Islands: A case Study of Nickel Mining in New Caledonia, available as No. 1 in SPREP's Environmental Case Studies Series, is currently in press in both French and English. This valuable study gives a detailed account of the impact of mining on high islands.



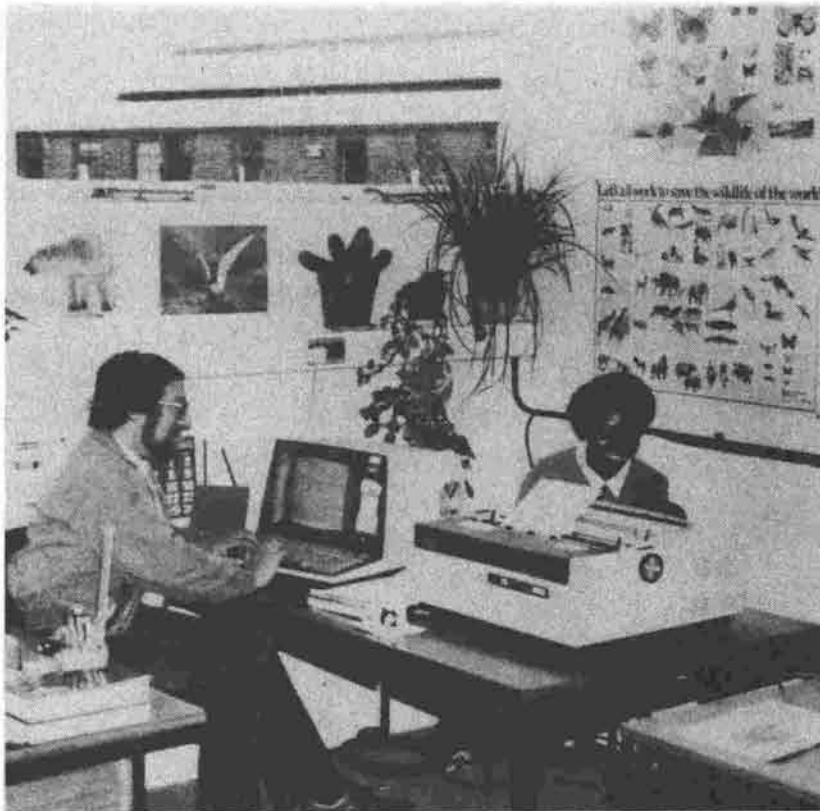
Mined Hills, Thio, New Caledonia.

COURSES IN ENVIRONMENTAL SUBJECTS

International Centre for Conservation Education (ICCE)

The International Centre for Conservation Education provides practical conservation education activities suitable for developing countries. Originating from a WWF/IUCN International Education Project started in 1975, the Centre has pioneered many innovative techniques for communicating conservation, especially in design, construction and use of mobile education units and the production of audio-visual material, providing regular training course. For further information contact:

The Director,
International Centre for Conservation
Education (ICCE),
Greenfield House,
Guiting Power,
GLOUCESTERSHIRE, GL54 5TZ,
United Kingdom.



New M.Sc. Course in Tropical Coastal Management, University of Newcastle upon Tyne, United Kingdom.

Commences : September 1987.
Duration : One year.
Scholarships : Restricted number available.

Course devised specifically for those within the developing nations who require an overview of tropical coastal zone management. Topics: coastal zone as a system, major biotic divisions in the coastal zone, physical processes that shape the tropical coastline, tropical marine pollution, coastal aquaculture, management of tropical coastal fisheries, collecting and analysing data, statistics and computing, tourism, marine parks, and conservation, the role of legislation, and socio-economics of coastal zone management.

Contact:

Dr Barbara E. Brown,
 Department of Biology,
 University of Newcastle upon Tyne,
NEWCASTLE UPON TYNE NE1 7RU,
 United Kingdom.

Forestry: Mid-Career Training for Technical Managers

Covering subjects such as Corporate Management, Commercial Aspects of Production Forestry, Management Aspects of Production Forestry (including engineering aspects, wood processing, land use planning, management of land for non-commercial values, management of forest soils, ecology of indigenous forests and applied research methodology).

Contact:

Mid-Career Training Services,
 c/- School of Forestry,
 Canterbury University,
CHRISTCHURCH 1,
 New Zealand.
 Phone: (64) (03) 482-009 Ext. 286.
 Telex: Unicant NZ 4144.

CALENDAR OF EVENTS

Conference on Global Development
and Environment Crisis - Has Man
a Future?,
Penang, Malaysia.

5 - 9 April 1987

The Conference, organised by Sahabat Alam Malaysia (SAM) and the Asia Pacific Peoples Environment Network (APPEN), will bring together representatives from people's movements, non-governmental organisations, international networks, resource persons and media working on problems related to development and environment issues.

Contact: Sahabat Alam Malaysia
(Friends of the Earth),
37 Lorong Birch,
10250 PENANG,
Malaysia.
Telephone: 376930.

"Only One Earth" Conference
on Sustainable Development

28, 29 and 30 April 1987

This conference will analyse 30 researched case studies of environmentally sound Third World development projects as a way of illustrating the meaning of the concept "sustainable development".

Contact: Conference Office,
International Institute for
Environment and Development,
3 Endsleigh Street,
LONDON WC1H 0DD,
United Kingdom.
Telephone: 01-388-2117
Telex : 261681 EASCAN G.

"Coastal Zone 87"
The Fifth Symposium on Coastal
and Ocean Management,
 The Westin Hotel, Seattle, Washington

26 - 29 May 1987

Theme : "Spotlight on Solutions"

Contact: Delores Clark,
 National Oceanic and Atmosphere
 Administration (NOAA),
 External Affairs,
ROCKVILLE, M.D. 20852,
 U.S.A.

Wetland Ecology and Conservation Symposium,
 Edmonton, Canada.

August 1987

Contact: Wetlands '87 Coordinator,
 Environment Canada,
OTTAWA,
 Canada.

International Conference on
Hazardous Chemical Wastes,
 Environmental and Policy
 Institute, East-West Center,
 Hawaii.

September 1987

(Details still to be finalised)

Symposium: "The Forest: Structure, Ecology,
Silviculture, Agroforestry" at Montpellier
 Botanical Institute.

September 1988

Further details from:

Colloque sur la forêt,
 c/- Institut de Botanique,
 163 rue August Broussonet,
34000 MONTPELLIER,
 France.

PUBLICATIONS

Following is a list of 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

- Report of the Regional Conference for Consideration and Review of the SPREP Work Programme for 1987-1988, Noumea, New Caledonia, 1-5 September 1986.

OTHER

- Australian Forests and Forestry: Resources for Development Assistance.
- Directory of Australian Forestry and Forest Industry Expertise.

Both books describe Australian expertise in forestry and are used to increase awareness of the potential Australian contribution to development assistance in forestry.

Available from:

Development Education
and Public Information
Section,
Australian Development
Assistance Bureau,
G.P.O. Box 887,
CANBERRA ACT 2601,
Australia.

- Wildlife and Wildlife Habitat of American Samoa, Vols. I and II.

Available from:

Fish and Wildlife
Service,
United States Department
of the Interior,
WASHINGTON, DC,
U.S.A.



- Conditions Hydrologiques Moyennes pour l'Océan Pacifique Sud-Ouest, par G. Eldin.

Available from:

Centre ORSTOM,
B.P. A5,
NOUMEA,
New Caledonia.
(French version only).



Printed at
The Environment Centre (NSW) Pty. Ltd.
Sydney, Australia.