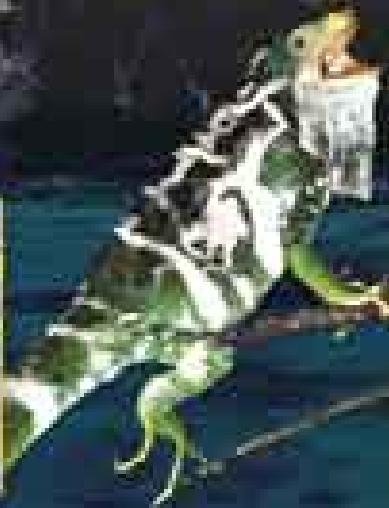




island life



Celebrating Pacific island biodiversity:
Case studies of island life

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SPREP is an intergovernmental organisation that works with Pacific countries and territories to strengthen environmental management and promote sustainable development.



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Acronyms and their meaning

| | |
|--------|---|
| AD | Anno Domini (in the year) |
| BPOA | Barbados Programme of Action for the Sustainable Development of Small Island States |
| CBD | Convention on Biological Diversity |
| CEPA | Communication, education and public awareness |
| CEPF | Critical Ecosystems Partnership Fund |
| CHM | Clearing-house Mechanism |
| CI | Conservation International |
| CITES | Convention on International Trade in Endangered Species of Wild Fauna and Flora |
| COP | Conference of the Parties |
| FAO | [United Nations] Food and Agriculture Organization |
| FLMMA | Fiji Locally Managed Marine Area |
| FSM | Federated States of Micronesia |
| GDP | Gross Domestic Product |
| GEF | Global Environment Facility |
| GIS | Geographic Information Systems |
| IMO | International Maritime Organization |
| ISSG | Invasive Species Specialist Group |
| IUCN | The World Conservation Union (previously: International Union for the Conservation of Nature and Natural Resources) |
| IWP | International Waters Project |
| JICA | Japan International Cooperation Agency |
| MIC | Micronesians in Island Conservation |
| NBSAP | National Biodiversity Strategy and Action Plan |
| NESAF | National Environment Strategy Action Framework |
| NFP | National Focal Point |
| NGO | Non-governmental organization |
| NZAID | New Zealand Agency for International Development |
| PACPOL | Pacific Ocean Pollution Prevention Programme |
| PAPP | Pacific Ant Prevention Plan |
| PICTs | Pacific Island Countries and Territories |
| PIE | Pacific Initiatives for the Environment |
| PII | Pacific Invasives Initiative |
| PILN | Pacific Invasives Learning Network |
| PMN | Planting Materials Network (Solomon Islands) |
| POPs | Persistent organic pollutants |
| RIFA | Red imported fire ant |
| SOPAC | South Pacific Applied Geoscience Commission |
| SPC | Secretariat of the Pacific Community |
| SPREP | Pacific Regional Environment Programme; Secretariat of the ... |
| TNC | The Nature Conservancy |
| UNDP | United Nations Development Programme |
| UNEP | United Nations Environment Programme |
| WSSD | World Summit on Sustainable Development |
| WWF | World Wide Fund for Nature |



Chapter 1:

Overview: Saving Pacific island biodiversity



In this publication, the Secretariat of the Pacific Regional Environment Programme (SPREP) offers a snapshot of work undertaken in the Pacific region that will contribute to the implementation of the Island Biodiversity Programme of Work as accepted by the 8th Conference of the Parties (COP8) of the Convention on Biological Diversity (CBD).

We highlight innovative activities and their outcomes in Pacific island communities. We also offer approaches and best practices for other Pacific islands and other countries interested in maintaining and improving island biodiversity.

The case studies illustrate some challenges and opportunities of dealing with island biodiversity.

Sustaining island life

In few other regions of the world does biodiversity underpin lives and livelihoods to such an extent as in the Pacific. We highlight the Pacific region's collective and individual responses to many of the issues, threats that need addressing, and opportunities that can be developed. This must be done with consideration, to ensure that their biodiversity and natural inheritance is not lost.

Both the terrestrial and marine biodiversity of the Pacific region are recognised as globally significant. Three globally recognised terrestrial biodiversity "hotspots" occur in the tropical Pacific: the Melanesian islands, New Caledonia, and Polynesia-Micronesia (Allison and Eldredge 2004), and five outstanding coral eco-regions (Olsen and Dinerstein 1998). The Western

Pacific is acknowledged to have the highest marine diversity in the world with up to 3,000 species found on a single reef (SPREP 1992).

Pacific threats

While being of global significance, the biodiversity of the Pacific is also highly at risk. Extinction rates in the region, especially for birds and landsnails, are among the highest in the world. Native forest cover is being removed at rates of up to 4% per annum (FAO 2003), with less than 30% of the forest cover remaining in a natural state (Allison and Eldredge 1999). Marine resources are being over-harvested and degraded in many islands and ecosystems.

A recent analysis of biodiversity hotspots indicates that the Polynesia-Micronesia hotspot can least afford to lose more habitat, because it has already lost so much of its original habitat—and is extremely vulnerable to further losses (Brooks et al. 2002).

Overall, the Pacific has more globally threatened species per capita than any other region (Given 1992; UNEP 1999).

Based on the global standard for identifying species at risk from extinction, i.e. the latest IUCN Red List of threatened species (IUCN



2003), there are approximately 858 species with a high probability of extinction in the medium-term future in the Pacific islands region. Hundreds more are candidate globally threatened species in the Pacific, but until good data on the population and conservation status of these species is obtained, they cannot be Red-Listed.

There are many reasons why the Pacific has so many threatened species, including the extreme vulnerability of small, isolated island ecosystems to impacts such as invasive species, habitat loss or modification, and excessive resource exploitation. Species on islands tend to be more ecologically “naïve”, i.e. less able to withstand impacts because they evolved in the absence of mammalian predators, grazing herbivores, and many of the pests and diseases found on larger landmasses. Speciation—and its opposite, extinction—can happen particularly rapidly on islands, particularly small isolated islands. The potential future impact of climate change is not known but could be severe, especially on the low islands and atolls.

Biodiversity is important to island life

Pacific islanders remain highly dependent on biological resources for survival. Fishing and agriculture are still the mainstays of the economies of most Pacific Island countries and territories (PICTs). The fisheries industry alone contributes approximately 11% of the GDP of all PICTs (Gillet et al. 2001).

Most Pacific islanders still rely on biological resources for housing, traditional medicines, transportation, handicraft production and food. Improving the conservation and sustainable management of biodiversity becomes imperative: not only to maintain the healthy functioning of island ecosystems, but also to sustain the livelihoods of Pacific peoples and the unique cultures of the Pacific region.

The human colonisation of Pacific islands over the centuries has resulted in massive change to island ecosystems and biodiversity.

First colonisation of Pacific islands resulted in subsistence exploitation of forest and lagoon resources, and the deliberate or accidental introduction of many alien species, including some that became pests: rats, pigs, and dogs.

While it is believed that many, if not most, Pacific Islanders lived harmoniously within the carrying capacity of local natural resources, there is evidence that some resource degradation did occur on many islands at certain times (Nunn 1994). The environmental degradation, social disintegration and intertribal warfare on Easter Island from about AD 1500 is a classic example, as is the probable extinction of more than 2,000 birds throughout the region since human colonisation (Steadman 1995).

However, the biggest changes to insular ecosystems have been wrought in contemporary times as a consequence of European colonisation. The introduction of more sophisticated and efficient tools and technologies, coupled with an increase in consumption per person associated with the adoption of commercial values and new lifestyles, have together resulted in increased environmental impact.

As new technologies and consumerism have become more widely adopted, the pace of exploitation has accelerated. Adoption of new values and lifestyles has often been associated with an erosion of traditional control over land and resource use, and a loss of indigenous knowledge of conservation methods.

People matter

Possibly the most important driver of environmental impact and exploitation of biodiversity in the Pacific is population growth. Most PICTs have experienced population booms within the past 50 years as a consequence of declining death rates, due to improved health care yet stubbornly high fertility rates.



Tropical Polynesia was the first to experience a population boom between the 1940s and 1970s, whereas Melanesia and Micronesia followed from the mid 1970s (UNDP 1999). Currently the highest population growth rates, of between 3 and 5% per annum, are being experienced in the Solomon Islands and in the Northern Mariana Islands (SPC 2000).

In many countries in the Pacific, the natural rate of population growth remains high but has been artificially lowered by emigration to metropolitan countries. But even with high rates of emigration, the population doubling time is only 30 years in Melanesia and Micronesia, and 58 years in Polynesia (SPC 2000). Also important are the distribution and movements of populations.

The population of most countries is still predominantly rural. Yet rapid urbanisation is a common feature of many countries, especially in Micronesia, where 48% of the population now lives in urban areas, mostly near the coast (SPC 2000). High urban population densities in many Pacific townships have been linked to a number of health, sanitation, housing and infrastructural problems (UNDP 1994).

The movement of people and their goods has been increasing as human populations and economic activity increase, and as the relative cost of transport lessens and trade barriers liberalise. This has resulted in a heightened risk of unwanted invasive species hitchhiking on or in the vessels or planes that transport the people and goods, on/in the containers transporting the goods, with the people, or on/in the goods themselves.

To counterbalance the negative environmental trends, recognition of the significance and value of the region's biodiversity is growing fast. A large number of policy responses at the local, national, regional and global levels have been developed and are in the process of being implemented in the Pacific.

At the global level, biodiversity resources and conservation measures are articulated through the Convention on Biological Diversity (CBD) and its resultant national policy and implementation.

Arising out of the 1992 Rio Earth Summit, the CBD is the first global agreement on the conservation and sustainable use of biodiversity. The objectives of the Convention are:

- Conservation of biodiversity;
- The sustainable use of its components;
- The fair and equitable sharing of benefits arising from the use of genetic resources.

The CBD has now been ratified by 188 countries, including 14 Pacific Island countries). They are: Cook Islands, Federated States of Micronesia, Fiji, Kiribati, Republic of the Marshall Islands, Nauru, Niue, Palau, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu, and Vanuatu.

Parties are required to address the issues covered by the convention through the preparation of national biodiversity reports and a National Biodiversity Strategy and Action Plan (NBSAP). These can be found on the CBD website: www.biodiv.org

The Action Strategy

Regionally, policy responses are reflected in the Action Strategy for Nature Conservation in the Pacific Islands Region 2003–2007 (SPREP 2004)—a regional strategy highlighting agreed priorities.

The key coordination mechanism of the Action Strategy is the Roundtable for Nature Conservation of the Pacific Islands. Efforts are underway to measure the outcomes of the Action Strategy (through the Roundtable), that will offer insights into current island biodiversity conservation initiatives, and highlight what impacts the collective efforts are making on the ground across the region.



The new Island Biodiversity Programme of Work results from the recognition at the global level that islands need to be treated differently. National, regional and local input and support are essential.

Consultation on the Island Biodiversity Programme of Work in the Pacific was collaborative and extensive. This continues the Pacific's history of working closely together as a region and is now geared to ensure that the financial resources become available at all levels to make its implementation a reality.

The following section and chapters highlight the experiences and lessons learnt in communities, non-government organisations, governments and donors. These give a small snapshot of the conservation activities currently being undertaken in the region.

We hope to demonstrate how the Pacific region is well placed to address biodiversity issues effectively. For this we need continued support.

Information sources:

Pacific Biodiversity websites:

Cook Islands: www.environment.org.ck

Palau: www.palau.biodiv-chm.org

Samoa: www.mnre.gov.ws/biodiversity/default.cfm

Republic of the Marshall Islands:

www.biormi.org

Vanuatu: www.biodiversity.com.vu

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Chapter 2:

Perspectives on CBD implementation



This chapter explores different experiences in the Pacific in working with the Convention on Biological Diversity, through bringing perspectives of various implementers and stakeholders in Pacific island countries.

Developing and implementing a national biodiversity strategy and action plan—the case of Samoa
Tepa Suaesi, Ministry of Natural Resources, Environment and Meteorology, Samoa
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Samoa developed its National Biodiversity Strategy and Action Plan (NBSAP) in 2001. It is the result of a successful experiment to exploit the potential of a national multi-stakeholder process on a larger scale.

A strong national team selected eight thematic areas for drawing up the NBSAP:

1. Mainstreaming biodiversity
2. Species management
3. Ecosystem management
4. Community
5. Biosecurity
6. Access and benefit sharing
7. Agro-biodiversity
8. Financial mechanisms.

Small technical teams reviewed existing information on the status of each of the thematic areas. Representatives came from all the key government ministries, government corporations, statutory bodies, non-government organizations and the business community.

These framers of the NBSAP were engaged in intensive research and consultations with their respective sectors to take stock of all relevant information for the NBSAP.

They were also given training opportunities and time to use various methods for evaluating and assessing the status and use of the country's biological resources. External experts were hired at the same time, to assist some of the key technical sub-committees in areas such as the economic valuation of natural resources, climate change and land use.

In three years, the process matured and produced a highly comprehensive NBSAP document and several other reports including:

- A stocktaking report of information collected and analyzed;
 - A technical report on key priorities for each of the thematic areas;
 - Samoa's first national report to the CBD;
 - A national report on the economic valuation of forests and marine resources of Samoa;
 - Three reports on capacity needs assessments: on biodiversity, climate change and land use issues in Samoa;
 - The formulation of an add-on phase funded by GEF-UNDP to initially implement the NBSAP;
- and above all,
- The attainment by the NBSAP team of



extensive experience and strong confidence in the exercise of a strengthened and systematic multi-stakeholder process.

The NBSAP document and its various products were formally approved by Cabinet and launched in 2001. Since then the NBSAP process has progressed further into:

- The establishment of two district Marine Protected Areas (MPAs) in Samoa: Aleipata and Safata;
- The launching of Samoa's Biodiversity Clearinghouse Mechanism (with a biodiversity website database at www.mnre.gov.ws) which integrates land management, planning and urban management, surveying, environmental capacity building, national heritage, and some of the keyline ministries programmes;
- A national assessment report on the capacity needs for the issue of access to genetic resources and benefit-sharing, and the protection of traditional biological knowledge;
- Training and formation of a geographic information systems (GIS) user group to assist the management of Samoa's lands, forests, biological resources and climate change issues;
- The formulation of a national invasive strategy;
- The first NBSAP national monitoring and evaluation and the selection of NBSAP priorities over five years (2005–2010);
- Projects proposed for the conservation of remaining lowland and upland native forests of Savai'i (the largest island in Samoa), and improved management of Samoa's first Ramsar Site, Lake Lanoto'o (the largest inland lake in Samoa).

Constraints in developing and implementing a NBSAP

It is true that Samoa has made strides forward in the NBSAP process and other related activities. But that is not to deny the many failures, shortfalls, difficulties and problems the stakeholders of this process went through, as they tried to achieve its objectives.

Commitment of representatives of the various institutions and communities involved in the NBSAP process was perhaps the most challenging thing to maintain. Taking four years to complete (1998–2002), the process needed these representatives to effectively share in the compilation and analysis of information, engaging in and reflecting on the vision, objectives, and the most likely activities to achieve conservation and sustainable use of the country's biological resources.

Changes in representatives on the steering committee resulted in institutional memory lapses and re-orientation—the need to ensure that participating institutions were knowledgeable of the process.

Most notable in this respect were the three changes in the external funding coordinator responsible for assisting in developing the NBSAP. With each change, the process slowed while the new coordinator became familiarized with the different activity threads.

Various incentive schemes were put in place to keep the momentum of the group of core members. Yet these proved inadequate to keep the members focused on the tasks assigned to them, as they were still required to carry out the same (or in many cases increasing) levels of responsibility within their organizations.

Information was another huge challenge to the process. There was a lack of both resources and commitment from some of the key relevant sources of information. This required more time and continuing efforts throughout the entire NBSAP process to assemble the fragments of data available. Yet this was essential to provide a sound basis for defining meaningful objectives and activities for addressing identified problems.

Key information gaps were identified, such as freshwater ecology: these lack adequate strategies in the NBSAP as there is an inadequate knowledge base at this stage to define actions.



The most important is the lack of a sound national biodiversity information management system for effectively addressing information needs. In fact, about two years were spent on stocktaking and researching relevant information. This is why the establishment of a biodiversity clearinghouse mechanism was chosen as one of the first actions to be implemented when the NBSAP document was approved.

Ensuring the full participation of more than 300 villages in the process was another huge challenge: this was an objective of the NBSAP steering committee.

The process could only encompass the views of a few sectors of grass root communities. While consultations were all carried out in Samoan, there was extremely limited time available to fully familiarize local communities with the new concepts or thematic areas of the strategy.

Thus many were not fully able to articulate meaningful views and recommendations for the formulation of the strategy. Engaging the community was therefore selected as one of the thematic areas of the NBSAP, with actions to ensure a continuing and increasing participation of the community in implementing and improving it.

And then there is the issue of the financial and human resources required to maintain this process through the implementation of the resulting strategy, and any other potential direction of its development. The NBSAP was from its outset in dire needs of increased resources and time to keep it moving and to achieve its targets.

The targets outlined in the NBSAP for each of its proponents (individuals, institutions and communities) have not generated the level of resources and commitment required yet.

While various actions have been accomplished in some of the strategy's thematic areas, many

remaining actions have not been started due to massive resource shortages. This challenge has become the highest priority for the NBSAP.

Other similar processes are the National Action Plan for Adaptation on Climate Change issues, the National Implementation Plan for Organic Pollutants, the National Action Plan for Land Degradation, and especially, the National Capacity Self Assessment. We hope that mainstreaming these with the NBSAP will result in a more clearly focused action, and increase its resources base through a system capable of addressing issues and dealing with increasing levels of difficulty.

Implementing the CBD—a community perspective from the Cook Islands
Ana Tiraa, Cook Islands community / NGO representative (tiraa@oyster.net.ck)

Perhaps I should start by saying that the title of this paper should be implementation of the Convention on Biological Diversity (CBD) in the Cook Islands from a Cook islander's perspective. What gives me the authority to present my thoughts on this topic?

Though I have over 15 years of conservation experience, ranging from biodiversity field research to advising on policy, this does not qualify me as an expert on the CBD. From this experience, I will share with you my observations and thoughts on biodiversity conservation in relation to the CBD.

The Cook Islands was one of the first countries to commit to the CBD by signing it at the Earth Summit in 1992. The early years of the CBD had very little obvious impact on Cook Islanders, even for those directly involved. As the years went by, the convention became gradually more familiar to local environmentalists, but the details contained in it are sketchy. Those outside the environmental field remain totally oblivious to the Convention. But the general public need not really be aware of it, so long as they support the principles behind it.



Convention matters have largely been dealt with by the Cook Islands Environment Authority; those outside government have only recently become involved in CBD procedures. This is a result of global recognition that non-government organizations and communities play a vital role in biodiversity conservation.

This recognition is also further supported by the increasing number of funding opportunities available for civil society to accomplish conservation initiatives: available funds for biodiversity conservation take into consideration the CBD.

The Cook Islands undertook biodiversity conservation before the CBD came into being. Some of these activities were with donor assistance and others without. One example has been the highly successful Kakerori Recovery Programme (which is highlighted later in this publication). The programme commenced intensively in 1989 when the critically endangered land bird numbered 29 individuals.

Today their numbers have grown to more than 250. Conservation activities without donor assistance usually occur on islands where there are few or no people living, or on islands where conservation of resources is integrated into daily life as a matter of survival. In the absence of funding, these deeds go largely unrecognized. Donor-supported activities are expected to be promoted and reported on regularly, hence they are acknowledged more often.

The Cook Islands has met some of its obligations under the CBD, including developing policies and national plans for the conservation and sustainable use of plants and animals. The Environment Act 2003, NBSAP and National Environment Strategy Action Framework (NESAF) are recent examples. Nevertheless, the implementation and monitoring of policies and plans has been relatively poor. The lack of resources coupled with the absence of a focused biodiversity

division in the Cook Islands are key reasons. The Cook Islands Natural Heritage database fulfills Articles 7 to 10 in listing species for conservation (Tangianau 2005).

This information-gathering commenced before the CBD existed and continues to expand. The database is highlighted later in this publication.

Responsibility for managing the environment in the Cook Islands, including biodiversity, is divided among several government ministries, agencies and councils. Non-government organizations also assist in addressing biodiversity concerns.

There is no aggregation of information generated by the different organizations dealing with biodiversity issues. As a result, exposure of biodiversity activities in global reports tends to be inclined towards the group who is reporting.

Furthermore, lack of coordinated information between groups means ignorance of what others are truly undertaking.

The Cook Islands has yet to produce a report to the CBD. The cumbersome reporting procedures have made it difficult to fulfill this requirement (Tangianau 2005) for which a government agency, the National Environment Service, has coordinating responsibility. The recent accessibility of funds for developing countries to apply for help with reporting requirements is a step in the right direction.

It is early days yet, but we hope that the Cook Islands National Capacity Self Assessment (NCSA) programme will help strengthen biodiversity conservation efforts in all areas.

When it comes to negotiation and advocacy processes in relation to the CBD, we are small in size and have limited negotiation capacity. Therefore we can do better by working with our Pacific neighbours in bringing issues to the fore. This way a wider extent of issues is covered.



The Programme of Work on Island Biodiversity is one of the most important initiatives for the Cook Islands in this area. It will ensure dedicated attention is given to island biodiversity.

I am extremely excited about this initiative. Its adoption at the Conference of Parties, and allocation of the right amount of resources will mean the policies and plans that we have set may even be implemented.

Environmental education and the clearing house mechanism—German-Palauan cooperation on biodiversity observations

Joel Miles, Office of Environmental Response and Coordination, Palau, and Dr Horst Freiber, National Focal Point, Clearing House Mechanism, Germany

Being involved in some of the processes related to various CBD activities provides opportunities for island countries to form partnerships with countries outside their normal geographical and political sphere. This is also one of the benefits of the Programme of Work on Island Biodiversity.

Palau has cooperation between their Clearing-House Mechanism (CHM) National Focal Points (NFP) on environmental education, with its equivalent in Germany. This resulted from a meeting of the Informal Advisory Committee on Communication, Education and Public Awareness (CEPA).

Focussing on the German web-based youth-multimedia project Naturdetektive (nature detectives): www.naturdetektive.de, Palau and Germany are developing a strong collaborative relationship which is developing competencies, sharing experiences and technologies in both countries.

It offers students and schools access into the world of biodiversity (for German students: using English also) and each country has been able to gain experiences in bilateral

cooperation on practical CEPA activities. Part of this included being able to test the usefulness and acceptance of existing tools by students from overseas.

Naturdetektive is directed at schools and the public to raise biodiversity awareness in Germany. Created in 1998 by the German CHM National Focal Point as a complement to the national CHM, and to make biodiversity more widely understood, the concept is simple: every year, 12 topics are presented and moderated by volunteer national experts from research, private and non-governmental organizations. Answering questions in their web-based forum, each topic needs practical field work with results being presented on a special reports page of the website. The results include text, photos and audio files.

Cooperation was initiated through Naturdetektive's International Biodiversity Competition, which informs German schools and the public on global biodiversity and the CBD. Every two weeks, different pictures showing animals or plants from tropical and other foreign regions are presented along with questions about the species relating to their environmental, biological and cultural relevance.

Participants answer these questions electronically via a web-form and then a winner receives a prize after each round. Big book publishers have been donating the prizes.

The collaborators expected participants from Palau and Germany to then start to search via the internet for sources of information about the species, so that both could learn about Palauan biodiversity. It also allowed Palauan students to collect experiences with internet-based nature observation projects.

During 2005 the following five Palauan species were presented in the International Biodiversity Competition:

- Palau Spider / Mangidabrudkoel (*Nephila pilipes*)



- Breadfruit (*Artocarpus altilis*)
- Taro (*Colocasia esculenta*)
- Betelnut (*Areca catechu*)
- Nautilus (*Nautilus belauensis*).

The main challenges were to collect the pictures and identify good websites providing background information on the species. A major challenge was to integrate these pictures into the Palauan CHM website, and this was accomplished for the Spring, 2006 competition, which began on 20 February.

The whole activity is a first approach to learn and exchange, on a daily and practical level, experiences about web-based environmental education activities between two CBD member countries.

While a major objective concerned implementing the concept of transfer of technologies (decision VII/29 on Technology Transfer in relation to CEPA), it was understood and intended that this means cooperation and partnership building over a longer time period.

Both partners had to make adjustments, specifically on the German project website Naturdetektive. This cooperative activity enabled the transfer of know-how (soft technologies) as well the transfer of open-source and copyright free tools and materials (hard technologies). A practical product of this “transfer of hard technologies” has been realised with the “Bud Quiz” developed by the German Naturdetektive project.

The German “Bud Quiz” programmed in HTML was adapted for the use of Palauan schools and the general public as “Mangrove Quiz”. It is now available in a CD-based version, and will be on the Palauan CHM Website, along with fact sheets on the main mangrove plants in Palau.

In 2006, the International Biodiversity Competition will continue to be open to every country. Learning from our first experiences, Palau will advertise all competitions through

a national newspaper which will include a new subject, the photo with text, and the questions—including the website of the Palauan CHM to get the web-based information.

Readers of the newspaper can call in or email the correct answers to the newspaper; the first reader with the correct answers will receive a T-shirt from the newspaper. Readers of the newspaper will also have the chance to send their answers in written form to the CHM National Focal Point of Palau and participate in the competition off line.

This flexibility is important, as not all schools and households have access to the internet in Palau. Teachers in Palau schools will also use the competition as a teaching/learning tool in science and computer-literacy classes.

Information sources

CBD National reports: www.biodiv.org/reports/default.aspx

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Chapter 3:

Indigenous conservation areas



The great majority of Pacific Island land and resources (including coastal seas in some areas) are held in customary indigenous ownership. To be effective here, conservation area design and implementation has had to break new ground.

A Pacific approach to conservation

Common to most places in the Pacific is the indigenous concept of ra'ui, a Polynesian word describing an area of land or sea closed to exploitation. It has other or similar names in various Pacific island countries. The protection order, imposed by a community or its leaders, is usually for a defined period of time, often to allow resources to build up for a forthcoming feast. Other conservation initiatives might be imposed for spiritual or cultural reasons.

What is not traditional in the region is the permanent protection status for a large area of land or sea where no resources are ever again taken. The majority of Pacific peoples live on or near their traditional lands and reefs which still provide them with important foods, building materials, medicine, village sites, or cash livelihoods. Conservation, exploitation of natural resources, cultural practices and development activities are all part of daily living in the Pacific Islands' customary-owned forests, reefs and food gardens. To be successful, the protected area concept needed to build on these realities.

The first colonial attempts to impose protected areas in the Pacific led to the creation of a number of national parks—intended miniature versions of those in Australia, New Zealand and the United States. These were usually over

small areas of state-owned land. Few have survived as intact forest areas. Being far from the Pacific concept of land use, tenure and management, full protection laws were often not respected by local residents.

At a landmark Pacific conservation conference in 1989, the concept of a 'protected area' was rejected for the region in place of 'conservation area'—words that were meant to convey land or reef where nature would be conserved in a manner that allowed traditional owners continued sustainable access to resources. At that time, forests were threatened by industrial scale logging that was being aggressively pursued across Melanesia. At the same time, changes in technology, pressure on food gardens and desire for development and change at the village level were putting increased pressure on the Pacific's forests and reefs. Setting up conservation areas has been seen as a way of protecting key places for biodiversity from the worst of these impacts.

Through the 1990s, many conservation areas were started in the region by different agents: communities themselves, local non-government organizations, international conservation organisations, Pacific governments, and regional organizations. They have been inspired by differing motivations and objectives. What they have in common is the hope that these are locally effective,



given the complexities of traditional resource ownership, development aspirations, and the social politics of both the community and the outside agencies involved. Each project has usually varying levels of commitment within the community and the supporting agency. There are different definitions of exactly what a conservation area is, and what it can be expected to achieve.

There is one common driver for both traditional owners and outside agencies to continue their efforts: a concern that the unique plants and animals which are so useful and culturally important to the Pacific, are more gravely threatened than they have ever been. The conservation area concept is one way to address these concerns.

Vatthe, Vanuatu

The story of Vatthe, the magnificent sweep of lowland rainforest that backs Big Bay on the island of Espirito Santo in Vanuatu, has a history similar to that of many of the conservation areas of the Pacific.

In the early 1990s indigenous resource owners of Vatthe were approached by a foreign logging company to sell their trees. With the promise of development benefits such as health clinics and roads as well as cash, logging is a serious opportunity for remote rural landowners in the Pacific, who otherwise have little chance to access these opportunities. Weighted against the perceived benefits of logging is the damage that uncontrolled logging does to forests, rivers and streams, soil and reefs—the ecosystems that rural communities depend upon for their livelihoods. In addition, the promised cash and benefits are often only partly delivered—or not at all.

While the Vatthe owners were considering the logging offer, a biodiversity survey was done of the area by the Vanuatu Environment Unit, in collaboration with the Royal Forest and Bird Conservation Society of New Zealand. This

found that Vatthe was nationally important for its unusually large area (around 2,800 hectares) of diverse lowland forest growing on river flats and its associated rich animal life, including 44 bird species (representing 85% of the birds found in Vanuatu).

Big Bay in 1602

"This night we remained tacking about the said bay with great satisfaction, because in it was like sailing in a river bordered by thick groves in which by day and night numerous birds sang, and it seemed as though we were in a delightful orchard."
(Chaplain Fray Martin de Munilla, on Quiros' 1602 voyage of the Pacific)

Concern by the local communities of Sara and Matantas about the impact of logging, particularly on their source of medicinal plants, was coupled with the desire of the Vanuatu government to see Vatthe conserved. A community-run ecotourism project was suggested as an alternative for logging in bringing desired development and cash benefits to the resource owners.

The Vatthe Conservation Area was established in 1994, the first conservation area in Vanuatu to be legally registered. But, typical of nearly all conservation areas in the Pacific, the Vanuatu Government has no regulatory or enforcement powers over the forests of Vatthe. It can only advise, educate and assist. Conservation is proceeding through winning the interest and commitment of the local resource owners.

Common to other conservation area initiatives in the Pacific, the most important work done in Vatthe since its establishment has not been scientific or biological. It has been social and developmental.

The conservation area idea was adopted by a community that had already a serious long-term land ownership dispute that reached the Supreme Court. Religious differences underpinned conflict in life style and values among land owners. The ecotourism business



was to be established by people who had little formal education in a place that is difficult for tourists to access.

The priorities for engagement in the project differed also between the outside agencies and the local residents. Living so remotely and feeling forgotten by their government, the people of Vatthe saw the interest of outsiders in their world as an opportunity to address pressing development issues such as water supply, health and education. But these priorities were not in line with the criteria of external donor agencies that had been attracted to support the project. External support demanded that the project meet the deadlines, protocols, reporting requirements and structures of a large regional conservation programme. Unfortunately, community-led consultation and decision-making rarely fit these requirements easily. Eventually, when the regional programme ended, external support for Vatthe came close to collapse.

Despite these constraints and problems, the Vatthe Conservation Area has had its successes. The tourism business was established and is now quietly flourishing. In 1998, tourist bungalows and a restaurant were opened. Capacity of this remote community has been developed through training in business management, tourism, and institutional strengthening. Links with government services help meet development priorities. Local attempts to overcome the bitterness of land disputes have been made, including a traditional ceremony to unite two villages in a common cause.

Most remarkable is that the project, for all its difficulties, has been instrumental in keeping logging companies out of these valuable forests for over a decade. There is hope that the forests remain in their natural state to support the resource owners, and to contribute to global biodiversity.

Ra'ui in the Cook Islands

In the Cook Islands, a marine conservation initiative is focused on ra'ui that can be moved across reefs and also in time (unlike the Vatthe Conservation Area, which is centred on a defined area of land).

Traditionally, a ra'ui was imposed by a reef-owning clan's chief for conservation management. During a ra'ui, harvesting was banned over a defined area to allow stocks to increase. When the ra'ui was lifted, it could be moved to another area or re-established in the same area once harvesting had taken place. Punishment for infringing the ra'ui could be severe.

In 1915, customary ownership of the lagoons and reefs of the Cook Islands was eliminated and ownership passed to the crown. Traditional management by local communities became far less common and, particularly on Rarotonga, marine resources became badly depleted.

By the 1990s, the state of Rarotonga's marine environment had become a matter of considerable concern to the chiefly council, Koutu Nui. The inshore fishery was overfished with marine life becoming scarcer and animals being smaller. After a number of public meetings on the subject, in which local residents echoed that concern, the Koutu Nui decided to re-establish the ra'ui system in five selected areas that together covered 15 percent of the lagoon area.

All Rarotongan churches were asked to say prayers for the closing of the five areas and mention them in their sermons. Extensive media coverage and an education campaign were also put to good effect.

Although the Ministry of Marine Resources is involved in marking the closed areas and monitoring the fisheries, there is no legal basis to the ra'ui. Instead they rely for their effectiveness on traditional authority, backed



by rebuke and community pressure against offenders. As the ra'ui are between 300 and 800 metres in width, sufficient area remains outside the closed parts of the lagoon to allow local fishing by the local community. This fact helped win support from people who were concerned about access to marine resources.

Like conservation areas throughout the Pacific, each ra'ui is unique, designed to suit local circumstances. Some are short-term, involving rotational closures of sites close to each other. Others are longer-term. Some prohibit the take of certain species and not others.

Initial compliance with most of the ra'ui was high. And after a year of closure, there was a measurable increase in abundance of marine life in the ra'ui areas, and the lagoon and reefs surrounding them.

Ongoing education and awareness activities were provided by several groups such as WWF Cook Islands, NZAID, the private sector and government (including Ministry of Marine Resources and the Environment Service). This helped grow the support for ra'ui, their number increasing to 12.

As time progressed, less focus was placed on public consultation and communication. The resulting lack of awareness led to uncertainty about the status of some ra'ui and a reduced level of support for them. Because of poaching problems, the traditional leaders who initiated one of the ra'ui asked for it to have legal recognition, and have commissioned a management plan to back that request. Not everyone is supportive of this, however. There is concern that legislation would weaken the mana (status) of the traditional leaders.

*"We would love our people to learn through education not legislation. Our approach to conservation is not through fear but through respect."
(Dorice Reid Te Tika Mataiapo)*

Ra'ui have had a more enduring impact in some of the outer islands. Here they may be more integrated into daily life as a matter of subsistence survival. By contrast, Rarotongans have more economic opportunities and are less dependent on the health of the reefs. Their ra'ui may need greater financial support and perhaps supportive legislation to ensure their ongoing effectiveness. Wherever ra'ui are placed, continuing education and awareness of local communities is important to maintain support for them.

A learning experience of decades

Community motivation for the conservation of the reef and lagoon resources is high in the Cook Islands where traditions, diet, and economic development value marine life. However, it has taken the re-instatement of traditional authority and traditional management techniques to lead local people towards a sustainable harvest regime.

The ra'ui initiative is an evolving one as the chiefs, their communities and the Government learn from their ongoing experiences. One ra'ui experienced a "fishing frenzy" when it was opened. While the community was very happy with the first catch results, over-harvesting returned the reef to the same poor state prior to the ra'ui. The ra'ui was reinstated nearby: at its lifting 10 months later, the chief instructed modest fishing and only for home consumption.

The ra'ui initiatives have led to an increased focus on the health of the marine environment in Rarotonga. The cause of decline is being linked to problems beyond over-harvesting, including land-sourced pollution.

What is clear is the need for continued education, awareness and focused support to back the traditional authority of the chiefs and their vision for conservation.



After a decade-and-a-half of experience in designing and implementing indigenous conservation areas in the Pacific, common themes are emerging. Effective conservation supports and builds on indigenous traditions. It is practical and must take into account that the natural world forms the basis of the economies, culture and diet of local people. Because much has changed in the past decades for Pacific Island communities, traditional approaches to conservation will need supporting and enhancing through research, awareness raising and, often, funding.

Conservation area practitioners have learned important lessons from community development practices: these include effective community consultation, and the value of local ownership of project design and implementation. External supporting agencies are important but need to ensure that their processes and timetables recognise the community processes that underpin local conservation success. Pacific communities and their partners can make effective and lasting gains for the conservation of biodiversity through indigenous conservation areas.

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Chapter 4:

Conservation of threatened species



The Pacific has more threatened bird species per unit of land area, or per person, than any other region in the world. Pacific species evolved on tiny, geographically variable oceanic islands, in isolation from predators and competitors, resulting in extremely high levels of endemism. However they have long been subject to extermination by a range of introduced species, by loss of habitat and by hunting. Although these threats are now better known and solutions are available, species are still becoming extinct in the Pacific.

Diversity, endemism and vulnerability

The Pacific is a region of diversity and contrasts. Papua New Guinea, in the far west of the region, is estimated to harbour 5–7% of the world's terrestrial species.

There is a general decline in marine and terrestrial biodiversity from west to east reflecting the distance of the oceanic islands to the origins of most Pacific species in South East Asia and Australasia. This decline also reflects the lower geographic complexity and rainfall of many of the eastern islands as well as the contribution of humans, who also migrated predominantly from west to east.

Thus there are no native amphibians east of Fiji and there are no native mammals east of the Cook Islands, except for a single Hawaiian sub-species. But while oceanic islands have few biological groups, those that are represented have undergone intense speciation, to form many unique species.

More than half of the terrestrial vertebrate species found in the Pacific are endemic to the region, and often to specific islands or countries. Knowledge of invertebrate diversity is very patchy, but groups that have been studied show high diversity. Land snail diversity is particularly high, with over 750 species (98% endemic) in Hawaii alone.

However, these island ecosystems and species are extremely vulnerable to impacts such as invasive species and habitat destruction. As a result, the flora and fauna of this region are among the most endangered in the world. In fact species extinction rates have been amongst the highest in the world, especially for birds. Of all the world's threatened bird species, nearly a quarter are in the Pacific.

Endemic island species are particularly threatened with extinction: as land areas are so small, they often have very small populations and it doesn't take much to disturb these.

The Pacific was one of the last parts of the world to be settled by humans. The spread of alien species into the region with the people—some deliberately, some accidentally—had unintended consequences on those species that had evolved there, often largely in isolation. The loss or changes to the habitats they lived in, as people cleared the land for new land uses, had similar disastrous consequences.

The extent of the decline of species in the region is not as well documented or understood as in other parts of the world: the small populations have few specialists that studied and understand the nature of the threats they face.



The region has developed strategies to deal with and prioritise actions through a number of workshops which have developed the:

- Regional Action Plan 2003–2007 for Dugongs;
- Regional Action Plan 2003–2007 for Whales and Dolphins;
- Regional Action Plan 2003–2007 for Marine Turtles;
- The Avifauna Conservation Strategy for the Pacific Region.

Turtle conservation in Vanuatu

Marine turtles are an important part of the diet and customs of Pacific people, with both their meat and eggs long considered delicacies. Today, marine turtle species are endangered or critically endangered. Causes are incidental catch at sea by fishing boats, disturbance of their nests by introduced dogs and rats, and increasing levels of hunting of both adult and juvenile turtles or egg harvesting, by coastal communities around the world.

It has been difficult to introduce turtle conservation measures in the Pacific, because of the traditional importance of these animals as a food source—and perhaps because the turtles' migratory habits means that turtle conservation is a shared responsibility. Turtle conservation in the Pacific has been recognised by a World Bank study as one of the hardest conservation measures to introduce.

The Wan Smolbag Vanua-Tai Monitors in Vanuatu have been unusually successful in raising awareness about the plight of the sea turtle. They initiated village-based monitoring, and won commitment from coastal village communities to ensure careful turtle management. There have been other significant spin-offs for marine conservation as a result of the programme.

In 1995, during the "Year of the Turtle", SPREP commissioned Wan Smolbag to prepare a play on sea turtle conservation.

Wan Smolbag is a non-government organization that has developed a unique approach to promoting social and environmental issues. It creates plays, songs, videos and cassette tapes on a broad range of topical issues and takes these to villages and schools throughout Vanuatu. Its effectiveness relies on its close collaboration with the hosting villages before, during, and after the production of a play.

The plays are not just theatre: they are community development tools that allow issues to be raised, often in humorous ways. After the performance, Wan Smolbag promotes discussion within the village until solutions are sought and implemented.

In 2003 Wan Smolbag was awarded the Pacific People of the Year award by the [Pacific] Islands Business magazine for its effectiveness. Its award citation said Wan Smolbag's messages:

"are about the basics of modern life in the Pacific, and about how to manage and improve upon them. They are education delivered in the most effective possible way: as entertainment. The success and impact of Wan Smolbag is easy to gauge. It is the instant response and the understanding flaring in the eyes of the grassroots audiences."

The play on turtle conservation was developed by the actors who traveled to coastal communities across Vanuatu to collect information and stories on sea turtles. This information was then incorporated into the play "I'm a Turtle", which has now been performed in hundreds of Vanuatu villages, often more than once. Each performance ended with an open discussion with the village and village chief on the issues raised in the play, and possible solutions.

The play appeared to be catalytic and many villages banned or restricted the harvest of turtles as a result. As part of the performance's follow up, most villages nominated an



interested and influential person to become a turtle monitor whose function was initially to monitor sea turtle activities. Subsequently the monitors expanded their activities to include tagging turtles, protecting nests and collecting data on turtles and nesting successes. Wan Smolbag worked with various environmental agencies and donors to offer on-going support to the monitors, including an annual meeting where they receive additional training and encouragement.

The initiative grew. Turtle conservation became an entry point at the community level to conservation of the reefs and fish. In many villages the turtle monitors have become advisors on fisheries, assisting the chiefs implement sustainable management of this resource. In 2001 the monitors' intervention on the plight of giant clams in Vanuatu was formally recognised by the Department of Fisheries, leading to an export ban on clam shells.

The movement continues to grow. There are now about 200 monitors in over 100 villages on many of the islands of the Vanuatu archipelago. To reflect their new and expanded role, the turtle monitors have changed their name to Vanua (land)–Tai (sea) Resource Monitors.

2006 Pacific Year of the Sea Turtle is a regional initiative that aims to increase turtle conservation in communities, through strengthening legislation and policies, and fostering long-term partnerships. One of the key initiatives is to duplicate successful community-based initiatives, such as Wan Smolbag, through sharing best practices and lessons learned.

Kakerori Bird Conservation in the Cook Islands

Community engagement has also been crucial to the ongoing effectiveness of the conservation of the Kakerori, the Rarotongan flycatcher in the Cook Islands. Last century, the

Kakerori *Pomarea dimidiata* was common in the mountains of central Rarotonga.

By 1989 its population had dropped to fewer than 29 birds. These tiny grey and orange birds are preyed on at nest by the introduced ship rat, leading to their IUCN 'critically endangered' status.

An intensive rat baiting project began in 1989, spearheaded by New Zealand conservation scientists. By the mid 1990s the vision was for the traditional three land owning clans, the families of Kainuku, Karika and Manavaroa, to manage the project and land in a dedicated conservation area. The landowners were initially concerned about gaining conservation area status for their land, fearing a loss of access and use under 'protection' status, and the potential problems of working together on a shared land and resource issue.

"Normally when it concerns land, we never come together here. The chiefs cling to the land; but to preserve this little bird, we agreed. It's a milestone."

(Tom Daniels, Member of the Takitimu Conservation Area Committee)

"I've developed a sense of pride. Even though the big funding has run out, this bird has become an attraction for tourists and we are getting some income and a substantial amount of attention."

(Papa Kapu Joseph, Committee elder)

In 1996, after a year of meetings and discussion, the Takitimu Conservation Area was established. Located on the wettest part of the island, the 155 hectares of forested ridges and valleys provide most of Rarotonga's drinking water as well as habitat for much of Rarotonga's wildlife.

With the establishment of the Conservation Area, the three families took over project management and formed the conservation area committee. This marks the first time the



Cook Islands' government had ever turned a project over to landowner management.

Management of the conservation area for Kakerori breeding and rat control is an important on-going activity. Each August, staff and volunteers band new birds and conduct a bird census. During the birds' breeding season, September through December, project staff stock rat baiting stations on a weekly basis throughout the Conservation Area.

The three clans benefit from a well-run nature walk and bird-watching venture that is a spin-off from the programme and central to the ongoing landowner interest in the Conservation Area.

As a direct result of the programme, the Kakerori population has reached 300 from a low point of 29 birds 17 years ago. But bird numbers need to grow to 500 to ensure long-term survival. Kakerori have outgrown the conservation area but each time they migrate outside the reserve boundaries they are preyed upon by rats. The families are considering giving more of their land to increase the size of the reserve, thus allowing the bird population to grow. They had already agreed to a relocation programme starting a second population on another island. This would safeguard against a sudden disaster in the reserve, such as a hurricane.

Takitumu Conservation Area's success has prompted active interest from throughout the Cook Islands. Families from other islands have visited Takitumu to get ideas for protecting their own endemic species. The Cook Islands Tourism Department now frequently uses Takitumu's nature walk and bird-watching business as a case study in its ecotourism workshops.

Success stories from the communities

The Kakerori Recovery Program is one of the success stories of the Pacific, winning the Pacific Environment Conservation Award in

2000. Its success reflects effective partnership between the traditional owners, dedicated locals, government and intergovernmental officers, donors, and New Zealand scientists. It also reflects the power and capacity of local clan control over programmes designed to conserve endangered species.

In Vanuatu too, indigenous communities owning the inshore marine area and having control over turtle management provided a powerful conservation platform, once their interest in and knowledge of resource management was supported. Indeed the community-led Vanua-Tai Monitors initiative has achieved a much higher rate of compliance to sustainable management rules than any previous government-imposed conservation measures. In addition to greatly expanding their village-based marine resource management initiatives, the villagers observed national marine conservation laws more actively. The focus on a single important animal, the turtle, has proved an effective entry point to total coastal resource management.

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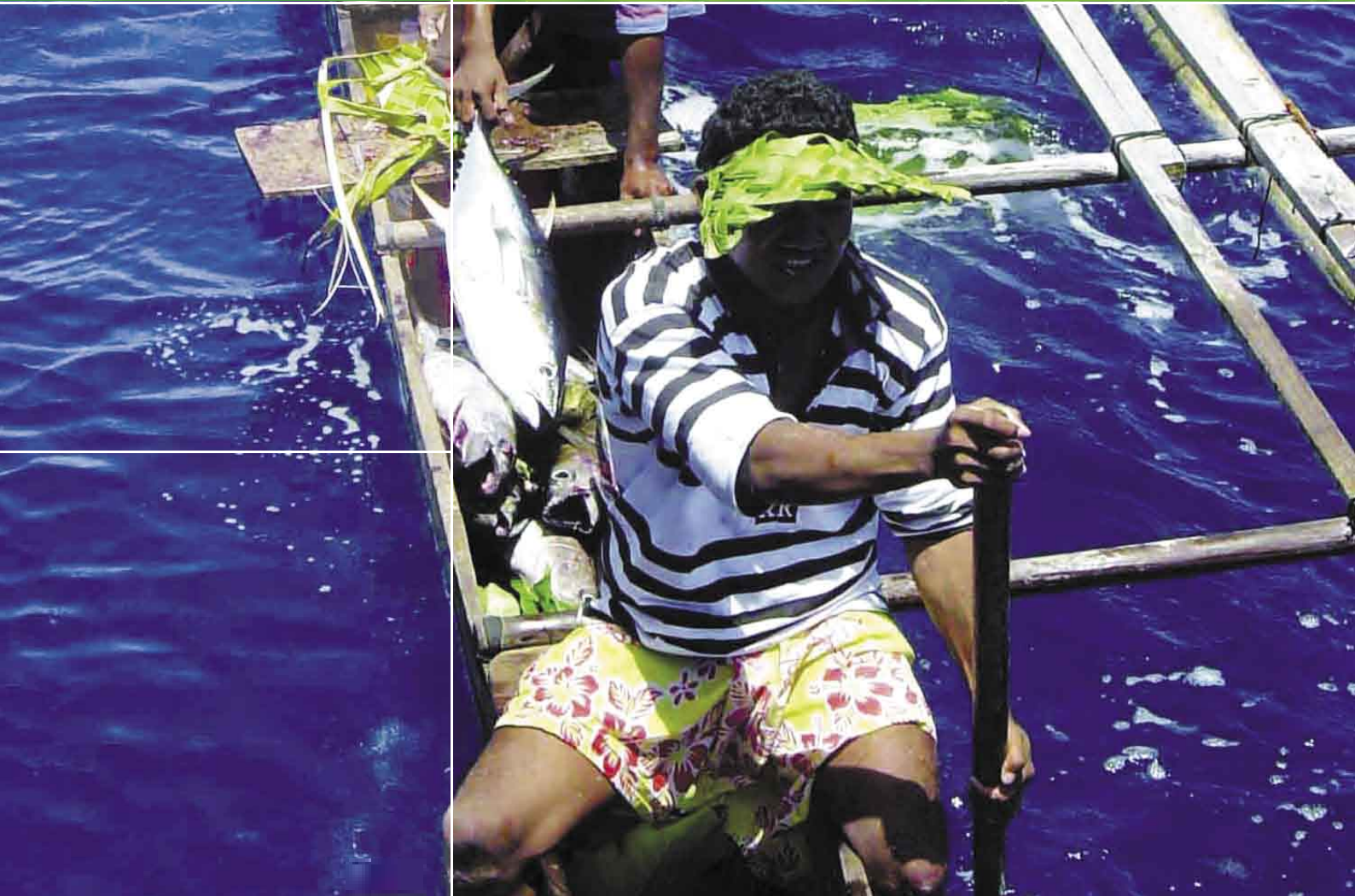
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Chapter 5:

Genetic diversity and indigenous knowledge



Indigenous knowledge of the Pacific's plants, animals and ecosystems can be based on several thousand years of local observation and use. Not only is this a knowledge storehouse of value and interest to conservation and scientific concerns in the region, it is also the basis for the well-being, cultural survival and economic growth of the Pacific peoples.

Generations of observation and use

The genetic diversity of the crops, forests and reefs of the region is an inheritance from the Pacific ancestors and the capital from which the region will continue to develop. The deep cultural and survival connections with the Pacific's biodiversity is also a crucial bridge to engaging local communities in conservation initiatives.

"The application of local and indigenous knowledge to the conservation and sustainable use of biodiversity is the most important pre-condition for the economic, cultural and ecological survival of almost all Pacific island societies and nations."
(R.R. Thaman 2001)

An example from Ha'apai in Tonga illustrates the extensive uses local people make of their forests. Communities in the Ha'apai Conservation Area were asked to list those plants and animals they sold for cash, or that were used for food, medicine, fuel body ornamentation and other cultural purposes. Over 300 plants were listed, both wild and cultivated, and of these a third were described as rare, endangered or in short supply. There was particular concern locally over the loss of food trees, fragrant or sacred trees and shrubs, and medicinal plants. For many people, loss of understanding of the value of many of the

plants meant the trees and shrubs were not being nurtured or replanted.

A number of conservation initiatives in the Pacific region are now focusing on indigenous knowledge and use of biodiversity. Building on this knowledge strengthens local livelihoods and provides the foundation for sustainable resource use.

The diversity of bananas: Makira, Solomon Islands

The island of Makira in south-eastern Solomon Islands is a rich centre of domestication for bananas. While everybody in Melanesia eats bananas and plantains, people from Makira rely on the crop to such an extent that neighbouring islanders teasingly call them huki after their favourite food. Indigenous land owners on Makira grow over 100 different banana varieties, each with a particular flavour or attribute. Some varieties are valued for dowry ("bride price"), others for different ceremonies and feasts. Some are chosen for the qualities of their stems to make rafts for transport. The Makira bananas look and taste very different from the commercial banana consumed in the west: they have more complex flavours.

Local residents on Makira report that traditional varieties of bananas are starting



to disappear. A local non-government organization is helping subsistence farmers to conserve and sustain the genetic stock. With support from the Solomon Islands Planting Materials Network (PMN), three sites on Makira have been set aside as “store gardens” of ancestral bananas.

Village communities across Makira were asked to donate suckers from their locally important banana palms. And students at the Manivovo Rural Training Centre (one of the three garden sites) are asked to bring ten suckers each from their villages. The students tag and document each variety with its origin, local name, donor’s name and utilisation. The students are paid a small fee for each variety they describe.

Since 2002, the PMN has made a collection of more than 150 types of bananas. PMN operates in several centres across Solomon Islands with the objective of preserving, through use, the agricultural biodiversity of Solomon Islands. More than 100 indigenous and exotic species are currently conserved by the network. Seeds, roots or suckers identified as valuable by indigenous farmers are grown and multiplied at the centres and then returned to interested farmers. Seeds are stored for as short a time as possible so they do not lose their viability. The aim is for the farmers’ gardens, in active use, to act as the seed banks across the Solomon Islands.

Preserving the diversity of the vegetables that subsistence farmers grow, is seen as important because the garden crops often represent many generations of selection and breeding. The favoured varieties often best suit the local climate, are resistant to common pests and diseases, taste best, and can be valued for cultural or historical reasons. The seeds, suckers and roots store the stories and work of the ancestors. Without active preservation, this diversity can be lost as more commercially mainstream varieties are introduced.

Retaining indigenous knowledge: Helen Reef, Palau

Retaining indigenous knowledge of traditional fishing techniques is an outcome of another conservation programme in the Pacific.

Helen Reef (Hotsarihie or “Rock of the Giant Clam”) is the largest atoll in Palau. It is documented as having the richest diversity of corals, fish and other marine life in the Pacific. There is one tiny island on the atoll, a mere slip of sand 150 metres long and less than 50 metres wide. It is a bird nesting rookery of great importance, supporting vast populations of terns and boobies, and also a major nesting site for turtles.

The traditional owners of Helen Reef are from the nearby island of Hatohobei (or Tobi). Only 13 people, older adults and younger children, now live on the island, with most others having moved to the capital of Palau for schooling and work. As a result of the exodus, people are losing their traditional and cultural knowledge.

Traditionally, fishing activities were undertaken in groups that not only gathered food, but also ensured fishing skills were passed on to younger men. Some of these once important traditional fishing skills are not longer practised. Examples are using kites to catch needlefish or torches to catch flying fish, stone traps, and feeding rainbow runners to lure fish together. Few young people have learned the art of making their own hooks from turtle shells, lines from coconut husks and sinkers from rocks or coral. The loss of traditional knowledge has been accompanied by reduced traditional controls on resource collection activities.

Modern fishing methods lead to increased pressure to hunt and fish for commercial gain, and the loss of traditional controls. Unsustainable use of the marine resources of the reefs is therefore likely. Even more crucial to resource conservation are the poachers that



visit Helen Reef from Indonesia, the Philippines and Taiwan—they strip the area of its remarkably dense populations of giant clams, large fish and precious *Trochus niloticus* shells. Its remoteness (700 kilometres from Palau, but less than half that distance to Indonesia) and lack of permanent habitation make Helen Reef an easy target for these poachers.

To protect their resources from being stolen, the owners of the atoll from Tobi Island have stationed three rangers on Helen Reef's island to intercept poachers. The reef has been designated as a commercial no-take zone (although fishing for personal consumption is allowed). Through a collaborative effort between the Helen Reef rangers and the Palau Government, the 2004 poaching enforcement effort Operation Big Eye was launched. This resulted in the largest confiscation of foreign fishing vessels in recent times.

The conservation project at Helen Reef has spurred an associated initiative on traditional knowledge. Through the Hatahobei Summer Programme, youth from Hatahobei learn alongside their elders traditional skills such as customary fishing techniques, how to read ocean current patterns around the island, the special agricultural skills required to grow Tobi's indigenous taro, and the traditional approaches to environmental stewardship.

While the land area of Hatabobei State is very small, on a Pacific scale the marine resources under the stewardship of the traditional owners there is great. Engagement in the care of those resources is being reinforced through rekindling the traditional ties and skills that still make this area home to the families of this land.

Celebrating biodiversity

With external assistance, these projects and many others in the Pacific are celebrating the genetic diversity of many useful plants and animals in the region. Vegetable diversity fairs are being held in Solomon Islands.

The first offspring of the heritage bananas on Makira will be available for redistribution to landowners early in 2007. Food shortages in the highlands of Papua New Guinea during the El Niño drought of late 1997 proved that the bush food resource was a significant repository of emergency food. Community-based biodiversity conservation action plans that list ideas for recognising, learning about, and saving the genetic diversity of local plants and animals, are being developed across the region. This way, ancestral knowledge pathways from the past are being built to secure the future for Pacific communities.

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Chapter 6:

Sustainable management



For some time now, conservation practitioners in the Pacific have understood that long-term success in conservation outcomes for the region will depend on more than establishing conservation areas or species protection work. The science, planning and ethos of conservation need to be integrated across the spectrum of development and daily living. This is particularly true for islands where, on small areas of land, the impact of unsustainable development and resource exploitation is soon evident as lost biodiversity and damaged ecosystems.

The value of sustainability

The importance and value of conserving the natural resource base of the island economies is obvious to many Pacific decision-makers and planners. Through partnerships with communities, conservation agencies, research organisations, donors and other partners, much is being learned about sustainable management of the sea and land. Challenges remain in controlling and better management of logging, and the commercial exploitation of the region's fisheries. However, at all levels in the region, awareness of the need for sustainable management is leading changes in resource use.

"Our ecosystems contain high biological diversity that has sustained the lives of Pacific communities since first settlement. They contain the most extensive coral reefs in the world, unique landforms, globally important fisheries, significant mineral resources and high numbers of endemic species. They may also contain many undiscovered resources of potential use to humankind. To safeguard Pacific communities and maintain the health of our ecosystems in perpetuity, it is imperative that we apply the precautionary approach as outlined in the Rio Declaration, Principle 15.

"We emphasize the need to build on Pacific traditions and to strengthen the use of culture and history in the development of strategic planning processes for sustainable development."

(Draft Pacific Position Paper: Furthering Implementation of the BPoA and New and Emerging Concerns)

Rock Islands-Southern Lagoon Management Area, Koror State, Palau

The Rock Islands-Southern Lagoon Area of Palau is world-famed for its stunning landscape of limestone islands, marine lakes and coral reefs. Its area of 600 square kilometres, enclosed by two long barrier reefs, has 500 patch reefs, 150 fringing reefs and over 400 limestone islands, with an associated rich marine and terrestrial biodiversity. It includes critical habitat for the country's threatened and endangered species. The area is an essential component of Palau's cultural heritage, supporting subsistence harvesting of marine resources for generations of the traditional residents. It is now also of unparalleled economic importance to the Koror State and Palau, supporting a major tourism industry. Over 70,000 tourists visit the Rock Islands-Southern Lagoon Area annually. From 1986 there has been at least a four-fold increase in tourism numbers.



The growing tourism industry and other development have placed the Rock Islands-Southern Lagoon Area under increasing pressure. Heavily used sites have suffered reef damage. Popular sites have become congested, leaving Palauans with no place to go for recreational and subsistence activities.

Concern about such stakeholder competition and a desire to ensure the survival of the area's spectacular beauty and cultural, biological and economic values, have led the Koror State to develop a number of far sighted planning, regulation and partnership initiatives.

In 1989, Koror State established law enforcement officers (Koror State Rangers) whose role included protection of the Rock Islands. All the Rangers are members of the local organization Ngarametal (a traditional men's group) and are supported by a capacity building programme. Engaging at this level with the community ensured links between traditional laws and the State regulations and reinforced a powerful partnership for Rock Islands Area. Both the State legislature and traditional leaders worked together to create laws establishing six protected areas in the Rock Islands Area, along with regulations on general resource use and boating.

In 1997, the controversial Rock Island Use Act placed bold management restrictions on the area. Some places were reserved from use. Tourism activity areas were designated and enforced through a permit system that today generates nearly \$1 million in state revenue which is returned to the Rock Islands for management purposes.

The first comprehensive management plan for the Rock Islands-Southern Lagoon Area has recently been completed. Two years in development and based on extensive stakeholder consultation and engagement, the plan identifies and addresses 10 priority management issues, including harvesting of marine species, endangered species, terrestrial

issues, climate change, tourism, development, boating, and invasive species. Objectives have been prioritised, such as baseline data collection and monitoring, the preservation of traditional and cultural uses, and ensuring tourism remains a high-quality, low-impact experience.

The Koror State and traditional leaders have had a long-term commitment to ensure sustainable management of the internationally valued Rock Islands Southern Lagoon Area. This, combined with extensive engagement with 11 different stakeholder groups (and their component individuals, institutions, partners and businesses) have led to the development of a comprehensive development plan that provides a framework for a sustainable future. Shortfalls in funding, technical capacity and staffing have been met through strong partnerships and collaboration with a number of national and international agencies—the total effort supporting a determination to have the Rock Islands remain a central part of the Koror culture and lifestyle.

"The State has learned that partnership that combines government and non-government agencies is vital in implementing management activities."
(Adalbert Eledui and Ilebrang U. Olkeril,
Department of Conservation & Law
Enforcement)

Crab Bay, Vanuatu

Crab Bay, on Malekula Island in Vanuatu, also faces sustainable management challenges. Here the key issue is commercial harvesting of land crabs by the local community.

Crab Bay is part of the Port Stanley mangrove area, the largest mangrove ecosystem in Vanuatu. Its extensive fringing reefs and sea grass beds support a high diversity of invertebrates and finfish, and provide feeding and resting grounds for turtles and dugongs. The bay is also known for its abundance of land crabs: once so plentiful they would crawl over people as they slept.



Seventy percent of Vanuatu's population lives in coastal communities where subsistence fisheries form a fundamental part of the diet and local economy. In Crab Bay, the land crab is one of the main sources of protein and cash for local villagers.

In the last 20 years, population growth in Crab Bay and the growing demand for cash has put much greater pressure on the land crab and other important coastal resources. The crab collectors are mostly women: many are now forced to harvest at night using coconut baits and traps. They say that in recent times it has become much harder to find enough to feed the family and earn some extra money at the market.

"Three years ago a bundle of 50 land crabs would fetch US\$1 on market day. Today, ten crabs will earn the women US\$2. But now the women and girls must go out for almost an entire day to collect enough crabs."

(www.sprep.org.ws/iwp/IWPVanuatu_CountryPage.htm)

Action to arrest this decline in resources has been hampered by a lack of basic ecological information, and there are few clear and enforceable rules to back community management of the crab harvest.

The land crabs, like all land and sea resources in Vanuatu and most other places in the Pacific, are owned by the indigenous communities. Until recently, however, enforcement of any resource management, including harvesting of the crabs, was controlled by the central government. This proved ineffective for management purposes: not only because control was not vested with the resource owners, but also because government assistance was limited by its shortage of human and financial resources.

The 2002 Environmental Management and Conservation Act attempted to address problems like this as follows: They gave

the indigenous resource owners powers to formulate their own management plans and penalties, and devolved to them the power of enforcement.

In 2000 the Crab Bay community chiefs set a tabu (meaning no entry and no take) on the reef and nearshore mangrove forest, in an attempt to arrest the decline in crabs and other coastal resources. But the new rules and their purpose were not clearly explained to all members of the community, and the tabu was not fully observed. In addition there was a lack of ecological information on land crabs, so it was difficult for the local community to devise an effective management regime for them.

A subsequent partnership with the SPREP-GEF-UNDP International Waters Project (IWP) resulted in a series of participatory processes (including training local facilitators). Developing a better understanding of the root causes of their resource management problems encouraged the whole community to fully participate in all resource management decisions. The resulting problem analysis led to socio-economic and ecological baseline studies to improve understanding of the resource and its management.

IWP and the Crab Bay resource owners, working together with the Malampa Provincial Authority, are using the information they have already gathered to develop a fisheries management plan with a focus on land crabs. Monitoring the impact of the new management approach is an important component of the plan, as is developing a deeper understanding of the ecology of the Bay and how best to work together. An effective communication strategy ensures all stakeholders are fully informed, committed to the same objectives, and engaged with plans and activities.

The Veratavou Project, Fiji

For the coastal district of Verata, outside Fiji's capital of Suva, marine resources are the



backbone of the local community's livelihood. Verata is one of the major sources of fish and other marine species to the greater Suva area. Here, too, over-harvesting to supply the markets had led to depletion of marine species within the district's fishing grounds. A species of shellfish, kaikoso (*Anadara* sp.), was particularly sought after and therefore specially at risk of over-harvesting. Kaikoso was relied on for local consumption as well as for cash income, to pay essential household expenses such as school fees. Kaikoso is the traditional totem of the Verata people.

In 1996, several outside agencies began engaging with the local community in partnerships that would stimulate a significant change in local fishing management. Seven agencies have been involved, including local and international non-government organizations, the regional university, several government departments, and a United States-based funding initiative.

Villagers were provided with information about the harm their harvesting regimes could be causing to their reefs and marine life. A number of conservation measures were suggested to them, including establishing tabu areas. A key component of the project was leaving the local residents to decide how they wanted to act on the information. The engagement, commitment and support of the district chief, the Turaga na Ratu was crucial.

The information was acted on by the concerned resource owners who, with the assistance of supporting agencies and using their traditional authority, drew up a marine management plan for the 94 square kilometres of sea in their control. Actions taken by the communities for this area include the banning of commercial fishing licences and destructive fishing methods (fish poisoning, coral harvesting and mangrove extraction), limiting the mesh size of nets, banning the capture of turtles, and setting aside as tabu reserve a small area of their mudflats where

the kaikoso are found. Community members, after training, conducted their own baseline socio-economic and biological monitoring.

Eighteen months after the project started, monitoring by the villagers found six times as many kaikoso in the tabu area and three times as many in the other areas still used for fishing. After three years, the size and the abundance of the target species had increased significantly. At the same time, villages reported a 35% increase in household incomes and tripled catches.

The project has clearly demonstrated that traditional fishing methods, if effectively managed, can satisfy community cash income demands while not depleting the marine environment. The success of the Verata project has encouraged other communities in Fiji to actively participate in managing their marine areas and Verata community members are assisting in their training. Verata community skills in monitoring have also been used under contract to undertake marine field surveys for environmental impact assessments. And at Verata itself, the marine management initiative is growing, with the resource owners now declaring nine tabu areas covering five marine species.

In 2002, the Veratavou Project under the banner of FLMMA (Fiji Locally Managed Marine Area) won the Equator Initiative Award at the World Summit on Sustainable Development in Johannesburg, South Africa.

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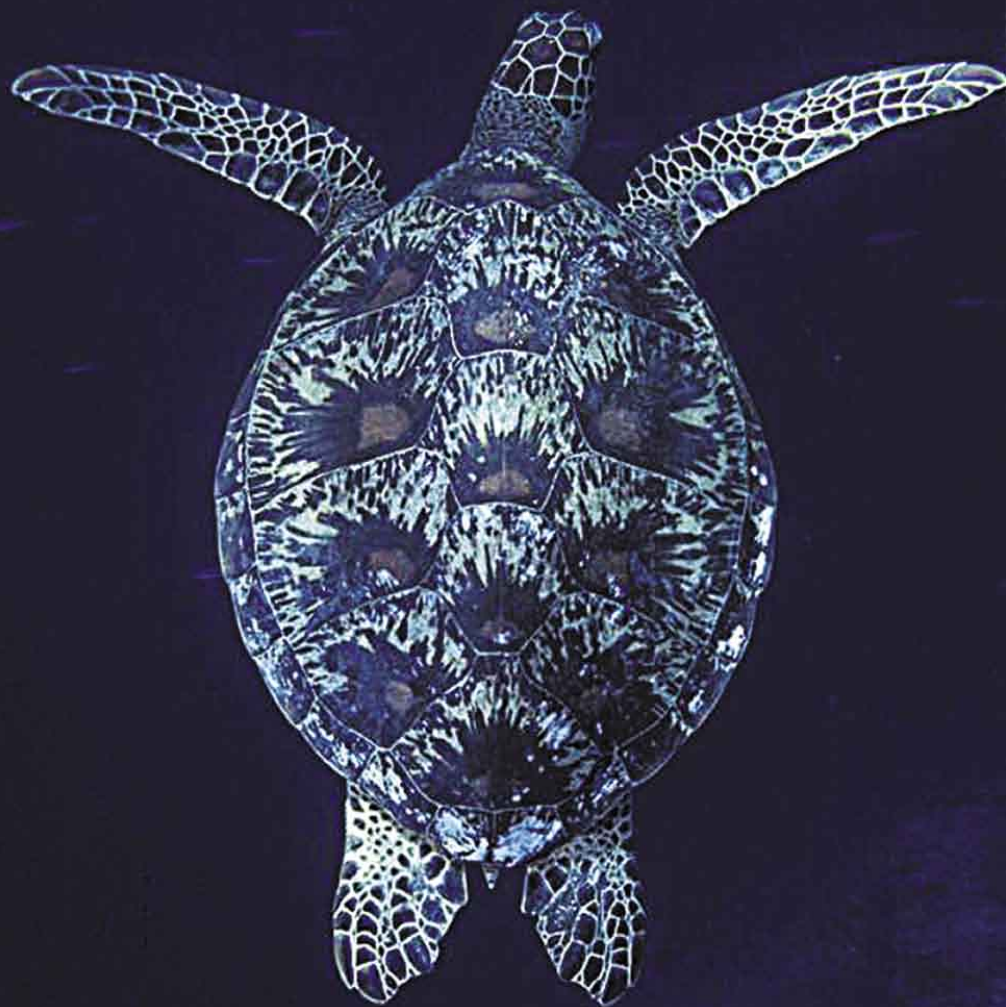
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Chapter 7:

International trade and endangered species



The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) is an international agreement between governments. Its aim is to ensure that international trade in wild plants and animals does not threaten their survival. It is the largest conservation agreement in the world, with 169 countries agreeing to be bound by the Convention.

Protection for endangered species

CITES accords varying degrees of protection to more than 5,000 species of animals and 28,000 species of plants around the world. The levels of exploitation and trade of some of these species is very high, capable of bringing some to extinction. Plants and animals that are listed under CITES are grouped in the Appendices of the agreement according to how seriously threatened they are. Along with individual species, some whole groups are protected, such as the whales, dolphins and porpoises, sea turtles, parrots, corals and orchids.

Those endangered plants and animals on Appendix I of CITES are prohibited from any commercial trade. For Appendix II, less endangered species can be traded but a licence or permit is required, the exploitation must be sustainable, and the plant or animal must come from a legal source.

Pacific Parties

Only five of the 14 possible Pacific island countries are parties to CITES. Palau is the most recent, and smallest of the current global CITES signatories; the others are Papua New Guinea, Samoa, Vanuatu, and Fiji. Together with Australia and New Zealand, these make up the

CITES Oceania region. This region is the only one in the world where non-Parties outnumber the Parties.

CITES is one of the few Conventions that are strongly binding on non-signatory countries. This is because the CITES Standing Committee can issue a ban prohibiting signatory countries from accepting imports of listed species from countries that they consider are engaging in unsustainable levels of trade; or do not have adequate management systems in place to monitor the level of trade.

There is a good deal of encouragement for non-Parties to join the Convention, but the experience of the Pacific countries has been a chequered one. All the Pacific members (other than Palau) have suffered trade suspensions at some stage, including most recently by Fiji. Most of the trade suspensions have arisen from failure to meet annual reporting requirements of CITES.

The difficulty for many Pacific island countries is that administrative structures, legislative developments, and enforcement mechanisms are required in order for Parties to implement CITES obligations. This requires significant resources. CITES obligations include not only the creation of Scientific and Management Authorities, but also the existence or



creation of an effective customs control and enforcement service. These obligations imposed on Parties by CITES can act to deter membership by small and resource-poor countries.

Efforts have been underway for some time in the Pacific to assist the region in meeting CITES obligations. This is not only to enable international trade in permissible species and prevent trading sanctions, but also to help with the sustainable management of the region's natural resources.

In the case of coral reefs, CITES exerts influence on the aquarium trade by listing all Scleractinia (stony corals) on its schedule of species that require special management consideration (CITES Appendix II). Winning compliance with CITES includes the need to develop collection area management plans, along with inspection and management systems that ensure sustainable use of coral species.

SUVA, Fiji Islands (20 February 2002—Radio Australia): The European Union, United Kingdom and Canada have agreed to a ban on the trade of endangered plants and animals with Fiji.

Fiji's principal environment officer, Manasa Sovaki, has confirmed the ban, which includes all species of sea turtle and giant clams (or vasua) as endangered species. He said the appearance of hard coral on the endangered species list makes it a problem for coral traders in Fiji.

The coral industry in Fiji is estimated to be worth about between (US) \$10 and 15 million a year.

In 2002, SPREP organised a number of workshops across the Pacific to increase the capacity of governments to certify exports of coral reef products, compliant with CITES requirements. Representatives from the Departments of Environment, Fisheries, Agriculture, and Customs and the private

sector in Tonga, Vanuatu and the Solomon Islands participated in the week-long national workshops in each of their countries.

Attention focused on capacity building for identification of coral species in trade in the respective countries, and exploring management options for the marine ornamental trade in each country. The workshops also provided an overview of coral reef dynamics and the implications of these for managing coral harvesting.

Problems for the Pacific

In all countries it was found that there were no specific management systems in place for management of collection for the marine aquarium trade, although both Fiji and Tonga were starting to work on this. In all instances, collection permits were being issued without any knowledge of the standing stock (stock size, ecological significance, rarity or abundance, and community composition at collection sites).

A number of recommendations came from these workshops to help Pacific countries meet CITES requirements. Pacific participants identified a shortage of technical experts in this field, a shortage that is likely to be met only at a regional level. There is an urgent need for countries to have a better understanding and knowledge of CITES requirements. Inventories of coral species exported from each country is required, along with tracking systems to follow the traffic of coral.

The need for baseline data on the extent and condition of targeted coral species, as a basis for management plans, was clearly recognized by all countries. Without an accurate assessment of current standing stocks of target species, there is no way of knowing whether harvesting is within sustainable levels or not.

Although the workshops specifically targeted government and industry representatives, it was commonly felt that future in-country



planning should include representatives from the communities involved in the industry. Not only is this an important development opportunity for communities but their traditional fishing rights mean they control coral resource exploitation as well.

The value of CITES

CITES is an essential and unavoidable international framework within which the Pacific coral trade can grow and develop, along with trade in other natural resources. Pacific island nations are now aware of the importance of compliance with CITES and, in most cases, recognise the value for sustainable management of the rules of harvest and trade.

Yet the region will need assistance, if it is to increase the number of nation signatories to the convention. It does not currently have the resources to establish the administration, management and enforcement mechanisms essential for CITES compliance.

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Chapter 8:

Pollution and land degradation



Across the Pacific region, the human population has been growing steadily in the last decade, at a rate of 2.3% per year. As Pacific populations grow, the limited areas of arable land are under increasing pressure to produce food for subsistence and cash economies.

Low agricultural plant diversity can mean that relatively low-value agricultural projects extend over large areas of land that were formerly forested. Extractive industries, such as logging and mining, further reduce land and water quality and availability. Land scarcity has pushed production into marginal land unsuited for intensive use, especially in a region that experiences extreme weather events. Coastal lands are particularly under pressure. Urbanisation is increasing as Pacific Islanders respond to the availability of better education, work and lifestyle opportunities, but these increasingly bring environmental issues to the fore.

Waste

Compounding these issues of land degradation are the increasing quantities and various types of solid waste generated on small Pacific islands. Pollution from solid, hazardous or toxic wastes is widely recognized as one of the major threats to sustainable development in the Pacific region. It has a direct influence on the quality of people's lives. In addition, the region's coastal and marine resources are threatened by introduced marine species, shipwrecks, marine accidents and spills, ships' waste and antifouling paints on vessels.

Only very few Pacific nations have specific laws addressing pollution and waste management.

In countries where there is reasonable legislation in place, implementation and enforcement are hampered by financial and personnel constraints.

The lack of adequate measures to combat the growing sources and extent of pollution is coupled with the lack of land area for the safe disposal of land-based waste, inadequate management systems and finances, and lack of appropriate technologies. Thus the Pacific islands face formidable obstacles in their efforts to maintain healthy societies and create future wealth.

Some work has been undertaken in the region over the past decade to address the most pressing waste management issues. Upgrading of the overall management of dumps and landfills are key achievements.

Tafaigata landfill, Upolu, Samoa

Over 2003–2005, the Tafaigata landfill on Upolu, Samoa, was given a major overhaul. With funding and technical assistance from Japan International Cooperation Agency (JICA) and in partnership with SPREP, the Government of Samoa transformed the open dump into the region's first semi-aerobic landfill to overcome significant problems associated with such disposal facilities. A breeding ground for flies and mosquitoes, the old dump leaked toxic



leachate into the groundwater. People and dogs scavenging from the dump exposed themselves to disease and poisonous gases from rubbish burning. The old dump took up excessive space and created an unsightly, smelly, toxic environmental problem.

The Government of Samoa passed a national waste policy that led to the establishment of the new waste management facility. The new landfill compacts waste more efficiently and thus make better use of the improved disposal facility. The few generated gases are released through strategically positive release vents. Leachate is collected in a lined collection pond and treated before release so as to protect the groundwater. The landfill is significantly healthier with fewer flies, mosquitoes and rodents and much reduced air pollution. And because waste is compacted and correctly stored, it attracts fewer scavengers.

Persistent Organic Pollutants

At a regional level, the Persistent Organic Pollutants in Pacific Island Countries (POPs in PICs) project was developed to improve the region's capacity to effectively manage its chemical wastes. Phase one of the project began in early 2000 with the compilation of an inventory of the existing stockpiles of scheduled POPs and other intractable pesticides. Contaminated sites in 13 Pacific countries were identified. In phase two, these wastes were collected, repackaged and transported to a suitable Australian facility for eventual disposal or destruction in an environmentally sound manner. At the end of the project, it is envisaged that the Pacific region should be free of the POPs chemicals and the intractable pesticides, possibly a first in any region in the world.

Shipping pollution

The trans-boundary nature of much marine pollution also requires a coordinated regional approach for both assessment and control. SPREP and the International Maritime

Organisation (IMO) formulated and approved a joint programme to address shipping-related marine pollution. The resulting Pacific Ocean Pollution Prevention Programme (PACPOL) has been implemented since 1999. It provides the tools, technical advice and assistance needed by Pacific countries to address issues such as marine spills, ships' waste management port operations and invasive marine species (through the control of ballast water and hull fouling).

The Cook Islands' water catchment project

The International Waters Project (IWP) was established to support 14 Pacific island countries in their efforts to address threats to marine and coastal resources. One component of the programme targets the root cause of problems associated with integrated coastal watershed management. It has a strong emphasis on community participation in pilot projects and behavioural change.

Under the IWP in the Cook Islands, a project has been established in the Takuvaine Valley Catchments. These catchments are the main source of water for urban Rarotonga, but in recent years the valley has become increasingly threatened by pollution. The Cook Islands IWP is working together with the Takuvaine community to develop a plan for managing this vital water catchment.

Several major watershed problems exist on Rarotonga and consequently impact on the coastal lagoon. Construction sites, forest clearance, and tillage on steep slopes have led to soil erosion and sedimentation in the streams. Herbicides and pesticides, along with fertilisers used on croplands and in private gardens, enter streams and are carried out to the lagoon. Where livestock can access streams, faecal bacteria are easily able to enter the water supply and the lagoon. Leakage from septic tanks also pollutes the streams and lagoon. Where rubbish is dumped into streams, not only can toxic material enter the



waterways, the resulting blockage can also create ponding of water and lead to mosquito breeding. This in turn is linked to dengue fever outbreaks.

The consequences of these problems on lagoon and drinking water quality in Rarotonga has been significant. Testing of Rarotonga's water supply has found that the quality of tap water falls below international safety standards and the impact of land-based pollution in the lagoon is measurable.

A recent economic valuation of the watershed pollution in Rarotonga estimated that the island could avoid costs of NZ\$7.4 million per year, or \$2,900 per household per year, if watershed pollution across the entire island was prevented. The total includes costs of health care and illness, water filters, substituting water sources, mosquito control, loss of fish in the lagoon, and the impact of the pollution on tourism. The total cost represents between 1.3% and 7.4% of the Cook Islands' gross domestic product (GDP), demonstrating a significant burden of watershed pollution on the local economy and people's day-to-day living expenses.

Community meetings and workshops held with the Takuvaine community identified underlying causes of the pollution and determined the best approach to addressing these causes. The initial response from the community to the idea of catchment management was negative. There was concern that the programme was an attempt to relocate plantations that used the upper slopes of the catchment. The community made it clear that this was not to be a considered management option, and that solutions would therefore have to be centred on community education and specific control activities within the catchment.

Based on these findings, a draft management plan that provides for the monitoring and control of entrance into the catchment has been prepared. This management plan is now awaiting final endorsements from the

landowners and government, after a very thorough public consultation process that spanned a period of six months.

Future work

Issues of pollution and land degradation in the Pacific require a layered response. Engagement with the local communities that are most affected by environmental problems, and often least in the position to resolve them alone, must underpin all work in this field.

At the national level, there is a need for pollution and land degradation strategies that can provide an overview for issues which impact most on individual countries. These need to be backed by legislation and enforcement. They would cover issues such as waste dump management, recycling, use of biodegradable packaging, air and water quality, and emissions control.

Regionally, it is important to have regulated control over the movement of hazardous material into and out of the region. Regional agreements and protocols can assist with this, backed by supporting national legislation.

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Chapter 9:

Invasive alien species



Invasive alien species are non-native plants and animals that have been accidentally or deliberately introduced into water or land ecosystems, and have reproduced and spread uncontrollably. In the relatively simple ecologies of island ecosystems, invasive species can cause extensive harm to native plants and animals, competing with them or preying upon them.

The harm of invasive species

Invasive alien plants and animals have been identified as the most serious threat to the Pacific Islands' high endemism. As well, indigenous agriculture and other economic landscapes are threatened by invasive alien species. They can prevent the sustainable development of both local communities and national economies.

The impact of introduced predators (particularly cats and rats) and of grazing animals has been devastating. In the great majority of Pacific Islands, plants and animals had evolved without the presence of terrestrial mammals. Now the survival of 30 percent of threatened birds is at risk by invasive species, primarily introduced mammalian predators.

The brown tree snake is an example of a species that has caused ecological devastation on Guam. Introduced to Guam by mistake in the late 1940s, the snake has since caused the extinction of nine of eleven of Guam's original native forest bird species, along with three species of skink and two species of gecko.

With increasing movement of people and trade goods throughout the region, numerous invasive alien species are unintentionally entering the island ecosystems. They come with people and goods, in packing and

containers or through soil, timber or live plant material exchange, or on the ships or planes that carry them.

Other pests and weeds have gained widespread distribution in the region due to the planned and coordinated efforts of people introducing that species. Horticultural imports may arrive as potential crops, but in an island ecosystem they can have a devastating impact. Cane toads and mynah birds were introduced to control insect pests, but are now causing ecological problems.

Plants introduced for soil stabilisation have become invasive. Fish species have been introduced as food products but then caused ecological mayhem. For example, in ten countries across the Pacific, reductions in the numbers of native fish and bird species have been linked to the introduction of Mozambique Tilapia.

Working towards solutions

Initiatives are underway at all levels in the Pacific to tackle the invasive alien species problem. These include addressing quarantine and border control measures, improving public awareness and understanding of the issue, exchanging information across the region, and researching and implementing eradication and control measures for invasive species.



The Pacific has a Regional Invasive Species Strategy, encompassing all aspects of effective invasives' management and control. Its implementation is coordinated and monitored by a special working group, established by the regionally representative Roundtable for Nature Conservation.

Funding for the development of a major regional management programme to prevent invasive species has recently been approved by the Global Environment Facility. The programme plans to work with 14 Pacific countries on priority needs. These priorities are invasive species control methods, and analysing the spread of invasives in the region.

The initiative comes as SPREP completes a training course in invasives prevention, with funding assistance from the United States and New Zealand. The course has been run in eight Pacific countries with some remarkable impact—for example a complete restructuring of national invasive species coordination structures to make them more effective.

The Pacific Invasives Learning Network (PILN) is a skill-sharing network aiming to build Pacific skills in invasive species issues. This innovative network will strengthen the ability of people in the Pacific to manage invasive species and prevent them from spreading between countries. The tools for this are sharing information, ideas and skills between practitioners from a range of sectors at both the national and regional level to accelerate action against invasives.

Nine partner organisations contribute to the network: The Nature Conservancy, SPREP, Pacific Invasives Initiative, IUCN Invasive Species Specialist Group, National Park of American Samoa, Conservation International, the Palau Office of Environmental Response and Coordination, University of the South Pacific USDA Forest Service, and the Secretariat of the Pacific Community. PILN is seen as a model for the way in which other biodiversity issues could be dealt with in the Pacific region.

Viwa Island, Fiji

An invasives story at a local level can be told about Viwa Island in Fiji. The 100 residents of Viwa, a 60-hectare island just off the coast of Fiji's capital, share their island with the endangered Fijian ground frog. The Fijian ground frog is found on only four other off-shore islands in Fiji, and a small population recently rediscovered on one of the main Fijian islands of Vanua Levu. The frog is predated upon by Pacific rats and feral cats and dogs. Invasive cane toads also have an impact on the native frogs, competing with them for food as well as preying on juveniles and adults. Cane toads are extremely abundant on Viwa, with population estimates of over 250,000 (close to 5,000 toads per hectare on the island).

The invasive pests cause problems for the local people as well, spreading disease, spoiling food supplies and, in the case of cane toads, spoiling the island's wells. Local residents therefore supported the idea by researchers from the University of the South Pacific, to eradicate the cats, rats and cane toads from their island.

Eradication is seen as very important to the long-term survival of the Fijian native frog and beneficial to the local people. In addition, it is likely to benefit other endemic species on Viwa—including the banded iguana, seven other reptile species, and several bird species.

Eradication is proceeding in two phases. The first phase is focused on removing the mammalian pests (rats, cats and dogs). If carefully planned, the mammalian eradications are not expected to present major difficulties. There is much international experience and success in this field and it can be achieved for relatively little cost.

The first phase will also develop the infrastructure and capacity for the cane toad eradication. This is the second phase of work, and is ground-breaking in its ambition. Cane toad eradication has not been achieved or



attempted at this scale before. Researchers are confident of the possibility of success, given the support of the local residents. A number of other physical factors on the island will help, such as the lack of natural waterways and limited number of human-made ponds (unlike the Fijian native frogs, cane toads need water to breed).

The Pacific Invasives Initiative

Technical assistance and funding for the toad eradication project is being channelled through the Pacific Invasives Initiative (PII), a regional programme based at Auckland University in New Zealand.

The PII is a collaborative programme designed primarily to test the eradication and control of invasive species at selected demonstration sites around the Pacific. PII works on behalf of eight partner organisations: the Invasive Species Specialty Group (ISSG) of the IUCN, NZAID, SPREP, The Nature Conservancy, Secretariat of the Pacific Community, Conservation International, and Birdlife International.

Using networks of experts and technical information provided by the ISSG, PII aims to field-test invasive species management with well-planned scientifically and technically valid approaches. Success depends on a fully engaged and supportive community that works with an effective implementing agency.

Experience gained at each demonstration site is to be shared across the region, leading to other communities adopting proven approaches to tackle pests and weeds on their own land, as well as contributing to changes in policy, law and practice at national levels in the Pacific.

The secretariat of PII is funded by NZAID. Additional funding from the Australian Natural Heritage Fund and the Critical Ecosystems Partnership Fund, through Conservation International, is supporting demonstration site implementation.

Pacific Ant Prevention Programme

A further example of PII coordinating effort for invasive species control in the Pacific centres on the red imported fire ant (RIFA), *Solenopsis invicta*.

RIFA is very likely the most serious impending invasives threat to the Pacific islands' biota, ecosystems and people's livelihoods. The ant is a native of the Pantanal region of southern Brazil, and was inadvertently introduced to Alabama, USA during the early 1900s. Hitchhiking on a wide variety of imported goods and containers, they are now found surrounding the Pacific in China, Taiwan, Hong Kong, Australia and Malaysia, but not yet within the Pacific Islands themselves.

RIFA is a notoriously destructive invasive pest. The species has significant negative impact on ground-nesting birds, turtles, small mammals, reptiles, and invertebrates. Its ability to farm honeydew-producing insects can cause serious stress to plants, including threatened species, resulting in further decline of populations. As well, RIFA's destruction of plant seeds hinders plant regeneration.

RIFA also causes significant damage to the economies of countries it has invaded. Due to its painful—sometimes fatal—sting, it also has considerable social impact. If RIFA becomes established in the Pacific region, the farming practices and way of life of island communities will change forever.

RIFA is but one of many invasive ant species of concern in the Pacific islands. Some high-impact species already plague some Pacific Island countries and territories, causing damage to their economies, environments and well being. These include the little fire ant (*Wasmannia auropunctata*) in Hawaii, Solomon Islands, Vanuatu, New Caledonia and recently in Tahiti; and the yellow crazy ant (*Anoplolepis gracilipes*) in Tokelau, Samoa and Papua New Guinea. Tokelau recently identified the yellow crazy ant invasion as



their most serious environmental threat. These already established invasive ants require sound management strategies including the prevention of future spread and distribution, both locally and regionally.

Exotic ants incursions are notoriously difficult to eradicate once established. Despite their small size, ants represent one of the more formidable organisms of biosecurity concern. Effective prevention measures are likely to be very cost-effective compared with managing them once they have arrived.

A joint Pacific approach

In response to the invasive ant threat in the Pacific, a collaborative, multi-agency effort was initiated. This resulted in the development of the Pacific Ant Prevention Plan (PAPP) in September 2002, the basis for the Pacific Ant Prevention Programme. The goal of the plan, now endorsed by all Pacific countries and territories, is to:

“Prevent red imported fire ants and other invasive ant species with economic, environmental and social impacts, entering and establishing in or spreading between, or within, countries of the Pacific region, thereby protecting economic, social and environmental interests in the area.”

The PAPP presents an unprecedented opportunity for agriculture and conservation interests to work together with funding agencies throughout the region. The aim is to build much needed quarantine capacity against invasive ants, and by extension other invasive alien species that jeopardise agriculture, biodiversity and lifestyles in the Pacific.

Invasive alien species have been identified as the most serious ecological threat facing the Pacific. They are likely to also be one of the most serious threats to sustainable development for the countries of the region. The Pacific has responded with a multi-layered response including quarantine, education,

training, awareness, policy, regulation, cooperation and field-testing eradication and control.

Perhaps more than any other biodiversity conservation issue in the region, the management of invasive species has initiated partnerships, between practitioners and funding agencies, conservation and development, government and non-government organisations, and across a wide range of sectors and individuals and networks.

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Chapter 10:

Financial resources



The case studies highlight the uniqueness of the Pacific islands' environmental issues. Most land and coastal marine areas, along with natural resources, are held in customary tenure by the region's indigenous people. Pacific islanders manage areas of threatened ecosystems of high biodiversity and uniqueness.

The region comprises many small and scattered nations with limited local expertise and limited financial resources. The economies and ecosystems of these small island developing states make them especially vulnerable to natural disasters, poor planning, unsustainable land and marine use, and external trade shocks.

Designing programmes to fit the region

The listed limitations of Pacific Islands mean that tackling their environment issues requires extensive financial and technical support from a wide range of donors and partners. Financial resources need to be long-term investments that are designed to fit the capacity, needs and priorities of the region. Effective assistance to the Pacific requires deep knowledge of the region's particular features and a willingness to design programmes that match these.

A number of innovative methods of financial resourcing are attempting to achieve this.

Sovi Basin, Fiji

The 20,000 hectare Sovi Basin is Fiji's most important terrestrial ecosystem in terms of biological and landscape heritage. It is the largest undisturbed block of lowland forest remaining in Fiji, and indeed in the central and

eastern Pacific. Sovi contains a high diversity of forest types: 11 in total, representing 30% of forest types found in Fiji. As such, Sovi provides habitat for virtually every forest bird and animal species found on the island of Viti Levu, including 19 endemic birds.

Sovi's forests are also a valuable timber resource in a remote area of the country that has few other development opportunities. For nearly 25 years a timber concession was held over this land. It promised some economic return to the 13 land-owning mataqali or indigenous clans, once the area was logged.

While the landowners might be interested in protecting the forests of Sovi, they are in no economic position to forego entirely the income they would have received from logging. Their forest is one of the few options open to them for financial and development gain. Consequently, conserving Sovi Basin means finding an alternative source of income for the landowners.

A conservation option for Sovi was first discussed in the late 1980s. Over the next 15 years, discussion and work took place at all levels of decision-making about Sovi. This happened with the mataqali, Native Lands Trust Board (which acts as a trustee for indigenous owned land in Fiji), the Ministry of Forestry (which approves logging



concessions and conservation options for forests), Conservation International, and a New Zealand NGO: the Maruia Society. As a result, a conservation future for Sovi became a desired option. In June 2004, the logging concession was cancelled, following a protracted legal process. Sovi landowners agreed to the cancellation, primarily because they were persuaded that receiving compensation for conservation is a preferable alternative.

Incentives for conservation

A deal was negotiated between Conservation International and other implementing partners, the Government of Fiji, and the Sovi landowners. As a result, the Sovi Basin will be declared a Nature Reserve under Fijian forestry regulations. This will be made possible by a Conservation Incentive Agreement: hereby the Sovi landowners will receive compensation commensurate with the benefits they have given up by revoking the right to log the forest.

As a Nature Reserve, the area will be protected from logging and agricultural conversion, and subject to conservation management. Subsistence resource rights of local communities will be respected within a collaborative management framework.

By decree and established practice in Fiji, the State must lease Nature Reserve land from mataqali and provide compensation for foregone royalties. The State is prepared to accept this obligation under an agreement with Conservation International: this specifies they will seek financing from donors to support both these payments and conservation management.

Sovi Basin will be financed by a dedicated endowment. The proposed endowment will yield three principal flows of funds. The first will guarantee the government's ability to make lease and royalty payments. The second stream goes to a revolving Community Conservation and Development Trust: it is

to be used for investments that benefit the communities as a whole, beyond just those households who happen to own land in the Sovi Basin Nature Reserve. The third flow of funds will support management activities in the Sovi Basin, including monitoring and enforcement and community liaison work.

A local non-government organization, the National Trust, will be the lead agency for management of the Sovi Basin Nature Reserve.

The success of the Sovi Basin initiative depends critically on continued concerted efforts to cultivate and maintain community support and participation. Earlier attempts to secure the support of landowners for conservation stalled because of failings in community consultation processes.

Work remaining

There is still a significant amount of work required before the Sovi Basin is fully conserved and the endowment functioning. This includes confirming legal status, constructing benefit mechanisms, designing and implementing management structures, and fund raising. To ensure the continued engagement of the communities until these mechanisms and structures are in place, Conservation International is supporting an educational scholarship scheme for mataqali children (FJD\$5,000 annually). This interim measure will later be incorporated in the Community Development and Conservation Trust Fund. There is also an interim lease agreement for five years to secure the area, and to give all parties the time required to finalise the establishment of the Trust Fund, Sovi's reserve status, and its long-term lease. CI contributes FJ\$35,000 annually towards the interim lease.

The cornerstones to this project are in place: acknowledgement by the international community that financial compensation for conservation is practical, fair and just; acceptance from the landowners that



conservation is a preferable alternative to logging if they are not disadvantaged by the option; and a strong working partnership between landowners, government and non-government organisations, and eventually, the international donor community.

The Critical Ecosystems Partnership Fund

The Critical Ecosystems Partnership Fund (CEPF) is a global initiative that has recently been established in the Pacific. CEPF is designed to safeguard the world's threatened biodiversity hotspots in developing countries. It is a joint initiative of Conservation International, the Global Environment Facility, the Government of Japan, the MacArthur Foundation, and the World Bank.

CEPF's fundamental goal is to ensure civil society is engaged in biodiversity conservation. It promotes working alliances among community groups, non-governmental organizations, government academic institutions, and the private sector. Through profiling a hotspot, the desired strategic direction to safeguard biodiversity within it is determined. This strategy is then used to direct conservation effort by making targeted grants to civil society groups. Three levels of conservation outcomes are targeted: species (extinctions avoided), sites (areas protected), and landscapes (corridors created).

CEPF in the Pacific centres on the Polynesia-Micronesia Hotspot. This area stretches from the Mariana and Palau archipelago in the west to Easter Island (Rapa Nui) in the east, and from the Hawaiian Islands in the north to the Cook Islands, Tonga and Niue in the south. The thousands of small, isolated islands that make up the hotspot are some of the most vulnerable in the world, as Oceania has one of the highest proportions of endangered species per unit land area of any region.

The ecosystem profile for the Polynesia-Micronesia Hotspot was completed in 2005. It provides an overview of biodiversity values, conservation targets, and causes of biodiversity loss, coupled with an assessment of existing and planned conservation activities in the hotspot. This information was then used to identify the niche where CEPF investment can provide the greatest incremental value for conservation.

The ecosystem profile recommends broad strategic funding directions: these can be implemented by civil society to contribute to the conservation of biodiversity in the hotspot. The strategic directions identified for the Polynesia-Micronesia Hotspot are: prevention, control and eradication of invasive species in key biodiversity areas, improvement of the conservation status and management of a prioritized set of key biodiversity areas, safeguard and restore a prioritized set of threatened species, and strengthen the capacity of civil society to achieve conservation outcomes.

Applicants propose projects for funding consistent with these broad directions and criteria. Applicants for CEPF funding are required to prepare detailed proposals that specify the proposed activities as well as performance indicators that will be used to monitor project successes.

The first major working alliance that has been forged in the Hotspot is with the Pacific Invasives Initiative (see previous chapter).

NZAID

NZAID is the official New Zealand Government aid programme. Created in 2002, its core geographical focus is the Pacific with which New Zealand has close historic, geographic and human links. NZAID's mission is the elimination of poverty through development partnerships. Sustaining a healthy environment with conserved biodiversity is seen as an important component of poverty elimination.



As well as specific projects through bilateral programmes (government-to-government funding), NZAID provides over NZ\$5million annually to supporting regional environmental programmes. The two main priorities of the regional programme are: to support community-level environmental management, and to facilitate Pacific island participation in international environmental processes. The following priority issues of the Pacific region have been identified: climate change (for which a specific funding commitment has been made), conservation of biodiversity, and sustainable resource management.

The Pacific Initiatives for the Environment (PIE) is a contestable fund set up to support community-level initiatives across the region. It has been redesigned, and in its new form will continue to provide funding support at this level, in association with the GEF Small Grants Programme.

Guided by regional strategies, NZAID provides core funding support for the South Pacific Applied Geoscience Commission (SOPAC), an organization that provides services to promote sustainable development in Pacific island countries; and to SPREP, an intergovernmental organization that supports environmental management and promotes sustainable development. NZAID also funds a range of SPREP's project activities.

The last component of NZAID's regional environment programme is its support for regional environmental partnerships, known as WSSD Type II partnership initiatives. The title was established at the World Summit on Sustainable development in Johannesburg in 2002. It was in response to the need for better collaboration between national, regional, and international stakeholders in the implementation of development activities. New Zealand has been a vocal advocate for the Pacific Type II partnerships. An example of its funding support through this window is the Pacific Invasives Initiative (see previous chapter) and the Roundtable for Nature Conservation.

Global Environment Facility

The Global Environment Facility (GEF) is an independent financial organization established in 1991 to help developing countries fund projects and programmes that protect the global environment. GEF funds are contributed by donor countries. Since 1991 GEF has provided grants for more than 1,300 projects in 140 countries.

In the Pacific, the GEF has been the financial mechanism of the Convention on Biological Diversity. The Pacific has had mixed success in implementing and accessing GEF projects. It is estimated that across all GEF Focal Areas, the Pacific has only used 40 percent of total GEF funding for which it is eligible (and that in turn is limited compared with funds allocated to other regions of high biodiversity and threat). This is not because environmental concerns are unimportant to the region. Rather, the processes involved in accessing GEF funds and managing large GEF projects are often beyond the limited capacity of many Pacific countries. Recent efforts by Pacific island representatives have seen some of the issues related to GEF funding addressed. The region is now contemplating the impacts of the GEF's new Resource Allocation Framework.

Overall coordination and long-term resourcing

In the Pacific, funding from a variety of multilateral and bilateral sources has been available to implement regional and national conservation strategies, as well as global environmental agreements such as the Convention on Biological Diversity. There have been efforts to improve collaboration and coordination of donors on environmental issues. The Roundtable for Nature Conservation, a working group that represents most of the implementing organizations and donors in the region, has made an important contribution at this level by working to implement a Pacific-wide strategy on nature conservation.



Other work has been undertaken to assess local, national and regional trust funds and other sustainable financial mechanisms. This in a region where long-term commitment and on-going external financial support for the environment are essential for sustained success.

The issue of resources for the environment was recognized at the 2005 Pacific Forum meeting, where Pacific island leaders called for facilitated international financing for sustainable development, biodiversity and environmental protection, and climate change in the Pacific (including through the Global Environment Fund).

The critical message from the Pacific is that, if the region is going to progress the Programme of Work on Island Biodiversity, it needs effective levels of funding that are relevant to the region's priorities, capacity and needs. Resourcing must be seen as a long-term investment with donors being open to innovative and different funding mechanisms to fit the unique conditions of the Pacific region.

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Chapter 11:

Technology, partnerships & capacity development



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This website has been developing since March 2003. The Cook Islands Natural Heritage Trust gratefully acknowledges those who have made the website possible, and gives a special *meitaki ma'ata* to the [Bishop Museum](#) for hosting the website.

Are there snakes in the Cook Islands?

By Gerald McCormack (posted 3/10/2005)

Inshore sea-snakes are common on and around the reefs of Fiji, Samoa, Tonga and Niue, but have never been recorded in the Cook Islands. The snake-like creatures in our lagoons are scaleless fish in the Snake-eel Family.

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Technology, partnerships and capacity development are critical focus areas in the Pacific region. Frequently, targets and goals for environmental outcomes are not met because of a lack of capacity and resources. A range of initiatives have been developed to address these issues with a growing realisation that partnerships will be critical to achieving conservation gains in the region.

Capacity issues for the region

Pacific island countries have identified that baseline data and technical capacity in-country limit both the development and the implementation of national biodiversity strategies and action plans. Information management, analysis and presentation are other major regional needs.

Capacity issues must be addressed in a way that is relevant to the needs of the region. Several projects centred on sharing experience and best practice have been developed at all levels of conservation and environment work. Achieving broad support for biodiversity conservation from a range of stakeholders including communities, policy makers, and churches is also seen as an essential component of implementation. This is reflected in the regional Action Strategy for Nature Conservation, which in 2002 moved to focus on mainstreaming conservation as the key to achieving regional priorities.

Coordinating regional conservation: a partnership model

In 2002, at the World Summit on Sustainable Development in South Africa, Pacific island leaders identified partnerships as one of the key means for achieving sustainable development goals.

A specific initiative, related to the Action Strategy for Nature Conservation in the Pacific islands region and its coordinating mechanism, was the establishment of the Roundtable for Nature Conservation. This is a growing coalition of conservation organizations and donor agencies, created to increase effective conservation action in the Pacific Island Region. It was formed in 1997 at the request of Pacific Island countries and territories.

In particular, the Roundtable is the coordination mechanism for the implementation of the Action Strategy for Nature Conservation in the Pacific Islands Region 2003–2007. In 2004, the organisations involved in the Roundtable (donors, non-governmental and inter-governmental organisations) instituted a new Working Group for countries developing and implementing national biodiversity strategies and action plans. This provides an opportunity for countries to support each other with lessons learned, experiences and ideas on progress for their national biodiversity priorities. It has been one of the key means for input into the island biodiversity Programme of Work from the Pacific region. The Working Group offers significant opportunities for working together on implementation beyond COP8 in 2006.



In 2005 the Roundtable engaged a two-year consultancy to help evaluate regional progress in the Action Strategy, as well as to develop indicators to enable this to happen.

Community Rangers Program, Pohnpei

Partnership and capacity development have been lynchpins in the success of a conservation programme on Pohnpei.

Pohnpei is the largest and highest island in the Federated States of Micronesia. It has mountainous terrain with deep valleys and ridges covered by dense tropical rainforest. Due to its relative age in isolation, the upland forests of Pohnpei support a very high level of endemism, including 111 endemic plant species and 16% of the island's 50 bird species. These forests protect the water shed and water supply for the island's 35,000 residents.

Since the early 1960s, several factors have combined to result in the forests of Pohnpei being significantly threatened. Population growth and an expanding economy have pushed settlement and land cultivation further into the upland forest from the coast. Problems with land tenure have led local indigenous people to exert land claims in the traditional manner—by occupying the land, coupled with the cultivation and gradual conversion of the forest. Forest conversion has been driven by the production of sakau (or kava), the premier cash crop for local residents. The roots of the sakau are pounded to make a sought-after narcotic beverage. Sakau requires full sunlight and so commercial production of the plant involves clearing the forest canopy. On an island that receives 5,000 millimetres of rain a year, and much more than that on its highest peaks, forest clearance for this shallow-rooted commercial crop has resulted in severe soil erosion.

In a 20-year period from 1975, the forest cover was reduced from 42% of the island to only 15%. In addition, more intensive resource use has affected the indigenous wildlife.

Populations of the avidly hunted native pigeons have been drastically reduced.

Faced with these problems, in 1987 the Pohnpei State Legislature set aside 5,100 hectares of upland forest as a protected area. The purpose of the Act was to stop agricultural development, road construction and settlement encroachment into the forests.

Despite the law and numerous attempts by government bodies and non-government organizations to establish conservation management of the area, forest loss and habitat destruction continued at an alarming rate. Since the upland forest is a relatively small area, it was coming close to a critical threshold in terms of habitat value. Also at a critical threshold was the relationship with the traditional leaders and sakau farmers, who complained about their lack of involvement in the decision-making and management of the reserve.

In the late 1990s, a new approach to conserving the valuable upland forests of Pohnpei was attempted. This involved partnership and capacity development. The new approach recognised the central role of communities in conservation.

The Forest Rangers Program was established in 1996 as a partnership between The Nature Conservancy, the Department of Lands and Natural Resources, the municipal governments, and traditional leaders of Pohnpei. Selected by traditional leaders, the Forest Rangers are usually young (18–35 years old) farmers who frequent the upland forests to plant sakau. Giving the young farmers the responsibility to manage their forests was believed to be the best way to get them and their peers to stop destroying it.

The programme started with the communities in the south and east of the island, areas selected because of their biodiversity significance and because they had the most extensive and highly destructive sakau farms.



Exceptional conservation success

Despite a rocky start, the Forest Rangers Program is now producing some of the most exceptional conservation accomplishments in Pohnpei. The program covers the entire island and comprises 22 community volunteers, with strong guidance from the Traditional Leaders and the Pohnpei Resource Management Committee—a task force with members from all government and non-government resource agencies.

The Rangers with their government and non-government partners have marked off 18 kilometres of the reserve boundary, ensuring it is clearly visible. They monitor and report reserve violations to traditional leaders and proper authorities for prosecution. This part of the programme has seen success beyond any initial expectation. The number of new clearings has reduced from 1,741 in 2001 to only 20 in 2005.

The campaign's major technical goal was to transfer the agricultural skills required for high yield, sustainable sakau production in the lowlands to all farmers, especially those currently working in the Watershed Forest Reserve. The Forest Rangers and their partners worked with more than 1500 upland sakau farmers and cultivated more than 150,000 sakau seedlings in the lowlands. To add diversity to the cropping, 9,000 vegetable seedlings have been distributed. As a result, 42% of upland sakau farmers have moved out of the reserve. While others remain, they have significantly reduced their farming activities.

The Rangers program has also been working on new and additional threats to the reserve's forest: invasive species. False sakau, a fast-growing smothering weed, has been targeted for control and eradication. Since 2002, over 30,000 plants have been treated with herbicide at 250 locations around the island. Eighty percent of the weed has now been eradicated. Two other invasive weeds are in the process of being fully eradicated.

"When government and non-government authorities show genuine respect towards the traditional leaders and the local communities and provide them with the necessary tools to carry out conservation initiatives at the ground level, true conservation is achieved. The level of support must be right. If we provide too much, we create infighting within the local communities and when we give them too little, they lose interest in the work. The key is to gain their trust."

(William N. Kostka, Executive Director, Conservation Society of Pohnpei)

This program has focused on combining Pohnpei culture and traditional knowledge with modern conservation planning and management practices—an act of reconciliation between the two political systems locally considered legitimate. In partnership, with capacity development, the result has been unexpectedly successful, far more so than formal legislation ever achieved for the watershed reserve.

Micronesians in Island Conservation

Pohnpei is one of 607 islands in the Federated States of Micronesia (FSM). While its total land area is 435 square kilometres, the nation is scattered over 1.6 million square kilometres of the Pacific Ocean, spanning more than 2,735 kilometres from Kosrae in the east to Yap in the west. The region of Micronesia extends beyond FSM to include five other nations and territories in a vast portion of the northern tropical Pacific.

Like everywhere in the Pacific, each of the islands and atolls has a conservation issue of local importance and in places, of national and regional importance. Individual or group conservation effort in these circumstances may feel isolated working so remotely from each other.

In 2002, The Nature Conservancy began a peer learning network for Micronesians in



an attempt to overcome the isolation of conservation leaders across Micronesia and to develop capacity in this field. The mission of Micronesians in Island Conservation (MIC) is to strengthen the organisational and technical skills of conservation leaders and their organisations so they can better protect and manage important natural areas in Micronesia. MIC believes that organisations grow stronger when they find ways to rapidly share skills, information, experiences and innovations. Its main tool is a regular retreat where leaders meet to review progress on their goals, share lessons learned, and identify issues for collaboration at the local, national or regional level.

Only two years after its inception, MIC has proven the high demand for a learning network across Micronesia. The members, now numbering 14, represent a wide range of government agencies and non-government organizations. Three out of the six nations and territories in Micronesia are represented with two more expected to join soon.

Significant conservation outcomes have been reported as a result of the network.

MIC has encouraged members to focus on strategic priorities for conservation. Before MIC, only two agencies had conservation programmes set in a high priority Area of Biological Significance. Today 14 high priority areas are being managed or monitored by MIC members.

The network has drawn organisations and individuals to work closer together, sharing goals, skills and experience. The number of organisations working on shared conservation goals has risen from two to ten.

National and local conservation policies are now coordinated more rapidly and efficiently across the region. And specific conservation area activities, including the creation of a network of marine protected areas in FSM, have reported improved outcomes as a result of the network support.

MIC has already proven to be a powerful tool for engaging partners and accelerating conservation action throughout Micronesia. In the next decade, the Conservancy hopes to build on the success of this program to launch similar networks that serve conservation leaders and organisations in Melanesia and elsewhere in the Pacific.

Cook Islands Biodiversity Database

In the Cook Islands, the technology of the internet and CDs is being harnessed to increase awareness and understanding of the country's biodiversity. The Cook Islands Biodiversity Database has been built up over 15 years. Its goal is to develop a biodiversity inventory to cover all taxa of the Cook Islands—plant and animal, terrestrial and marine—in a single multimedia database.

The publication of visual guides for biodiversity is a major hurdle to small island developing states. In affluent countries the wide range of visual guides opens the world of biodiversity to the public, increasing their understanding of the natural world and helping to build support for conservation. Small Pacific nations often do not have the resources to produce or buy such visual guides.

As a result, people do not have access to knowledge that might build a deeper local understanding of their biodiversity. The Cook Islands Biodiversity Database project aims to empower the people of the Cook Islands through providing such access. At the same time, the database partially fulfils the country's commitment through the Convention on Biological Diversity to develop a national biodiversity inventory.

The Cook Islands developed the foundation for the database through the Natural Heritage Project in 1990. The objectives of this project included recording local plants and animals with photographs and drawings, recording traditional and scientific knowledge about the national biodiversity, and making all of



this knowledge and information available to the public. It was decided to develop a single computerised system for this record.

The resulting database, which is available on the web and on active CD, presently has information on 4,200 species (i.e. about 60% of the total national biodiversity), including 2,500 with photographs. Assistance in developing the database has included resident specialists in traditional knowledge and external scientific experts. Microsoft Access was selected to carry the database because it is easily and widely used.

Incorporating all desired features of the database was not easy given the constraints of computer logic and the necessity for easy accessibility. Search criteria needed to include biological taxonomy, social usefulness, invasiveness, endemism, status (threatened or common) and habitat. Compound names, the different dialects of the Cook Island Maori—the indigenous language—handling uncertain identifications, and editing and managing thousands of image files are all challenges that required creative solutions.

Accessing the multimedia biodiversity database is dependent on students and the general public having access to computer technology. All schools in the Cook Islands now have a

computer room for students and computers are becoming more common with the general public in the Cooks. Internet access is also becoming more widespread and affordable although the slow connections and high costs will continue to be a relative obstacle to browsing a complex multimedia database. To meet this challenge, the project provides the website and database on a CD. These are provided free to local schools and government agencies and are available to the public at a nominal cost. The website database is updated every six months and a new CD is issued each mid-year.

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Chapter 12:

In conclusion

As part of the Small Island Developing States (SIDS) grouping, the Pacific islands have joined with key partners to highlight their unique situation in biodiversity conservation. They called for a specific action framework to address the issues covered in this booklet. The result of this, the Island Biodiversity Programme of Work (POW), aims to significantly reduce biodiversity loss by 2010.

There are five goals of the programme of work:

1. Conservation of island biodiversity;
2. Sustainable use of island biodiversity;
3. Addressing the threats to island biodiversity;
4. Access and benefit sharing of island genetic resources;
5. Increasing capacities and financing for the implementation of the Programme of Work of island biodiversity.

At the 8th Conference of the Parties of the Convention on Biological Diversity (COP8) in March 2006, a number of Pacific island countries announced commitments to conserve island biodiversity:

Fiji: By 2020, at least 30% of Fiji's oceans and coastal waters ("I qoliqolis") will become part of effectively managed and financed networks.

Kiribati: The Phoenix Islands in Kiribati have been declared a Protected Area. This area covers some 184,700 square kilometers and represents 8% of the area of Marine Protected Areas (MPA) currently designated globally. The Phoenix Islands Protected Area is the biggest marine protected area in the Pacific and includes a range of marine habitats from coral reefs to deep seamounts. Management planning is under way with a Memorandum of Understanding between the Government of Kiribati, the New England Aquarium, and Conservation International for the design of a range of protection zones. A trust fund is also being developed to support this initiative.

Micronesia: The countries and territories of Micronesia made a shared commitment to a comprehensive system of protected area

networks. This will see at least 30% of the nearshore marine and 20% of the forest resources across Micronesia under effective conservation by 2020.

COP8 also recognised that partnerships are a key factor in progressing island biodiversity issues, reflecting the capacity limitations and needs faced by the Pacific region and other SIDS. COP8 saw the formation or strengthening of a number of partnerships, including the IUCN Taskforce on Island Conservation and Protected Areas, which collaborated with SPREP on a community side event at COP 8. Side event participants identified that to amplify success in addressing and implementing the Programme of Work, there is a need to seek concrete partnerships and to have clear commitments.

It was recommended that a practitioner network be developed and strengthened to share:

- Experiences
- Lessons learned
- Best practices and
- To offer a collective and united voice.

At a higher level, the Global Islands Partnership was also a feature of COP8, aiming to support the implementation of the Programme of Work. Equally important is its aim of making tangible connections between the global conservation targets and national actions, and to foster and support leadership in island biodiversity.

The present publication highlights Pacific island efforts, in addressing some of these conservation goals and in developing partnerships. While not a comprehensive overview, it attempts to give food for thought and identify further opportunities.

The Programme of Work, which outlines the critical actions needed to reduce biodiversity loss, is an important guide in the efforts of Pacific island countries and territories to develop sustainably—while at the same time conserving biodiversity for future generations.



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