

ENVIRONMENT NEWSLETTER

Quarterly Newsletter of the South Pacific Regional Environment Programme

Contents:

NUMBER 9

APRIL - JUNE 1987

	Page
News In and Around the Region	1
Feature	10
Courses in Environmental Subjects	18
Calendar of Events	21
Publications	23

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.

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

© Copyright South Pacific Commission, 1987.

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

SPREP UNDERTAKES MARINE PARK SURVEY IN WESTERN SAMOA

The Aleipata Islands were the site of a recent Marine Park Survey undertaken by SPREP at the request of the Government of Western Samoa. This survey, forms the second phase in work aimed at developing a set of management policies, harmonious with the complex issues of customary land and fishing rights affecting the area, which will lead to environmental protection through the establishment of a national park.



The early phase of the project dates back to 1974 when the Government of Western Samoa sought international aid through U.N.D.A.T. and I.U.C.N. to prepare a master plan to develop a system of national parks and reserves in the country. A two-man mission in 1974 recommended that the Aleipata Islands, lying to the south east of the island of Upolu, form the nucleus of a national park. The plan was largely adopted by the Government and, to date, the O Le Pu Pu Pue National Park, the Palolo Marine Reserve and four other reserves have been established.

At the Third South Pacific National Parks and Reserves Conference held in Apia in June 1985, the Western Samoan Government sought assistance in continuing to implement the initial recommendation. UNESCO assisted by exploring the feasibility of establishing this marine park, recommending a set of management policies, and a strategy for their implementation. SPREP, through the services of its Project Officer (Scientist), Mr Paul Holthus, and Consultant, Mr Greg Andrews of the Australian Institute of Marine Science (AIMS) recently implemented this work by undertaking a two-week inventory of the marine resources of the Aleipata area with support and assistance from the Forestry and Fisheries Divisions of the Western Samoan Government.

The two marine scientists initially surveyed the shallow reef front by manta towing. In this technique, developed on the Great Barrier Reef of Australia, a scientist equipped with mask and snorkel is towed behind a small boat to note broad reef patterns. After this reconnaissance survey, scuba dives were made at 11 selected sites to characterise the reef areas in more detail. Dominant fish, coral, soft coral, algae and sediment components were recorded as well as reef geomorphology. The wide reef flat and lagoon between the shore and outer reef was similarly characterised by "ground truthing" of patterns mapped from aerial photos.

While this work was being undertaken, Mr Savale Time, of the Fisheries Department, and Mr Everett Bishop, Peace Corps Volunteer working with the Parks section, conducted interviews with fishermen at the Aleipata area. Detailed information was collected on the kinds and location of reef fishing, gleaning of reef flat organisms, number of fishermen and boats, and special topics (e.g. spawning sites, "crown-of-thorns" starfish, dynamite fishing, current patterns, user access rights).

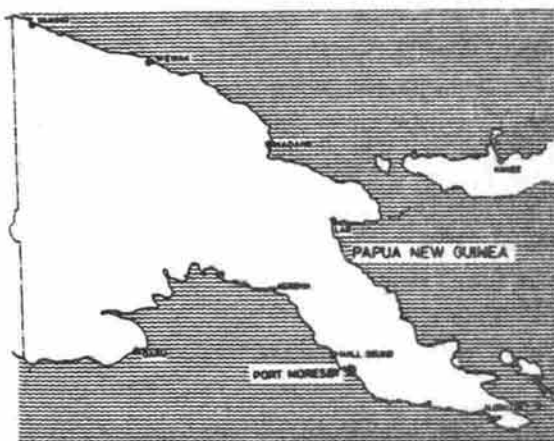
Information from both the field and interview work are currently being compiled into a technical report. The field survey revealed that coral populations are generally not well developed, with large areas of dead standing coral colonies encrusted with algae. However, reefs in high wave energy areas and those of the offshore islands of Nu'utele and Nu'ulua exhibited well developed live coral cover. Preliminary analysis indicated that the reefs of Aleipata were severely degraded by at least one massive outbreak of the coral eating crown-of-thorns starfish (Acanthaster planci) within the past 15 years. The reef coral communities are recovering and continue to support a substantial fish population and fishery. Of particular importance for conservation are the sea turtle nesting beaches of Nu'utele and Nu'ulua islands.

This is one aspect of SPREP's extensive Protected Area Management Work stemming from the Action Strategy for Protected Areas in the South Pacific Region developed and approved by the governments of the region at the Third South Pacific National Parks and Reserves Conference in 1985.

PNG ESTABLISHES DATABANK ON CONSERVATION, WILDLIFE
AND MANAGEMENT OF NATURAL RESOURCES

The PNG Department of Environment and Conservation established this project some years ago with the aim of setting up an on-line DATABANK of references to conservation, wildlife and management of natural resources in Papua New Guinea. In practice the scope has been extended to cover the fauna of the whole island of New Guinea with prime emphasis on the vertebrate species. In addition the opportunity is taken to list important invertebrate references (except insects, which are adequately covered in a separate bibliography by Gressitt and Svent-Ivany), and to extend the geographical range by listing important papers dealing with fauna of the south-west Pacific.

It is hoped that eventually the DATABANK will be seen as a significant contribution by Papua New Guinea to conservation in the area roughly coinciding with that of the South Pacific Commission. It is hoped, also, that once the appropriate steps have been taken by the Government to establish a National Computer Network, that the DATABANK will be available on-line for researchers throughout Australia, and, eventually, the world. Linkage with established databases such as CSIRONET and AUSSINET may become a reality instead of a dream.



Work is organised at three levels:

- (i) identification of all major references to conservation-environment-wildlife in PNG (= the Card File)
- (ii) assembly of original offprints or photocopies of these references into a single collection (= the Collection)
- (iii) analysis and computer storage of each of these references in a form which will allow sorting and searching by a variety of methods (= the Databank)

leading to their use by researchers, planners, and students in the course of their work at National, Provincial, and Local Government levels and by the general public. However, in order to preserve the raw data, access at the present time must of necessity be restricted until the computer databank is in place. No value judgements are made as to the suitability or otherwise of a reference to be included in the database: if it refers to PNG it is included. Other people can then make their own value judgement as to whether or not to use it.

Over 10,000 Entries Despite Lack of Resources

In the present climate of reduced funding and reduced manpower in non-economic fields of endeavour, work on the database has been kept fairly low key. The principal researcher makes one, sometimes two trips to libraries in Australia each year and spends up to a month on intensive systematic searches through appropriate journals to find references for the database. Restraints on photocopying together with the lack of a typist trained in biological terminology have hampered progress. Nevertheless the Card File is now approaching something over 10 000 cards covering all the major vertebrate groups, dominated by references to birds.



(Source: Dr Eric Lindgren, Scientific Adviser to the Secretary, Department of Environment and Conservation, Papua New Guinea.

CONCERN FOR ENDANGERED SPECIES

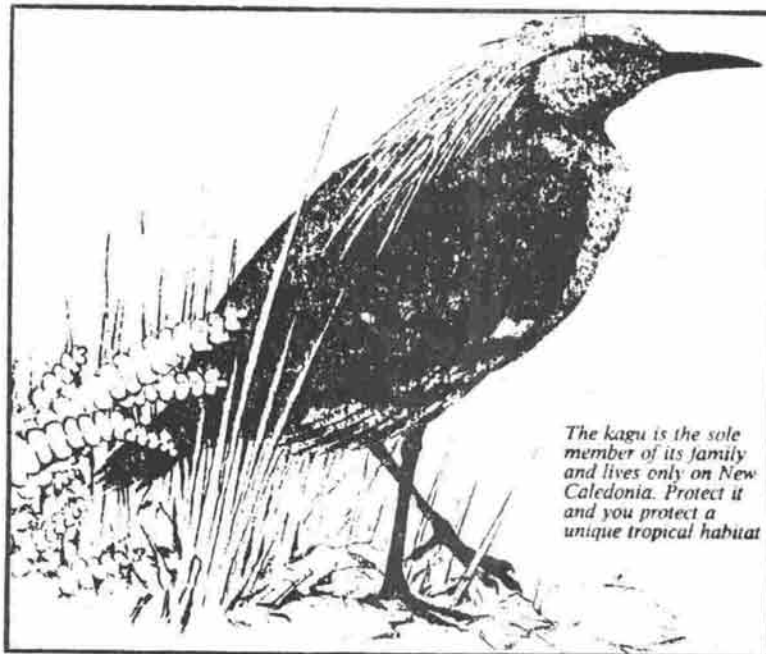
Oceanic islands often shelter birds found nowhere else - the birds are "endemic". Time, isolation and small area have fostered the evolution of unique assemblages of species, which are inherently fragile and vulnerable to disturbance. In historical times, the activities of people have driven animals to extinction on oceanic islands more often than anywhere else. For example, of the 217 groups of birds to have become extinct in the past 400 years, 200 were island-dwellers.

Many bird species, more than 900 according to a recent survey, live on only one island. Birds are of special interest to those working to conserve habitats because islands are richer in endemic species of birds than in other vertebrates. Many of these birds have evolved in specialised ways, losing the ability to fly, for instance. This makes them susceptible to competition and predation for animals introduced by people.

One such endangered species is the kagou, Rhynochetos jubatus, a large, flightless species of bird found only on New Caledonia. It is one of 18 species of birds endemic to the island. The kagu is especially interesting because it is the only species in the Rhynochetidae family, making it arguably the bird most worthy of conservation in the world.

KAGU BEING PROTECTED WITH SPREP ASSISTANCE

The International Council for Bird Preservation (ICBP) lists the KAGU (*Rhinocetus jubatus*) among the world's twelve most endangered bird species. The International Union for the Conservation of Nature and Natural Resources (IUCN) and the World Wildlife Fund (WWF) go even further. They place the kagu first on the list of birds in danger of extinction. In response to the international concern expressed SPREP, together with local New Caledonian conservation bodies, has developed a protection plan which mobilises substantial resources to achieve a better understanding of kagu behaviour, undertakes a comprehensive inventory of kagu numbers and takes appropriate protective measures. The project will also include population surveys and behaviour studies of other New Caledonian birds, some of which are considered rare. An important aspect of the project is its public awareness-raising activity which will be implemented with appropriate education material.



The kagu is the sole member of its family and lives only on New Caledonia. Protect it and you protect a unique tropical habitat

The kagu is New Caledonia's national bird, so it is a perfect flagship for promoting conservation on the island. Probably no more than 500 to 1000 birds remain. At first, kagus were threatened most by mammals introduced by people - especially feral dogs (which people use to hunt pigs), cats and the pigs themselves. Pigs may also compete with the kagu for the invertebrates it eats. Rats are a further threat because they eat the eggs and young of this species, which nests on the ground. The greatest threat is probably the destruction of the birds' habitat. During the nickel boom between 1970 and 1980, open-cast mining destroyed much suitable habitat. An expanding human population has increased the demand for agricultural land and further threatens the rainforest. A third and no less significant factor contributing to the threatened status of this species is hunting, for both food and sport.

(Source: Our thanks to New Scientist for much of the information in this article).

CURRENT STATUS OF 'SPREP' CONVENTION

The Convention for the Protection of the Natural Resources and Environment of the South Pacific Region, called in short the "SPREP Convention" was approved in November 1986 at the fifth in a series of negotiating meetings, the first of which commenced in January 1983. At the High Level (Plenipotentiary) Conference in 1986 seven countries signed the Convention and its two protocols, one concerning prevention of pollution by dumping and the other concerning regional co-operation in combating pollution emergencies. Since that time the Convention has been open for signature with its Depositary, the South Pacific Bureau for Economic Co-operation. To actually come into force the Convention needs to be signed and ratified by ten countries. The table below gives the current signatory and ratification status:

<u>Parties</u>	<u>Date of Signature</u>	<u>Date of Ratification</u>
Australia	-	
Cook Islands	25 November 1986	30 June 1987
Federated States of Micronesia	9 April 1987	-
Fiji	-	-
France	25 November 1986	-
Kiribati	-	-
Marshall Islands	25 November 1986	4 May 1987
Nauru	15 April 1987	-
New Zealand	25 November 1986	-
Niue	-	-
Palau	25 November 1986	-
Papua New Guinea	-	-
Solomon Islands	-	-
Tokelau	-	-
Tonga	-	-
Tuvalu	-	-
United Kingdom	16 July 1987	-
United States of America	25 November 1986	-
Vanuatu	-	-
Western Samoa	25 November 1986	-

At the time of going to print there were ten signatories and two ratifications which means the Convention is drawing very close to coming into force.

SPREP FOCAL POINT FOR GUAM RETIRES



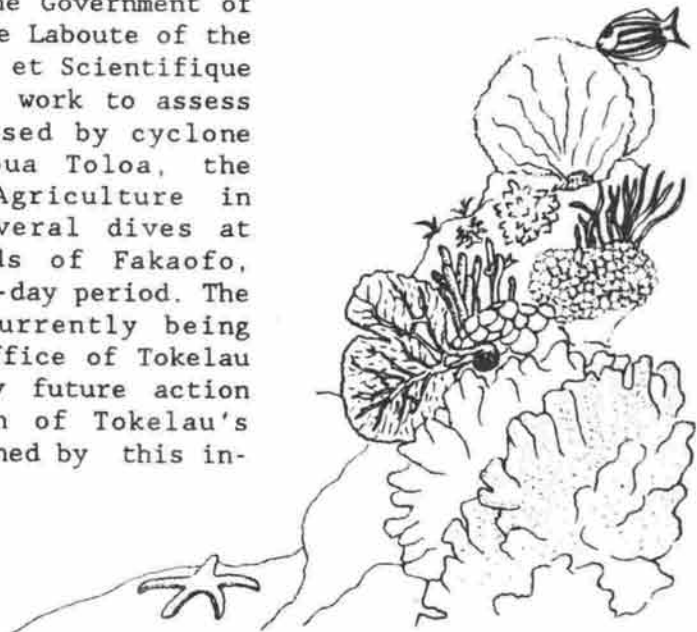
James B. Branch

Mr James Branch, Deputy Administrator for the Guam Environmental Protection Agency (GEPA) from 1974 to 1983 and then Agency Administrator from that time through to January 1987 when he retired was also a valuable contact point and active supporter of SPREP from its inception. Jim was involved in the first SPREP Technical Meeting in 1981, and the Conference on the Human Environment in 1982 at which SPREP's Action Plan was developed. As a strong opponent of nuclear waste dumping and storage in the Pacific, Jim's voice was heard in the negotiating meetings which finally culminated in the signing of the Convention for the Protection of the National Resources and Environment of the South Pacific Region (the "SPREP" Convention).

SPREP's contact with GEPA will be now undertaken by Mr Charles Crisostomo whom we welcome and wish well in his post as Administrator of GEPA and as Guam's Focal Point for SPREP.

CYCLONE DAMAGE TO CORAL REEF ASSESSED IN TOKELAU

In response to a request from the Government of Tokelau, SPREP assisted Dr Pierre Laboute of the Office de la Recherche Technique et Scientifique Outre Mer (ORSTOM) to undertake work to assess damage to Tokelau's reefs caused by cyclone Tusi. Accompanied by Mr Foua Toloa, the Director of Fisheries and Agriculture in Tokelau, Mr Laboute made several dives at various places on the islands of Fakaofu, Nukunonu and Atafu over a twelve-day period. The findings of this work are currently being evaluated by officials of the Office of Tokelau Affairs who will determine any future action required to ensure the health of Tokelau's reefs. The information obtained by this intensive underwater viewing and assessment of the state of these reefs should prove useful in assisting other island countries who also suffer reef-damage following cyclones.



NEW ZEALAND'S NEW DEPARTMENT OF CONSERVATION
DEPICTS ITS IDENTITY IN LOGO

The logo of New Zealand's new Department of Conservation is a blend of European and Maori symbols intended to depict the role and identity of the new department. It has the shape of a traditional heraldic shield, and its white curling frond represents Tane-mahuta, spirit of the forest and guardian of life on earth. Blue at the top of the shield represents Rangi the sky father, and green below represents Papa the earth mother. Included in the symbol are representations of growth, evolution, an initial letter C standing for conservation, and if the graphic is viewed from the opposite angle, New Zealand's national symbol, the kiwi, appears, embraced by the protective arm of Tane.



The Department of Conservation will administer parks, reserves, wilderness and ecological areas, archaeological sites and historic places. It will be responsible for native wildlife, the margins of lakes, rivers and the seashore, and most of New Zealand's offshore and outlying islands.

KERMADEC ISLANDS MARINE RESERVE PROPOSAL

The New Zealand Department of Lands and Survey has applied to have a marine reserve declared around New Zealand's northernmost island group, the Kermadecs, in view of the outstanding scientific value of their marine flora and fauna and inshore marine communities. Of the 112 coastal fish species recorded from the Kermadecs, three species are endemic to the islands and only a small proportion of the Kermadecs species are common in New Zealand. A

Kermadec Islands →



feature of the marine ecology of particular interest is the lack of coral reefs, even though reef building corals are common. The sub-tidal habitat is, therefore, a part-tropical, part-temperate transitional habitat. This complex of different elements is uncommon, and possibly unique worldwide.

(Source: Nature Conservation Council Newsletter, No.64, Feb-March, 1987)

SPREP ASSISTS COASTAL WATER
QUALITY MONITORING

As part of its regional coastal water quality monitoring activities, SPREP with financial assistance from the Oceans and Coastal Areas Programme Activity Centre (OCA/PAC) of the United Nations Environment Programme assists the universities and research institutions in the region to undertake work in this field. This assistance enabled the University of Papua New Guinea (UPNG) to recently purchase an Atomic Absorption Spectrophotometer which, together with a Gas Chromatograph purchased with SPREP/UNEP assistance in 1985, facilitates the monitoring of the presence of organochlorines and heavy metals in seawater and marine life at selected sites in Papua New Guinea.

NEW LASER PRINTER FOR SPREP WITH FUNDS
DONATED BY THE GOVERNMENT OF CHILE

Since SPREP's inception, large numbers of documents, in both the SPREP Topic Review and Meeting Report Series, have been produced together with a whole host of other printed matter one of which is the Environment Newsletter. Through the work of SPREP's Secretary Mrs Judith Demene and Project Assistant, Miss Marie-Therese Bui, the programme's word processing equipment is in constant use. The staff are cognizant of the need to ensure that the written material produced by the programme is of the highest possible quality and were recently assisted in this endeavour by the purchase of a laser printer provided through funds donated by the Government of Chile. This edition of the Environment Newsletter is the first document to roll off the new equipment. This valuable contribution to SPREP will be in evidence throughout the region as dissemination of environmental material is continued.



Mrs Judith Demene Secretary of SPREP, at work with the new LASER PRINTER.

FEATURE

PROBLEMS IN THE SOUTH PACIFIC ENVIRONMENT

This article was written by Dr Arthur Dahl,
Consulting Ecologist,
Les Allues, 73250 St. Pierre d'Albigny,
France and
former
Regional Ecological Adviser
to the South Pacific Commission

Our thanks to AMBIO for permission to reprint
part of what
appeared as an article in AMBIO 13 (5-6):
302-305.

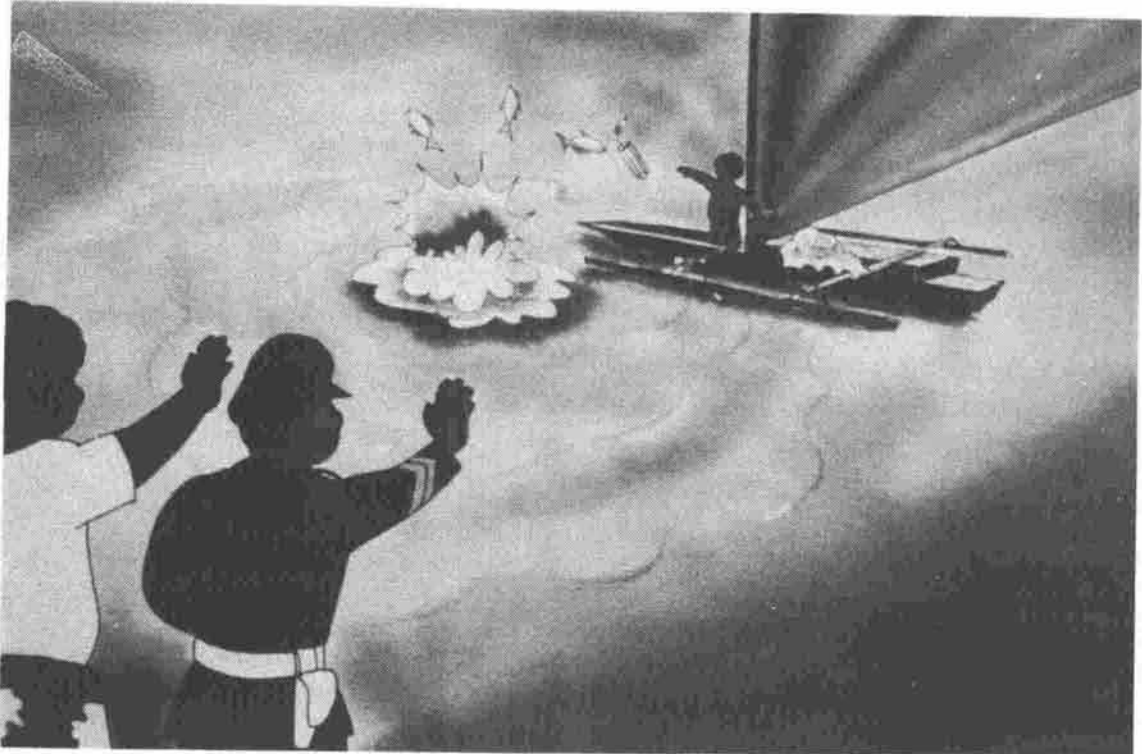
The South Pacific Regional Environment Programme (SPREP) has collected information on the environmental problems and priorities in its area of action, making possible the following description of the most pressing environmental concerns facing the region.

WIDESPREAD PROBLEMSDomestic Waste

The most widespread environmental problem affecting 90 percent of the countries, is the safe disposal of liquid domestic wastes, particularly human wastes and human sewage. Few countries have adequate waste collection and treatment facilities even in urban areas, and those that exist are costly and seldom properly maintained. In spite of efforts at rural sanitation, there are still few or no facilities in many rural areas. The result is serious water pollution both of freshwater supplies (rivers, groundwater and even rainwater catchments) and coastal waters around beaches, reefs and lagoons that are important for tourism, recreation and fishing. This pollution presents grave risks to human health, as illustrated by the series of cholera epidemics affecting different countries in the region over the last few years. Many countries are now trying to solve this problem, but waste treatment is expensive and progress is slow.

Fisheries

The damage or destruction of productive coastal resources and fisheries is a nearly universal problem. Coral reefs are destroyed by construction, dredging, pollution, siltation, and dynamiting or poisoning for fish. Mangroves are killed by dredging or filling, or by changing patterns of water circulation and salinity. Seagrass beds are often dredged or silted over. Modern boats and fishing techniques combined with increased fishing pressure have wiped out some coastal species (such as giant clams, dugongs and sea turtles) in local areas, and left others seriously reduced. There are usually



over 100 serious cases of ciguatera fish poisoning each month in coral reef areas and on some small islands up to half the population may suffer from the after effects of ciguatera. Many fish are avoided because of the risk of poisoning. As a result local fishermen work harder to catch less fish, and people have to use imported canned fish and other substitutes.

The establishment of 200 mile exclusive economic zones has brought most of the ocean area in the region under national jurisdictions. The principal concern in these zones at present is the management of the fisheries for highly migratory species, principally tuna, which can only be done on a regional basis.

Forest cover

Another major environmental concern for the future of the islands is the steady loss of forests in every country of the region with countries such as Samoa and New Caledonia running out of trees worth cutting. Forests are logged for local use or export; shifting cultivation and clearing for agriculture remove more forests; and frequent uncontrolled fires eat into the forest margins in areas with a dry season such as in Papua New Guinea and New Caledonia. This not only means the loss of a productive resource, but contributes to other problems such as water shortages, soil erosion, and loss of habitat for endangered species. While many countries have tree replanting programmes, these have rarely been more than marginally successful. Only Fiji has succeeded in creating significant forest plantations, but these have been on degraded grasslands rather than in recently cut forest areas.

Land Use and Land Tenure

On small islands with limited resources, efficient use must be made of all available land in order to meet the needs of the people for water, food, building materials and a reasonable quality of life, and to maintain the functioning of the natural systems on which these all depend. This requires careful planning for the best use or uses of the land. The present systems of land and resource tenure have made planning for environmental management difficult in Oceania. Land is a limited and precious commodity on an island.

The Pacific Islander's attachment to his land goes far beyond western concepts of ownership, and includes mystical and spiritual dimensions rooted in island cultures. The indigenous systems of collective tenure were often effective, before European contact, in maintaining the fair allocation and wise management of scarce resources, but authority and control within the traditional land tenure systems are rapidly breaking down. European systems of individual freehold ownership are no improvement in this respect. Both result in anarchic development, resource abuse and destruction without the possibility of imposing modern systems of zoning or control in the common interest. While some land is abused, other areas are neglected. However, tampering with land rights produces the same reaction as would interfering with religion. Restoring or adapting customary systems of management may be the most acceptable and effective approach where possible.

COMMON ENVIRONMENTAL CONCERNS

The above problems are the most widespread in their impacts within the Pacific Islands, and thus rank first in regional priority. Another group of concerns affects a majority of countries and territories in the region. They are frequently given high priority at the national level.

Water Shortage



While heavy rains are characteristic of the region, they can be irregular from season to season and from year to year. Since most islands have little water storage capacity because of their porous rocks and many small watersheds, dry periods can result in serious water shortages which hamper development, and can create serious public health problems. Destruction of the forest has caused many streams to stop flowing in the dry season. The shallow freshwater lenses of atolls and the coastal groundwater supplies of high islands can be irreversibly contaminated by saltwater if too much water is drawn from wells. Rainwater catchments are dependent on regular rainfall. On such islands, water is often the most limiting factor in enabling habitation. Some islands in the Phoenix group, for example, had to be abandoned for lack of water after a decade of settlement.

Soil Loss

Soil, the basis for agriculture, is inevitably limited on islands. The countries of the region are subject to the same problems of soil erosion and loss of fertility as most other parts of the world, but the problem is more acute because the resource is often so limited. Many island soils are poor to begin with, and irregular island topography, geological instability, heavy rainfall and larger areas of cleared land increase their susceptibility to erosion. Traditional agriculture generally involved lengthy fallows or the addition of humus, but these techniques are being abandoned with modernisation and increasing pressure on the land. On Niue, for example, where soil fertility is particularly sensitive to poor agricultural practices, a comparison of two land surveys suggests that degraded lands increased from about 20 to 45 percent of the total island surface in the twenty-two years from 1949 to 1971.

Solid Waste Disposal



The smaller the island, the more difficult are its problems with solid waste disposal. The steady increase in imports from overseas has brought with it an accumulation of old car bodies and broken down heavy equipment, appliances, bottles, cans and plastic. Disposal sites often ruin coastal swamps, or take land from other important uses. Collection and disposal of wastes are expensive on a small scale, so that wastes are either not collected, or the disposal sites are poorly managed, resulting in health and pollution problems.

Toxic Chemicals

There is widespread concern about the potential dangers of the increasing amounts of toxic chemicals being imported into the Pacific Islands. Most governments lack good legislation controlling toxic chemicals. Pesticides or herbicides may be imported in bulk and then repackaged without adequate labelling, resulting in accidental poisonings. Chemicals brought in on a trial basis, or given in aid programmes, may simply sit in a warehouse until the containers deteriorate and the contents spill out or seep down into the groundwater. Products considered too dangerous elsewhere are still in widespread use (and misuse) with no public awareness of the risks involved.



Pesticides have been widely used in campaigns to control mosquitoes and other insect pests with no monitoring of possible environmental effects. In Tokelau, a warehouse containing barrels of Lindane was swept into the lagoon during a hurricane, killing a large area of reef. Dieldrin has been used for fishing in the Cook Islands. Spraying equipment may simply be washed in the nearest stream, which may also serve as a village water supply. Accidents with toxic chemicals are more serious on small islands where few island doctors have experience in identifying such poisoning; most incidents probably go unreported. Monitoring for chemical residues in foods and the environment is just beginning.

Oil pollution is not a big problem in the region at present. Oil spills have generally been restricted to small harbour accidents during fuelling or transshipment, and to spillage of fuel oil from wrecks. Even small accidents like these can be serious if they affect critical habitats such as mangroves or fishing areas on a small island, but most spills to date have either been on remote reefs or in the already-disturbed environment of harbours. There is a slight chance of accidents involving tankers delivering petroleum products to Pacific Island countries, but otherwise the Region is not on major shipping routes, and attempts to find oil within the Region have not yet met with success. However, if a major accident does occur, the island countries are poorly equipped to deal with it.

Endangered Species

The problem of the conservation of nature is particularly critical on islands where isolation has permitted the evolution of many unique plants and animals, while their small numbers make them vulnerable to extinction. The demands of growing human populations on limited land resources make it difficult to protect natural areas even where the land tenure situation would allow such action. Steady habitat destruction, and competition and predation by introduced species further increase the pressure on native species. The situation on many Pacific Islands is becoming critical as the undisturbed natural areas get smaller. The result is a relatively large number of endangered (and extinct) species in a region where the resources available to deal with the problems are very limited. There are roughly seven times more endangered bird species per person in the South Pacific than in the Caribbean, fifty times more than in South America, and a hundred times more than in North America or Africa.

While a number of countries have made great efforts in setting aside about one hundred protected areas totalling approximately 800 km², this is only 0.15 percent of the land area, and the needs far exceed the means. In addition, small islands seldom can afford to create parks and reserves only for nature conservation. Solutions need to be more flexible and adapted to island circumstances. The wildlife management areas of Papua New Guinea, which are created and managed by the traditional land owners, represent the kind of creative approach to conservation needed in the Pacific.

Sand and Gravel

One illustration of the limited nature of island resources is the difficulty on many islands in finding supplies of sand and gravel for construction without creating serious environmental problems. Removal of sand from beaches leads to coastal erosion and the loss of beaches which are important resources for tourism and recreation. Mining may affect agricultural or forest land, and leaves useless pits and quarries behind.

Human Habitat

There are also problems of the human habitat in the Pacific, particularly involving housing and sanitation. In a region where cyclonic storms are common, many houses are unable to resist hurricane force winds, or are in areas subject to flooding. The pressure of migration to urban areas has also resulted in overcrowding and makeshift construction with consequent health problems. Some cities now have at least partial sewage treatment, but the problems of urban pollution in general are far from solved.

SIGNIFICANT LOCAL PROBLEMS

A third group of environmental concerns are not as widespread as those above, affecting perhaps only a third of the countries in the region, but they are significant in the local areas affected.

Coastal Erosion

Islands interact dynamically with the sea, with sand and rock constantly being deposited on or carried away from shorelines. While the building of new land is usually considered desirable, coastal erosion is a serious local concern, particularly where it affects roads, buildings or scarce agricultural land. The expense of protective works to control erosion of shorelines is a continuing drain on those countries (particularly atolls) suffering from this problem. The probable rise in sea level is bound to make things worse.

Mining

Mining is the most significant economic activity for a number of island countries, and it is inevitably accompanied by serious environmental problems. These include the disposal of mine wastes, tailings, and processing wastes, erosion problems and the pollution of rivers in mined areas, loss of natural habitat or of land with agricultural potential, and the abandonment of unusable wastelands once the mining has ended. While new mines today are generally subject to strict environmental controls, older mining areas continue to present serious environmental problems. Some phosphate islands such as Ocean Island were mined so intensively that their inhabitants had to be evacuated as the island could no longer support them.

Industrial Pollution

Industry is not widespread in the region, concentrating mostly on the processing of food or minerals for export. However, it frequently causes pollution and other problems in some localities. Wastes from fish and fruit processing plants, and dangerous air pollution from smelting operations are some examples of localized industrial pollution problems in the Region. While some general air pollution (mostly from vehicles) is present in the larger urban areas, it is only of local significance and is usually blown away.

Radioactivity

The problem of radioactivity in the Pacific Islands is a special case, and is given a high political priority by governments. The Region has perhaps suffered the most from the nuclear activities of the great powers since the last war. The United States, the United Kingdom and France have all conducted many nuclear weapons tests in the Pacific Islands, with the latter still continuing to do so. Some island people were contaminated in fallout accidents, and a few islands still have residual levels of radioactivity from local fallout from these tests. The region was a principal battleground in the last world war, and nuclear activities are seen as increasing the risk that it might again become one. Recent proposals to dump nuclear wastes in the Pacific have increased fears of regional contamination. A SPREP technical review minimized the dangers to the region from present nuclear activities, showing that this issue is more moral and political than environmental.

SUSTAINABLE USE OF ISLAND RESOURCES

The above problems all contribute in one way or another to the most critical environmental issue facing the countries of the South Pacific: the sustainable use and management of limited island resources. Population growth is not always the most important factor; some islands have rapidly increasing populations while on others the population is actually declining through emigration. Nevertheless, many islanders are destroying the resource base on which they depend for survival. Since resources are more limited on islands, there is less room for error; an islander cannot just move on to a new area. Some Pacific islands such as Wallis and Futuna, Nauru and some atolls are getting very close to their environmental limits. In some cases the rapid loss of soil and cultural barriers to family planning are immediate threats to adequate food production.

It is clear that the solution of these problems of the environment and of sustainable resource use will require management skills and a good scientific understanding of the island environment. Unfortunately, skilled managers and scientists are sorely lacking in the region. The few scientific institutions are staffed largely by expatriates. In the past there were many traditional experts of resource management at the local level, but more than a hundred years of missionary activity, colonization, European education and modernization have largely destroyed this knowledge and the traditional management systems through which it was applied.

If the peoples of the region are to ensure for themselves a satisfactory environmental future, they must take measures to reverse the steady erosion in their resource base and to stabilize their populations within the carrying capacity of their islands, even if this means modifying what they see as deeply held cultural values. They must increase efforts to restore damaged resources, and to achieve comprehensive management of different resource uses



and development activities, particularly in the critical coastal zone. This will be very difficult, as it means questioning some of the development goals and assumptions inherited from former colonial masters or copied from elsewhere. It is clear from the above list of environmental concerns that the region requires unique forms of development adapted to the island environment, and drawing as much from the traditional societies that successfully lived within island limits for generations as from the modern world.

COURSES IN ENVIRONMENTAL SUBJECTS**M.SC. IN TROPICAL COASTAL MANAGEMENT.**
University of Newcastle Upon Tyne

This one-year course is devised specifically for those within the developing nations who require an overview of tropical coastal zone management. Whilst the course covers several matters relating to coastal zone management, of central importance are Environmental Impact Assessment (EIA), Environmental Monitoring and Resource Appraisal.

Prospective applicants should have already graduated with a first degree (B.Sc. or equivalent). The course will take place over a period of twelve months, and will consist of two ten-week teaching terms, followed by an examination and then either a two-month research project (for the award of Diploma) or a four month research project (for the award of M.Sc.). A limited number of scholarships may be available for the M.Sc. programme. For further details contact:

Dr B.E. Brown
Department of Zoology
University of Newcastle upon Tyne
Newcastle upon Tyne NE1 7RU
United Kingdom.

RURAL AND REGIONAL RESOURCES PLANNING
University of Aberdeen

This Master of Science degree may be undertaken full-time over 12 months and incorporates compulsory units on Theories of Planning and Development; Rural Resource Base; Techniques for Planning and Management; Environmental Remote Sensing; Data-handling Using Micro-computers; Public and Private Decision Making. Elective units may be taken for a wide range of subjects including Coastal Resource Planning; Environmental Impact Assessment; Tourism Planning and Environmental Pollution.

Candidates should have a degree of at least Class II Honours standard in an appropriate background subject. Applications are welcomed from persons with experience in planning or allied fields and from overseas students. Details of possible fellowships for UK and overseas students from international agencies and other organisations can be supplied. For details contact:

Brian D. Clark
 Joint Course Co-ordinator
 Department of Geography
 University of Aberdeen
 ABERDEEN AB9 2UF
 SCOTLAND (U.K.)

Phone: (0224) 480241 Ext. 5181/5178
 Telex: 73458 UNIABN G
 Fax: 0224 491439

ENVIRONMENTAL REMOTE SENSING
 University of Aberdeen

This course deals with the theoretical basis and the application of techniques for sensing, recording and analysing the interaction of electromagnetic energy with the earth's surface features. Particular emphasis will be placed on sensors operating from aircraft and earth orbiting space vehicles and on environmental applications in agriculture, forestry, geography, geology, marine science and fisheries, soil science, physical planning and natural resource inventory and mapping.

Two postgraduate courses, a Postgraduate Diploma extending over 9 months of full-time study and a Degree of Master of Science in Environmental Remote Sensing, extending over 12 months of full-time study are being offered by Aberdeen University, Scotland, United Kingdom. For details contact:

Mr R. Wright
 Geography Department
 University of Aberdeen
 St Mary's, High Street
 OLD ABERDEEN AB9 2UF
 SCOTLAND (U.K.)

DISASTER MITIGATION IN DEVELOPMENT
City of Birmingham Polytechnic

Polytechnic Diploma of Post Experience Training - 44 week full-time course

44 week full-time course divided into 2 sections:

- 1) 22-week Certificate Course (Part I)
- 2) 22-week Diploma (Part II)

Fees: Pound Sterling 5450 Whole Course
 Pound Sterling 2850 Part I
 Pound Sterling 2600 Part II

Emphasis on pre-disaster planning to reduce vulnerability of countries which experience earthquakes, volcanic eruptions, tropical cyclones, floods and famine. The effects of 'accidents' in technology are also covered. The course is multi-disciplinary both in its teaching and in the students it will accept.

The organisers hope to recruit participants from many hazard-prone countries so that they can make a contribution by bringing their own experiences to the course. As well they are looking for sponsoring agencies to nominate and support students on the course who will then be able to return to their own countries and pass on their new knowledge and thus help in planning the mitigation of disasters. For details contact:

Dr Mohsen Aboutorabi
Course Director
Faculty of Built Environment
City of Birmingham Polytechnic
Perry Bar
Birmingham B42 2SU
United Kingdom

Telephone: 021-356 6911
Telex: 334909 CBPOLY G

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.

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.

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
USA.

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.

PLES



**An Environmental Education
Journal
for the
South Pacific Region**

SOUTH PACIFIC REGIONAL ENVIRONMENT PROGRAMME
(SPREP)
SOUTH PACIFIC COMMISSION



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 Hazard: A Case Study of the Tuamotu Islands.

OTHER NEWSLETTERS

The Marine Pollution Bulletin seeks to publish "news items" concerning marine pollution in Australasia and the Pacific. Should you have notices or outcomes of major meetings, public issues, and scientific developments please contact:

Dr L.S. Hammond
Victorian Institute of Marine Science
14 Parliament Place
MELBOURNE Vic.3002
Australia.