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LAND TENURE AND CONSERVATION: PROTECTED AREAS IN THE SOUTH PACIFIC

South Pacific Commission
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Peter Eaton
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South Pacific Commission
Noumea, New Caledonia
January 1985

S U M M A R Y

LAND TENURE AND CONSERVATION : PROTECTED AREAS IN THE SOUTH PACIFIC

Peter Eaton

This study is concerned with the influence of land and marine tenure on the development of conservation areas in the South Pacific region. Customary tenure and the distribution of protected areas are described for the region as a whole, then in more detail for case studies of Papua New Guinea, Fiji, Tonga, Western and American Samoa.

Past development of conservation has generally been dependent on the availability of public land. This is usually in short supply and subject to competing land use needs. Governments have power to acquire land for public purpose either by negotiation or compulsory processes, but are now reluctant to purchase large areas for conservation purposes. An alternative is development of protected areas on land held under customary tenure systems. There are still many examples in the region of traditional environmental management designed to prevent the over-exploitation of natural resource, also there are taboos protecting particular places and wildlife species.

Examples of parks and reserves which have already been established on customary land are the wildlife management areas in Papua New Guinea and the Yadua Taba Iguana Sanctuary in Fiji. Problems arise if traditional owners feel they may have to forgo what are regarded as the advantages of development, such as timber royalties in the case of a proposed forest reserve.

On the other hand, customary groups often welcome conservation measures that reinforce their own rights and exclude outsiders.

The provision of national parks and reserves in the South Pacific region is at present inadequate. A realistic model for expansion within the present tenure system would include a limited number of national parks and nature reserves on government land with full protection for wildlife and controlled access. There would also be a network of traditional conservation areas on customary land.

These would be managed by local land-owners. Some fishing and hunting could be allowed, but only by traditional methods for subsistence purposes. Finally, there would be larger areas under customary tenure, but subject to land use and development controls.

R E S U M E

REGIME FONCIER ET PRESERVATION DES TERRES :
ZONES PROTEGEES DANS LE PACIFIQUE SUD

Peter Eaton

Cette étude s'attache à examiner l'influence du régime de la tenure des terres et des mers sur le développement des zones à préserver dans la région du Pacifique Sud. Y sont présentés, pour l'ensemble de la région, le régime foncier coutumier et la répartition des zones protégées, ces deux sujets étant traités ensuite de façon plus détaillée dans le cadre d'études de cas portant sur la Papouasie-Nouvelle-Guinée, Fidji, Tonga, le Samoa-Occidental et les Samoa Américaines.

Dans le passé, le développement de la conservation était généralement tributaire de l'étendue des domaines publics. Ceux-ci sont habituellement rares et font l'objet de conflits entre des impératifs contradictoires concernant le mode d'utilisation de la terre. Les gouvernements ont la faculté d'acquérir des terres, pour les attribuer au domaine public, soit par la négociation, soit par des mesures d'expropriation, mais ils hésitent aujourd'hui à acquérir de vastes superficies à seule fin de les préserver. Il existe une autre possibilité qui consiste à transformer en zone protégée des terres relevant du régime coutumier. On peut encore trouver dans la région de nombreux exemples de gestion traditionnelle de l'environnement dont l'objet est d'empêcher la surexploitation des ressources naturelles. Notons aussi les tabous qui protègent certains lieux et certaines espèces de la faune et de la flore sauvages.

Des parcs et réserves ont déjà été créés sur des terres coutumières. Ce sont par exemple les zones de conservation de la vie sauvage en Papouasie-Nouvelle-Guinée et la réserve d'iguanes de Yadua Taba à Fidji. Des problèmes se posent lorsque les propriétaires coutumiers craignent d'avoir à renoncer aux avantages supposés de l'exploitation de la terre - redevances forestières par exemple - dans le cas d'un projet de réserve forestière. Par contre, les collectivités coutumières sont souvent favorables aux mesures de conservation qui tendent à affermir leurs droits et à exclure les étrangers.

Dans le Pacifique Sud, le nombre de réserves et de parcs nationaux est actuellement insuffisant. Un modèle de développement réaliste dans le cadre du régime foncier actuellement en vigueur consisterait en la création d'un nombre limité de parcs nationaux et de réserves naturelles sur les terres du domaine public, où la faune et la flore sauvages seraient intégralement protégées et l'accès réglementé. On pourrait également constituer un réseau de périmètres protégés de type traditionnel sur les terres relevant du régime coutumier. Ces zones seraient administrées par les propriétaires fonciers locaux. On pourrait y permettre, dans une certaine mesure, la pêche et la chasse, mais à la condition expresse qu'elles soient pratiquées avec des méthodes traditionnelles et à des fins de subsistance. En fin de compte il y aurait de plus grandes superficies relevant du régime foncier coutumier, mais faisant l'objet d'un contrôle quant à l'utilisation des terres et à l'exploitation.

PREFACE

Twelve years ago, the United Nations Conference on the Human Environment (Stockholm, 5-16 June 1972) adopted the Action Plan for the Human Environment, including the General Principles for Assessment and Control of Marine Pollution. In the light of the results of the Stockholm Conference, the United Nations General Assembly decided to establish the United Nations Environment Programme (UNEP) to "serve as a focal point for environmental action and co-ordination within the United Nations system" (General Assembly resolution XXVII of 15 December 1972). The organizations of the United Nations system were invited "to adopt the measures that may be required to undertake concerted and co-ordinated programmes with regard to international environmental problems", and the "intergovernmental and non-governmental organizations that have an interest in the field of the environment" were also invited "to lend their full support and collaboration to the United Nations with a view to achieving the largest possible degree of co-operation and co-ordination". Subsequently, the Governing Council of UNEP chose "Oceans" as one of the priority areas in which it would focus efforts to fulfil its catalytic and co-ordinating role.

The Regional Seas Programme was initiated by UNEP in 1974. Since then the Governing Council of UNEP has repeatedly endorsed a regional approach to the control of marine pollution and the management of marine and coastal resources and has requested the development of regional action plans.

The Regional Seas Programme at present includes eleven regions (1) and has over 120 coastal States participating in it. It is conceived as an action-oriented programme having concern not only for the consequences but also for the causes of environmental degradation and encompassing a comprehensive approach to combating environmental problems through the management of marine and coastal areas. Each regional action plan is formulated according to the needs of the region as perceived by the Governments concerned. It is designed to link assessment of the quality of the marine environment and the causes of its deterioration with activities for the management and development of the marine and coastal environment. The action plans promote the parallel development of regional legal agreeements and of action-oriented programme activities (2).

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(1) Mediterranean, Kuwait Action Plan Region, West and Central Africa, Wider Caribbean, East Asian Seas, South-East Pacific, South Pacific, Red Sea and Gulf of Aden, East Africa, South-West Atlantic and South Asian Seas.

(2) UNEP: Achievements and planned development of UNEP's Regional Seas Programme and comparable programmes sponsored by other bodies. UNEP Regional Seas Reports and Studies No.1, UNEP, 1982.

The idea for a regional South Pacific environment management programme came from the South Pacific Commission (SPC) in 1974. Consultations between SPC and UNEP led, in 1975, to the suggestion of organizing a South Pacific Conference on the Human Environment. The South Pacific Bureau for Economic Co-operation (SPEC) and the Economic and Social Commission for Asia and the Pacific (ESCAP) soon joined SPC's initiative and UNEP supported the development of what became known as the South Pacific Regional Environment Programme (SPREP) as part of its Regional Seas Programme.

A Co-ordinating Group, consisting of representatives from SPC, SPEC, ESCAP and UNEP was established in 1980 to co-ordinate the preparations for the Conference.

The Conference on the Human Environment in the South Pacific was convened in Rarotonga (8-11 March 1982). It adopted: the South Pacific Declaration on Natural Resources and Environment of the South Pacific Region; and agreed on the administrative and financial arrangements needed to support the implementation of the Action Plan and on the workplan for the next phase of SPREP (3).

To facilitate the Action Plan, close co-operation has been developed between Research and Training Institutions in the South Pacific Region and SPREP. This report was produced by Dr Peter Eaton, of the University of Papua New Guinea. The study had its origins in work done in Papua New Guinea on land problems affecting national parks development. This was followed by an examination of some of the wildlife management areas which had, unlike the parks, been developed on customary land. In 1984, the University of Papua New Guinea granted him a period of research leave which enabled his work to be extended to other countries of the South Pacific region. For three months, he was attached to the Institute of Pacific Studies, University of the South Pacific, Suva. During this period, he was able to visit different parts of Fiji, Tonga, American Samoa and Western Samoa.

A large number of people in South Pacific countries have provided assistance and information. These have included colleagues and students at the Universities of Papua New Guinea and the South Pacific, government officers, national parks staff and traditional land-owners. In particular, the author wishes to acknowledge the help and information provided by the following:

Karol Kisokau and the staff of the Office of Environment and Conservation, Papua New Guinea;
Professor Ron Crocombe and staff of the Institute of Pacific Studies, Suva;

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(3) SPC/SPEC/ESCAP/UNEP: Action Plan for Managing the Natural Resources and Environment of the South Pacific Region. UNEP Regional Seas Reports and Studies No.29, UNEP, 1983.

Dr John Gibbons, Biology Department, University of the South Pacific;
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Sione Tongilava, Superintendent, Department of Lands, Tonga;
Semisi Fakahau, Chief Fisheries Officer, Tonga;
Dr Arthur Dahl for information on New Caledonia;
Dr Lucius Eldredge for information on Guam and former American Trust Territory;

The countries in this report are those covered by the South Pacific Commission. The South Pacific Regional Environment Programme of the South Pacific Commission, provided financial assistance for travel within the South Pacific area and towards the cost of preparing this report which is to be printed as one of the Programme's Topic Reviews. It is hoped that the information it contains will be of particular relevance to the Third South Pacific National Parks and Reserves Conference which is to be held in Western Samoa in 1985.

The second part of his research leave was spent in England where he visited the different sections of the IUCN Conservation Monitoring Centre based at Kew and Cambridge. They were able to provide further information on protected areas in the South Pacific region and the list of wildlife of conservation concern which forms Appendix 2. The final draft of the report was completed during a period of attachment to the Department of Land Economy, Cambridge University. Dr Peter Eaton wishes to thank Professor Gordon Cameron and the staff of the Department of Land Economy for their hospitality and assistance during this time.

CONTENTS

CHAPTER 1

INTRODUCTION

1.1 BACKGROUND

This study is concerned with conservation and the development of protected areas in the South Pacific region. In particular it examines land tenure as a significant factor in the initiation and management of national parks and other types of conservation areas. It is a subject for investigation which was recognised as being of particular importance to environmental management in the region by the Conference on the Human Environment in the South Pacific. Here it was stated that there was a need for:

> "The study of traditional land and marine tenure systems and their reconciliation with environmental management, especially in relation to conservation and the designation of and management of reserves".

Customary land tenure has particular relevance to the development of protected areas in the region. The traditional tenure system often encouraged the conservation and management of wildlife resources. It excluded hunters and collectors who did not come from the land-owning group; it protected certain sacred areas and certain species of wildlife; and it also provided for temporary bans on hunting and fishing in certain areas. These traditional rules helped to maintain substained resource yields in the past but have not always proved adequate to cope with changes and pressures associated with population increase, new forms of economic activity and different techniques of hunting and fishing. In many areas unique natural environments are threatened and there is a need to set aside land for conservation purposes.

However, these purposes may be imperfectly understood and often unappreciated by local landowners who are frequently among the poorest and most neglected members of the population. Conservation areas often have to compete with other forms of land utilisation which appear to offer more immediate profits. Furthermore, the system of land tenure often makes it difficult to acquire land for national parks and even when they have been established, the former landowners may feel that they retain customary rights such as access, hunting, burning the vegetation and clearing the land for cultivation. These problems may be partly a result of misunderstanding and ignorance of the aims of national parks; they are also associated with a concept of land tenure in which land inherited from ancestors cannot be permanently transferred outside the tribal group.

In this report the problems of establishing protected areas on land held under customary tenure are examined and also the attempts which have been made to involve customary owners in their management. Existing protected areas legislation is examined and an attempt is made to assess the extent to which traditional tenure and conservation practices have been and could be incorporated into legislation and protected area management.

1.2 OUTLINE

The first section of this report contains a short general discussion of land tenure in the region. This is necessarily comparative in nature, but I have tried to identify and analyse those elements in the system which seem relevant to protected area development. Within the customary system these include a definition of the different land use rights and the way they are distributed and controlled within the land-owning group. Factors governing the transfer of land are also considered, in particular government powers of acquisition. The relative importance of communal, individual and state-owned land is also examined. Marine tenure is especially important to the island states of the region and particular attention is given to fishing and collecting rights in lagoon, reef and ocean areas. In addition, traditional beliefs and practices that provide natural resource conservation are assessed.

The chapter on tenure is followed by an overview of protected areas legislation and implementation within the countries of the region. In it I have included a general inventory of national parks and reserves which is an attempt to update the United Nations List of National Parks and Protected Areas, 1982. I have also attempted to classify the areas into the ten types used by IUCN in compiling the United Nations list but have found that in many cases the criteria used in drawing up the categories are not always relevant or applicable to the region.

The second part of the report is concerned with case studies of particular countries within the region. These are Papua New Guinea, Fiji, Western Samoa, American Samoa and Tonga. The land tenure system and its implications for protected area development in each country are discussed. Descriptions are given of the existing national parks and reserve with special emphasis on those which have involved the customary land-owners.

In the concluding chapter a comparison is made of the experience of these and other South Pacific countries in establishing conservation areas. Land tenure is considered as a factor in their development and suggestions are made on ways that an effective network of reserves and parks might be established that would protect the resources and life-support systems of the region.

1.3 THE REGION

The countries covered in the report are those of the South Pacific Commission. They are listed in Table 1.1 with information on their land area and population. These statistics show how there is considerable difference in the size of the countries and also in the density of population and consequent pressure on land and other natural resources. There is also considerable diversity in the physical environments which include both high mountain ranges and low coral atolls; 72 different ecosystem types have been identified within the region (Dahl 1980). This heterogeneity is also found in the ethnic composition of the region which includes Melanesia, Micronesia and

Polynesia. The political status of the countries also varies. Most are self-governing and independent, but a few are still administered and controlled by larger industrialised states.

The countries of the region suffer common problems of environmental degradation, although the degree and scale varies. All are being affected by social and economic changes which make new environmental policies necessary. There is a need to make these relevant to the conditions in the different countries. For example, in smaller nations where land is scarce it may be unrealistic to set aside large areas exclusively for parks and reserves. The emphasis may have to be on multiple land use; there should be enough flexibility to allow conservation, forestry, agriculture, fishing and subsistence hunting. Both local and overseas recreational needs have to be catered for by countries which are encouraging tourism. Shortages of funds and trained staff may also limit the capacity of individual small nations to develop and administer parks and reserves.

1.4 REFERENCES

Dahl, A.L., 1980, Regional Ecosystems Survey of the South Pacific Area, Noumea: South Pacific Commission, pp. 20-23.

South Pacific Commission, 1982, Report of the Conference on the Human Environment in the South Pacific, p. 42.

IUCN, 1982, 1982 United Nations List of National Parks and Protected Areas, Gland.

TABLE 1.1

COUNTRIES OF THE SOUTH PACIFIC COMMISSION REGION

Country	Area	Population
American Samoa	200	35,000 (1982)
Cook Islands	240	18,000 "
Federated States of Micronesia	699	81,477 "
Fiji	18,376	671,712 (1983)
French Polynesia	4,000	164,000 "
Guam	550	111,000 (1982)
Kiribati	890	60,000 "
Marshall Islands	181	33,000 (1983)
Nauru	20	7,000 (1982)
New Caledonia	19,000	145,000 (1983)
Niue	260	3,000 (1982)
Northern Marianas	477	16,000 (1980)
Palau	492	12,173 "
Papua New Guinea	461,690	3,329,000 (1982)
Solomon Islands	28,450	239,000 "
Tokelau	10	3,000 "
Tonga	700	99,000 "
Tuvalu	26	8,000 "
Vanuatu	14,760	124,000 "
Wallis and Futuna	200	10,800 (1980)
Western Samoa	2,836	159,000 (1982)

Source: U.N. Fund for Population Activities, Suva, 1984.

CHAPTER 2

LAND TENURE AND TRADITIONAL CONSERVATION

2.1 LAND TENURE

The land tenure systems of the South Pacific countries reflect the variety of geographical, social, political and economic conditions in the region. The histories of the different states, the influence of metropolitan powers and the introduction of foreign concepts of law and land-ownership have all influenced the traditional systems that existed. Nations which have only recently become independent and self-governing are still in the process of establishing and implementing their own policies on land and natural resource management. Land tenure systems continue to be dynamic as they adapt with varying success to changing circumstances and needs.

The traditional or customary land tenure systems show these variations and have been subject to change. Even within one country the system has never been homogeneous but varied from one island to another and from one valley to the next. The size of land-owning groups and their territories shows considerable differences. There are variations in the hierarchies of control over land use allocation. The balance between individual and communal rights is constantly shifting. Rights to land are acquired, distributed and transferred in many different ways.

Nevertheless, it is possible to identify some common characteristics of customary tenure in the Pacific before contact with Europeans. It was a system associated with the subsistence economy. Groups were traditionally self-sufficient although access to certain resources might lead to specialisation and barter trade. A community's land was necessary for its food, shelter, clothing and other necessities of life. It was also the basis of its social organisation, culture and religion. It gave the group identity and provided a common link with their ancestors who were buried there. It provided security for the old and opportunities for the young. The importance of land is expressed by one Melanesian (Bonnemaison, 1984) in this way: "The clan is its land, just as the clan is its ancestors. Each man must have some place, some land which belongs to him, which is his territory. If he does not control any land he has no roots, status or power."

In most customary systems rights to land are held by a kinship group who have inherited them from a common ancestor. These rights might have been originally acquired in a number of different ways. Sometimes the ancestor was the original pioneer who had made the first landing on an island or who had cleared an area of forest and cultivated the land. Many of the group's myths and legends concerned the way the land had been acquired with special heroic, mystical or god-like qualities being attributed to the original ancestor. Animals and birds might also be involved in these myths and become identified with the group as a totem which must not be killed or eaten. Rights were also acquired by warfare or conquest with stronger more numerous groups forcing the weaker less organised ones off their land.

Within the land-owning group, rights to occupy the land were usually inherited by birth through membership of a particular lineage. The system was also flexible enough to cater for particular cases such as adopted children and outsiders marrying into the group. Location, the fact of living with a group, participating in its economic and ceremonial activities, observing its customs and fulfilling group observations and responsibilities were factors which helped to give at least temporary rights to land.

Customary tenure was characterised by a multiplicity of different rights. These included rights to clear and cultivate land, to build houses, to hunt, to pick fruit, to fish, to fetch water and to have access to particular localised resources such as salt or potting clay. The rights varied in their strength and permanence; some were held by individuals and others by the whole group. Several people might have different rights over the same piece of land; rights to trees and to ownership of the land where they were planted could be held seperately. Areas held collectively included those reserved for ceremonial and sacred purposes. Control over the allocation of land rights varied in different societies. In some areas the whole group was involved and decisions were made by consensus; in others powers were concentrated in the hands of a chief or king.

The importance of land meant that there were often very strict controls on its permanent transfer outside the group. When land did exchange hands, it was often as a result of warfare but it could also feature in exchange dealings or as gifts in return for services.

A good description of the complex social system and different land rights in Polynesia is provided by Crocombe (1964) in his account of the Cook Islands before contact with Europeans. In the island of Raratonga chiefs, mataipo, were allocated blocks of land, tapere, usually running from the interior mountains to the coast. The descent group which derived from each of the original chiefs became the focus of landholding within the tapere. There were also other groups. Larger ones were the tribe or vaka headed by an ariki, high chief. There were also minor lineages and at the lowest level in the hierarchy was the commoner, unga, with his nuclear family, puna. Within the tapere each family was generally allocated several pieces of land as different crops needed special soil conditions. "Certain rights in land were at times transferred by gift but never all the rights in any parcel". It was also "customary for persons holding land by permissive occupancy to take the head of the donor family some token of the produce of the land."

The definition of land rights within the customary system is often influenced by the distance from a group's permanent settlement. Generally rights to use land near the village tended to be more definite and individualised whereas those to land further away were vaguer and belonged to the whole group. In Western Samoa this occurred with village house lots and plantation plots near the settlement and village and district lands in the more remote areas. For New Caledonia Saussol (1971) writes:

> "The land surrounding hamlets had very clear patterns of tenure .. but further away were

> areas of "no man's land" little used except for gathering and wood .. The precise nature of indigenous rights to such lands in pre-contact times is not known, but available evidence suggests that they were limited, and that the right-holding units were large, usually tribes or groups of related clans."

In New Caledonia these areas of uncultivated land were later to be taken by the French colonial administration because they were regarded as "vacante". Many of the British colonies also had "waste and vacant" ordinances which enabled similar land to be taken by the government because it was regarded as unoccupied. Indigenous groups often maintained territorial claims to this land based on past historical associations, present hunting and collecting rights and future needs for cultivation.

In most, but not all, parts of the Pacific the arrival of Europeans usually resulted in alienation of some land from the customary system. Land was acquired for plantations, missions, trading and administrative purposes. Most colonial governments established some control over the sale of land to foreigners, but the degree to which indigenous rights were protected varied considerably. Foreign land-ownership was sometimes encouraged as a supposed means of bringing about economic development. In some cases, notably Fiji and New Caledonia, labour was imported from other countries and eventually came to outnumber the indigenous populations.

New systems of land tenure were imposed on alienated land. Rights were no longer dispersed but concentrated in the ownership of leasehold and freehold titles. Land became a commodity that could be bought and sold; its price subject to the market forces of supply and demand. It also assumed financial value as a form of security for obtaining loans.

In many countries of the South Pacific a dual system of land tenure evolved. There was the alienated section which included land owned by government and private interests; this land was held under registered titles and its boundaries were surveyed and marked. In contrast customary land was unregistered and had boundaries formed by natural features; knowledge of these and inherited rights were handed down orally from one generation to the next.

Colonial policies also brought about changes in the traditional system. Tribal warfare was reduced and there was a stabilisation or freezing of land boundaries; groups that wished to expand could no longer acquire territory by force. Some attempts were made to record native rights but they did not always result in an accurate representation of what was a complex but flexible system. For example, in Fiji it was decided that the mataqali should be regarded as the main land-owning unit, in spite of the fact that other territorial and social groupings were considered to be of comparable importance (France 1969). In some places chiefs who had little power previously were selected by the colonial administrators to represent their people in land matters; elsewhere traditional authorities were ignored. The Christian missions were also influential in many areas in weakening the power of traditional

leaders and causing spiritual beliefs associated with the natural environment to be weakened.

In French colonies attempts were made to combine customary law with the French civil code. In particular the application of French laws on property succession caused problems over the division of family lands between co-heirs.

When countries in the South Pacific region became self-governing and independent land policies often directed towards the return of land to the traditional owners and the reassertion of traditional rights. This had its most extreme form in Vanuatu where all land was returned to the customary owners. The Constitution of Vanuatu states that all land "belongs to the indigenous custom owners and their descendants. The rules of custom shall form the basis of ownership and use of land."

In other countries, such as Papua New Guinea, foreign freehold titles were converted to government leases. In Papua New Guinea there has also been localisation of expatriate-owned property through the plantation redistribution scheme. In Western Samoa German-owned plantations were taken over by the New Zealand government after the First World War and have now been handed over to the Western Samoa Trust Estates Corporation. In some Pacific countries there is little or no foreign-owned land. In Tonga, for example, the sale of land to foreigners has always been prohibited. However, in New Caledonia, where the indigenous kanaks have lost much of their land, it is a major political issue.

The proportion of land under customary tenure is generally high in most of the larger Pacific countries: 97 per cent in Papua New Guinea, 83 per cent in Fiji, 80 per cent in Western Samoa. However, these figures do not usually relate to productive capacity. Many customary areas are in mountainous, infertile and inaccessible areas; alienated land is often on the fertile coastal lowlands.

Owners of alienated land also often have the advantage of a system of registration of titles which is lacking in the customary sector. Registration generally helps to give greater security of tenure, facilitates rural credit and helps to prevent disputes. Attempts at sporadic registration through land tenure conversion in Papua New Guinea and "land settlement" in the Solomons have not been very successful or widely applied. In Fiji the rights of the group, the mataqali, have been recorded by the Native Land Commission. In Western Samoa only the titles of the matai, elected chiefs, are registered. In Tonga titles to land should be registered but this does not always happen in the case of tax allotments on hereditary estates. There is also the problem of recording or registering land dealings and transfers. In Papua New Guinea land dealings involving customary owners and outsiders are still indirect through the government; transfers according to custom are allowed between indigenous land-owners but are largely unrecorded and their permanence at times a source of dispute. In Fiji the Native Land Trust Board looks after all dealings in native land. In Vanuatu the Land Leases Act, 1984, provides for the registering of leases of customary land with the Land Records Office. In Kiribati the land court performs this function for native leases. In Western Samoa customary leases can be registered with the Registrar of Lands but the procedure is not compulsory.

There may be special courts that deal with disputes on customary land. In Papua New Guinea, under the Land Disputes Settlement Act, 1975, a three-tier dispute resolution procedure was established. The first stage is when local mediators attempt to bring about an agreement. If this fails there is arbitration through a local land court. Finally appeal is possible to a provincial land court. Most Pacific nations have courts that deal with customary rights. In Vanuatu these are known as island courts. Western Samoa has the Land and Titles Court. Each island in Kiribati has its land court. In these and other similar courts the emphasis is on customary rules and lawyers are discouraged from attending; nevertheless in most cases, Papua New Guinea is an exception, appeal is possible to higher courts where lawyers may be present.

Most Pacific countries have legislation which allows the government to acquire customary land either by negotiation or by compulsory procedures. This power is often subject to certain conditions. The most common is the requirement that it must be for public purposes. In the Papua New Guinea Land Act these purposes are specified. In the Solomon Islands the Land and Titles Act provides for compulsory acquisition for public purposes, but the Constitution requires that there must have been prior negotiations with the land-owners and they should have had access to legal advice. Similarily in Western Samoa, the Takings of Land Act gives compulsory acquisition powers but the Constitution states it must be for a public purpose. In Vanuatu Article 81 of the Constitution allows the Government to own land in the public interest. Generally, as in the case of the Fijian statute, the Crown Acquisition of Land Act, the legislation states that a negotiated purchase must be attempted before compulsory acquisition takes place. In nearly all cases of acquisition, compensation is paid based on both the unimproved value of the land and on the improvements (usually buildings and plants) that have been added to it. Payments are not always in cash; occasionally exchanges of land takes place or land-owners are offered a share of future profits. They may also receive part of the royalties from forestry and mining projects. In the past payment was often in trade goods or by traditional means of exchange such as shells.

In most countries the acquisition of customary land tends to be a lengthy procedure. There is a need for investigation to determine land ownership, something which may involve the compiling of genealogies. Negotiations may require consensus approval and be delayed by absentees. The land has to be valued and surveyed; the need for the latter is frequently the cause of long delays in land transactions. Often administrative delays may be caused by the involvement of several government departments in the acquisition procedure.

In relation to compulsory acquisition, a final point that should be emphasised is that governments are very reluctant to use their particular powers in this respect. This is not only due to the legal and constitutional restraints, it is also politically unpopular and may give rise to law and order problems if the land-owners refuse to give up their land. The result is that in the newly independent countries of the South Pacific compulsory acquisition of customary land rarely occurs even if it appears to be in the public interest.

2.2 MARINE TENURE

Marine tenure is of particular interest and significance to the people of the South Pacific region. In coastal areas and on small islands rights to fish and collect shells from the lagoon, reef and ocean are vital to the subsistence economy. In the traditional system these rights were carefully controlled to ensure a sustained yield of marine resources. Today these resources are under pressure from the introduction of commercial fishing and also greater subsistence demands resulting from population increase. The introduction of new fishing techniques, larger boats and marine engines have all led to the over-exploitation of fisheries. Urbanisation, population growth and the development of manufacturing and tourist industries have increased pollution risks from the discharge of effluents into coastal waters. Highly productive coral reefs have been affected and also suffered from quarrying for construction purposes and the depradations of the crown-of-thorns starfish. In addition, fish, invertebrates, birds, sea mammals and turtles have all found their breeding grounds increasingly accessible and vulnerable. The conservation and management of the marine environment has become a subject of increasing concern.

In the traditional system marine territory exists in that a group may claim exclusive use of an area of sea, beach or lagoon. Outsiders are excluded or may only fish with the permission of the group; this may be restricted to certain times of the year and be conditional on some form of payment, gifts or a proportion of the catch. Rights to gather shells and other products are safeguarded in a similar way.

Additional rights may also be involved. These include access and rights of passage through gaps in reefs and between islands. Unless there was enmity between groups, this right has usually been freely granted although again permission may have to be requested. If damage results this can lead to dispute and rights being refused. This happened recently on Manus Island when villagers claimed that canoes with outboard engines using the passage between Los Negros and the main island were frightening away the fish and that the wash was causing erosion along the shores.

Another right is the use of stretches of beach as landing places for canoes. In Vanautu these landing rights, lelepa, are inherited by each head of family, although chiefs may also allocate general landing rights where reefs make it difficult to come ashore by one's own land (Taurakoto, 1984).

The addition of improvements can also give special rights. Examples are the making of fish traps or fences such as those used off the Tongan coast, or the construction of stone enclosures for clam gardens in places such as Manus. In Atiu in the Cook Islands the people feed fish with pieces of taro and coconut flesh and claim that by fattening and attracting the fish they have acquired special harvesting rights. On the other hand, if no labour has been involved in developing a resource, claims to it may not be as strong. The strength of territorial claims will also be partly dependent on the monetary value of the resources involved. When a resource assumes commercial importance, there may be more attempts to assume rights to it and more possibilities of disputes.

The boundaries and extent of traditional marine territories are in many cases an extension of those on land. The ownership or use of adjacent land is generally regarded as the basis of rights to the beach, reef and sea.

The question of how far these rights extend out to sea is a more open one. For many Pacific islands the outer edge of the fringing or barrier reef is regarded as the limit. This is how marine boundaries are described for Atiu in the Cook Islands:

> Boundaries were determined by the boundary lines on the dry land (which ran from inland to the coast and continued across the lagoon to the reef) and sea-passages on the reef. For some places special rocks on the cliff edges were used to mark the inner border-lines. Beyond the reef, just a few feet from where the waves break on the reef, is the end of the boundary line. This is marked by the site where men fished for mackerel (koperu). The boundary is known as taunga koperu because the koperu remain in the same area throughout the year. (Mokoroa, 1984)

Similarly in Fiji it is stated that "fishing rights were maintained from the beach to the seaward edge of the outer reefs" (Kuanatabu, 1983). Sometimes sea boundaries might extend even further. In Vanuatu they might "extend as far out as one can fish or dive for shells" (Taurakato, 1984), and in the Marshall Islands property rights extended out as far as the area where people could stand, usually waist-deep, to fish. In some places the use of larger boats and new fishing methods has enabled traditional claims to be extended further out to sea than in the past.

Marine territorial boundaries make use of a variety of natural features. This description of boundaries is from Fiji:

> These tend to be straight lines joining distinctive geomorphological features observable from the surface. Thus, a boundary may begin from the tip of a rocky promontory, bear along a straight line to a patch of reef perhaps a kilometre off-shore, change direction at this reef to continue several hundred metres to a pass in the main reef, then follow the seaward edge of the main reef to a conspicuous reef hole before recrossing reef and lagoon to intersect the coast. (Baines, 1980)

Occasionally special markers are also used to show boundaries on reefs or beaches. Large stones, posts or sticks are often used. The latter with coconut fronds attached may indicate an area under taboo where no fishing is allowed.

Control over traditional fishing rights varies. In Papua New Guinea it is often decided by the clan or village; in other countries more power has traditionally been with the chiefs. In the past in the Marshall Islands, a chief might claim a particular reef as his property and place

a taboo on others fishing around it. Today chiefs rarely have such complete powers although they may still have considerable control and allocate rights of usage. Kuantabu (1983) writes about Fiji: "Today traditional fishing rights are still controlled by Chiefs of the various Yavusa. Whenever people from adjacent villages wish to fish in these areas, presentations are made of yaqona (kava) for approval."

Just as the introduction of western legal systems by colonial governments resulted in a dual system of land tenure, so also did it result in the application of two sets of rules for marine tenure, in this case affecting the same areas. The laws of Britain, France, the United States and Australia all stated that all land and sea below the high water mark or mean high tide level was government or crown land. These principles were incorporated into the colonial regulations and ordinances and perpetuated in the legislation of the countries when they became independent. In practice, the conflict between introduced and customary laws has often been solved by government recognition of traditional fishing rights but not ownership of the marine areas involved. Compensation has also been paid for damage to or loss of traditional fisheries as a result of development projects. Problems have occurred when commercial fishing takes place in coastal areas; local fishermen are often anxious to exclude outsiders in order to protect their fisheries.

2.3 TRADITIONAL CONSERVATION

Traditional conservation practices have often been closely associated with customary tenure. The identity of the group with its land and the concept of land as something which is held in trust for future generations led to careful management of natural resources. The importance of the immediate environment as the source of all sustenance meant there was a need for it to be carefully looked after and maintained. People in Vanuatu say: "The ground is like our roof. If we do not care for it, it will not shelter us and we will die out". (Lane, 1981)

In customary tenure a large degree of communal control is retained over land use and the exploitation of natural resources. Certain rules and procedures have to be followed in agriculture, hunting and fishing. Methods have evolved of maintaining soil fertility such as shifting cultivation, composting, building mounds and using pits. Economic trees, for example those used in making canoes, tapa and kava, were all carefully looked after and protected from indiscriminate felling. Wildlife and fish numbers were maintained by temporary bans on hunting and fishing during breeding periods or times of scarcity. Owen (1969) writes about American Micronesia:

> Chiefly decrees, clan and island taboos and other means of control were apparently effective. The taking of turtles, turtles' eggs, sea bird eggs and dugongs were so regulated. The necessity to have island sanctuaries for certain birds and turtles were also recognized and such sanctuaries did exist. Some of the old conservation practices of long ago

> still persist in parts of the Trust Territory, but the impact of cultural changes is gradually breaking down the old chief and clan systems and the conservation practices which were part of the old system.

The imposition of taboos was one of the main means by which wild life and areas could be protected. These prohibitions, often known as tambu in many parts of Melanesia and tapu in Polynesia, were invested with supernatural powers and sanctions. In the Cook Islands "access to land or crops could be controlled or denied by the use of ra'ui or customary prohibition, by the appropriate chief"; this might be shown by a sign such as "a coconut leaf tied around a tree on the path leading into a prohibited area" (Crocombe, 1964).

Taboos were often used to protect sacred areas. These were sometimes burial places and as the abode of the ancestors often formed the core of a group's territory. In other cases they were the site of old villages or battlefields. Sometimes the sacred areas were used for particular ceremonies but not at other times. In other areas no specific taboos had been imposed but there was general fear of the spirits or supernatural beings who dwelt there. These places are known as ples masalai in Papua New Guinea and may be associated with deep forest, mountain tops, large stones, caves or lakes.

Areas may be declared taboo for a number of different reasons. Sometimes it may follow a person's death; for a certain period no hunting or collecting of food is allowed. The taboo may be also the result of a communal decision to protect wild life and its habitat. On Niue there are tapu forest which include the remnants of the primary forest which covered the island; these are important as the homes of flying foxes and edible land crabs. Taboos may also be placed on areas of reef to conserve the fish for important feasts.

Particular wildlife species and types of food may be also subject to taboos. The animal concerned may be the totem of the clan or moiety or it may be protected for reasons associated with its supernatural origins. It may also have particular qualities which make it undesirable as food. In Papua New Guinea women sometimes will not eat crabs because they are afraid of having children which are deformed in similar ways; in Tuvalu pregnant women may not eat rays of flatfish or their babies will have flat deformed heads. In Kiribati there are taboos on young boys eating cowries, which it is believed prevent body hair from growing and also on eating damsel fish which will make them nervous adults (Zann, 1983).

Taboos are still in many areas effective in giving protection to specific areas or species of wildlife. Villagers are aware of them and the sanctions, both supernatural and secular, ensure that they are observed. They have the strongest influence in isolated areas where animistic beliefs are dominant and are generally not so widespread where Christianity has been established for a considerable period as in Tonga. Nevertheless, in many islands people may belong to Christian churches and also observe traditional taboos and rules.

Other changes have tended to diminish the self-regulatory mechanisms of traditional environmental management. The weakening of the traditional authority of chiefs has reduced the controls over hunting, fishing and agricultural activities. The introduction of the cash economy has meant the catching of fish and killing of wildlife beyond subsistence levels. This has been facilitated by new technologies in transport, storage, hunting and fishing. In some areas land-owners have reacted to these threats by making their own regulations to discourage or forbid practices such as the use of dynamite, outboard engines and pressure lamps in fishing, and shot-guns for hunting. A return to traditional methods is seen the best way of protecting scarce resources against exploitation.

Internal controls are one means by which land-owning groups safeguard their natural environment. Another is by excluding outsiders and jealously guarding access to resources within their territory. The restriction of hunting and fishing rights to members of the group is a feature of the customary tenure system which often helps to prevent over-exploitation. It is significant that customary land-owners may welcome conservation measures which give them greater security of tenure and formal recognition of their rights. In their own areas these land-owners often prove the best guardians or wardens of their environment.

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CHAPTER 3

PROTECTED AREAS

3.1 LEGISLATION AND IMPLEMENTATION

Only a few South Pacific countries have specific national parks legislation. In many cases the powers to establish reserves are linked to forestry or wildlife laws.

In Papua New Guinea there are three statutes: the National Parks, Conservation Areas and Fauna (Protection and Control) Acts. The National Parks Act provides for the conservation of sites and areas of special scientific, scenic or historical purposes. It contains powers to reserve government land, lease and accept gifts of land. Seven areas have been officially declared and gazetted, but these are small in area, only two are over a thousand hectares.

The Conservation Areas Act has similar objectives but attempts to be more flexible in that the areas can be established on public, private or customary land. It contains provisions for local representation on a management committee. It requires a management plan for each area; land use changes can then only be in accordance with the plan or with ministerial approval. This statute has not yet been implemented and there are no conservation areas at present.

Under the Fauna (Protection and Control) Act sanctuaries, protected areas and wildlife management areas can be established. For the management areas there are local committees responsible for drawing up and enforcing the rules. These areas can be established on customary land. There are at present 11 wildlife management areas, 2 sanctuaries and one protected area.

The Solomon Islands has a National Parks Act which contains provisions for the declaration of national parks and the control of land use within them. There is one park, the Queen Elizabeth National Park, which is of limited conservation value; part of it has been returned to customary owners and much of the rest has been affected by squatters' gardening activities. Under the Forest and Timber Act, vegetation can be protected in contolled forest areas and there is one such reserve on Kolombara Island. In addition local authorities may develop sanctuaries and one has been established by Santa Isabel provincial government in the Arnavon Islands, an important turtle-breeding area.

Vanuatu has Forest Regulations which provide authority to declare forest reserves. There are no national parks although wrecks around the coast, such as the "President Coolidge" sunk during the Second World War, are protected.

In Fiji the Forests Act provides for reserved forest areas and nature reserves. At present there are 24 forest reserves and 9 nature reserves. The National Trust Act gives the National Trust powers to acquire land for conservation purposes; the Trust has been involved in the establishment of a crested iguana sanctuary and one reserve.

New Caledonia has a number of decrees under which parks and reserves have been established. At present there are 2 territorial parks, 2 marine reserves, 1 nature reserve and 5 fauna and flora reserves. These have all been established on public land.

Western Samoa has a National Parks and Reserves Act which provides for the establishment of parks and reserves on public land. There is at present one full national park and 5 reserves of different types. The Forests Act also enables the protection of forest and water catchment areas.

Tonga has a Parks and Reserves Act and 5 marine reserves have been gazetted under this statute. Two areas of lagoons are also protected in that only subsistence fishing is allowed and the discharge of effluents and destruction of mangroves is forbidden. There is also a Preservation of Archaelogical Interest Act and several historical sites are protected.

The Cook Islands have a comprehensive Conservation Act. Under it any land, lagoon, reef, island or part of the territorial seas and the seabed can be declared a national park, reserve or world park. There are not yet any national parks in the Cook Islands; a world marine park was proposed for Manuae Atoll but it was not established, partly because of objections from the land-owners. Three fishing reserves have been established under the Trochus Act; diving and fishing for trochus shells is prohibited in these areas without a licence.

The other small Polynesian territories of Tuvalu, Tokalau, Wallis and Tutuna and Niue have no protected area legislation or reserves. In French Polynesia the Forestry Act contains provisions for the protection of vegetation and wildlife which enable nature reserves to be established. Five reserves have been listed by Dahl (1980).

American Samoa has a Parks and Recreation Act and a variety of relevant federal legislation such as the Coastal Zone Management Act. Most of the areas which have been designated parks are for recreational purposes but there is also one national wildlife refuge, Rose Atoll, and a national marine sanctuary is being developed at Fagatele Bay.

American federal legislation also applies to Guam. In addition there is Parks and Recreation Enabling Legislation which provides for natural preserves, conservation reserves, territorial and community parks, recreational facilities, and historical and prehistoric sites. Altogether there are 110 sites listed in the Guam territorial system, although most of them are small recreational sites and of limited conservation value. There is also a larger area of territorial seashore park.

The former American trust territories also came under federal jurisdiction but are now developing their own legislation. Under Section 2, Article XIV of the Constitution of the Northern Mariana Islands, two islands, Sariguan and Maug, are to be "maintained as uninhabited places and used only for the preservation of bird, fish, wildlife and plant species". Palau has the Ngerukewid Islands Wildlife Reserve. There are two bird sanctuaries, Bikar and Pokak, in the Marshall Islands.

Elsewhere in Micronesia, Kiribati has a Wildlife Protection Ordinance under which sanctuaries for birds and sea turtles can be established.

There is also a Prohibited Areas Ordinance which could be used to restrict access for conservation reasons. Seven sanctuaries and four prohibited areas for birds and turtles have been established.

At present there are no sites in the South Pacific Commission region which are protected under the World Heritage Convention, although several areas have been identified as being suitable for inclusion. There is one international biosphere reserve in French Polynesia.

3.2 INVENTORY OF PROTECTED AREAS

3.2.1 Sources of Information

This list is an attempt to update the 1982 United Nations List of Parks and Protected Areas (IUCN 1982). I visited the Protected Areas Data Unit of the IUCN Conservation Monitoring Centre who provided a more recent list of parks and reserves for the Oceanian region. Additional information was obtained from fieldwork, interviews, correspondence and government publications. The Regional Ecosystems Survey of the South Pacific Area (Dahl 1980) also provided a valuable reference guide.

Occasionally the information I obtained has been contradictory, partly because of doubt in some countries about the exact status of particular areas. Some territories have parks which are predominantly recreational and these have not been included in the list.

3.2.2 Classification

Where the data has been available I have also added information on the area of the protected area and the date it was established. If the protected area occurs on one of the IUCN lists, it has been classified according to the designated category; for those not on the list I have suggested the category that seems most appropriate. The ten categories are as follows:

I - Scientific Reserve/Strict Nature Reserve
II - National Parks/Provincial Parks
III - Natural Monuments/Natural Landmarks
IV - Nature Conservation Reserves/Managed Nature Reserves/Wildlife Sanctuaries
V - Protected Landscapes
VI - Resource Reserves
VII - Anthropological Reserves/Natural Biotic Areas
VIII - Multiple Use Management Areas/Managed Resource Areas
IX - Biosphere Reserves
X - World Heritage Sites

3.2.3 List of Protected Areas in the South Pacific Commission Region

Country	Name	Area (hectares)	Date Established	IUCN Category
Papua New Guinea				
National Parks	Varirata National Park	1063	1969	II
	McAdam National Park	2080	1962	II
	Baiyer River Sanctuary	120	1968	IV
	Cape Wom International Memorial Park	105	1973	IV
	Namenatabu Historical Reserve	27	1979	II
	Nanuk Provincial Park	4	1973	II
	Talele Nature Reserve	40	1973	II
Awaiting formal gazettal				
	Mount Wilhelm National Park			
	Mount Gahavasuka Provincial Park			
	Horseshoe Reef Marine Park			
	Kokoda Trail National Walking Track			
Wildlife Management Areas				
	Tonda	590000	1975	IV
	Maza	184230	1979	IV
	Zo-Oimago	1488	1981	IV
	Lake Lavu	5000	1981	IV
	Sawataetae	700	1977	IV
	Pokili	N.A.	N.A.	IV
	Garu	8700	N.A.	IV
	Ranba	41922	1977	IV
	Bagiai	13760	1977	IV
	Mojirau	5074	1978	IV
	Siwi-Utame	12540	1977	IV
Solomon Islands	Queen Elizabeth National Park	6080	1965	II
	Kolombara Forest Reserve	N.A.	N.A.	IV
	Arnavon Wildlife Sanctuary	N.A.	1980	I
New Caledonia	(Dahl's updated list and classification)			
	Montagne des Sources Strict Nature Reserve	5870	1953	I
	Rivière Bleue Territorial Park	9054	1960	II
	Thy Territorial Park	1133	1980	II
	Yves Merlet Marine Reserve	16700	1970	I
	Maître and Amédée Islets Fauna & Flora Reserve	874	1981	V
	Marine Fauna Rotating Reserve	30000	1981	VIII
	Haute Yaté Fauna Reserve	15900	1960	IV
	Lepredour Islet Fauna Reserve	760	1980	IV
	Pam Island Fauna Reserve	460	1966	IV
	Acupinié Fauna Reserve	5400	1975	IV
	Mont Panie Botanical Reserve	5000	1950	IV

Country	Name	Area (hectares)	Date Established	IUCN Category
New Caledonia (continued)	Mont Mou Botanical Reserve	675	1950	IV
	Mont Humboldt Botanical Reserve	3200	1950	IV
	Southern Botanical Reserve	8932 (7 areas)	1972	IV
Fiji	Nadarivatu Nature Reserve	93	1956-8	I
	Naqaranibuluti Nature Reserve	279	1956-8	I
	Tomaniivi Nature Reserve	1323	1956-8	I
	Vunimoli Nature Reserve	18.7	1966	I
	Draunibota and Tabiko Nature Reserve	2.18	1959	I
	Vuo Island Nature Reserve	1.2	1960	I
	Ravilevu Nature Reserve	4020	1959	I
	Yadua Taba Island Crested Iguana Sanctuary	70	1981	IV
	Garrick Memorial Reserve	427	1983	II
	Koroutari Nature Reserve	18.7		VI
	Kioba Nature Reserve	14		I
Tonga	Ha'atafu Beach Reserve	8	1979	I
	Hakaumana's Reef Reserve	126	1979	I
	Malinoa Reef Reserve and Island Park	73	1979	I
	Monaufe Reef Reserve and Island Park	32	1979	I
	Pangaimotu Reef Reserve	48	1979	I
	Ha'amonga Trilithon	23	1972	V
Western Samoa	O Le Pupu-Pu'e National Park	2800	1978	II
	Stevenson Memorial Reserve	½	1958	II
	Mt Vaea Scenic Reserve	52	1958	II
	Valima Botanical Garden	12	1978	II
	Palolo Deep Marine Reserve	22	1979	II
	Togotogiga Recreation Reserve		1978	II
American Samoa	Rose Atoll National Wildlife Refuge	656	1973	I
	To be declared in 1985: Fagatele Bay National Marine Sanctuary	66		IV
Kiribati				
Sanctuaries	Birnie Island			IV
	Kiritimati Island			IV
	Malden Island			IV
	McKean Island			IV

Country	Name	Area (hectares)	Date Established	IUCN Category
Kiribati (continued)	Phoenix Island			IV
	Starbuck Island			IV
	Vostock Island			IV
Prohibited or Restricted Areas				
	North West Point Reserve, Kiritimati	N.A.	N.A.	IV
	Motu Tabu Reserve, Kiritimati	N.A.	N.A.	IV
	Cook Island Reserve, Kiritimati	N.A.	N.A.	IV
	Ngaon te Taake Islet Reserve	N.A.	N.A.	IV
Northern Mariana Islands				
	Maug	N.A.	N.A.	I
	Sariguan	N.A.	N.A.	I
Palau	Ngerukewid Islands (Seventy Islands) Reserve		1958	
Marshall Islands				
	Bikar	N.A.	N.A.	IV
	Pokak	N.A.	N.A.	IV

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CHAPTER 4

PAPUA NEW GUINEA

4.1 INTRODUCTION

Papua New Guinea consists of the eastern part of New Guinea and several island groups. It has a total area of 462,840 square kilometres. It is a country of great physical and cultural diversity. The interiors of all the main islands are mountainous; the highest point being Mount Wilhelm, 4,350 metres, in the central highlands. There are a large number of volcanoes especially along the northern coasts and on the islands. The main lowlands are along the Sepik and Fly rivers and in the delta region of the Gulf of Papua.

Papua New Guinea has an equatorial climate with temperatures ranging from means of 22° C to 31° C. The highland areas are cooler and experience greater ranges of temperature. The annual rainfall is high, generally over 2,500 millimetres, although these are both regional and seasonal variations. Much of the country, 86 per cent, is still covered by tropical rain forest.

The people are classified as Melanesians, but there are many different ethnic types and over seven hundred linguistic groups. The total population is at present just over three million, 3,010,727 at the last Census in 1980.

Most of the people still live in villages and depend upon subsistence agriculture. The main food crops are sweet potato, taro, yams, bananas, cassava and sago. In most areas these crops are grown by systems of shifting cultivation. Both fishing and hunting are often important to the subsistence economy. Wildlife hunted include birds of paradise, turtles, wallabies, crocodiles, echidna, cassowaries, bandicoots and many small marsupials.

In the monetary sector of the economy important cash crops are coffee, cocoa, coconuts, oil palm, rubber and tea. The main export is copper, at present mined at Panguna in the North Solomons and more recently being developed at Ok Tedi in Western Province.

Between 1884 and 1973 the country was at various times under British, German and Australian colonial administration. It became self-governing in 1973 and fully independent in 1975.

4.2 LAND TENURE

Most land in Papua New Guinea, about 97 per cent of the total area, is still held under customary land tenure. In a country of over seven hundred different language groups, the customs and systems of tenure vary but they have certain common characteristics. Ownership of land is vested in the kinship group, lineage or clan. Rights to use land are inherited from a common ancestor. They may be passed down on a patrilineal

or matrilineal basis, the former is prevalent in the Highlands while in the islands in the east of the country matrilineal descent is more common.

Certain rights are usually exercised by the group as a whole over land within the group's territory; these include hunting, fishing, gathering jungle products and firewood. Other rights to use land for cultivation or building houses are allocated to individuals and can be passed on to descendants. Individual rights tend to be stronger where population density is greater, periods of fallow are shorter and considerable labour has been invested in the land (e.g. by fencing, terracing, building mounds or mulching). Rights to useful trees are often held by individuals or small groups and may be distinct from rights to the land where they are growing.

In many areas an individual may have rights to several scattered areas. This fragmentation is partly a result of shifting cultivation practices, it may be also in order to give everyone in the group access to different resources and types of land.

Knowledge of group and individual rights is not documented but passed down by word of mouth from one generation to another. Boundaries to territorial units are usually marked by natural features such as ridges, rocks, trees and rivers, occasionally by fences and planted vegetation.

The association of a group with its land is a strong one; it gives the people their identity and provides the basis for their social relationships. It is the home of their ancestors, the place where their bodies lie and where their ghosts or spirits still wander. Traditionally it is held in trust for future generations and provides the resources important for the support and security of all sections of the village population.

Permanent transfers of land outside the group are rare and usually require general consensus agreement. Occasionally gifts, sales or exchange of land occur, but often these are of a temporary nature and their permanence may be the source of disputes later. Rights to use land may be acquired by marriage or adoption into a group. In time residence in an area and participation in the common activities of its people may also lead to the acquisition of some rights although these are generally of a usufructuary rather than proprietary nature.

It is a system which is complex, flexible and constantly changing. The strong territorial attachments and the fact that boundaries are not surveyed and rights not registered also result in many disputes over land, both between groups and individuals. Traditionally these were often decided by the elders or leaders of the group who had the greatest knowledge of custom, genealogies and the intricate history of the lineage. Only a few Papua New Guinean societies have chiefs but often there were individuals whose status could be defined as that of land controller. Today there is also a government system of mediation, and land courts to deal with disputes on customary land.

Only the government can acquire land directly from customary landowners. The procedures involved include a detailed investigation by field officers to determine the rightful owners of the land and to ascertain that their claims to it are not under dispute. Population projections are also made to ensure that the group has enough land for its future needs. A survey has to be made and also a valuation; the latter is based on the unimproved value of the land plus compensation for any fruit trees or crops. The government has powers of compulsory acquisition but rarely uses them; instead any purchase generally involves protracted negotiations at village level, often complicated by the need to get uninamity of agreement from the landowning group and hindered by the fact that there may be absentees. Land acquisition is often a long drawn-out process, frequently delayed by administrative inefficiencies and lack of co-ordination between the different government departments involved.

During the period of colonial administration from 1884 to 1973 the government also acquired land which it claimed was ownerless or "waste and vacant". These were areas where there were no settlements or cultivated land. Land acquired in this manner has frequently been the subject of dispute and compensation claims because groups considered it was part of their territory being kept in reserve or used for hunting; claims may also be based on distant historical associations with the area.

At the time of self-government in 1973, 1.4 million hectares of land, 3 per cent of the total area, had been alienated from the customary system. This included about 160,000 hectares of freehold land and 340,000 hectares that were leased to private interests such as missions, individuals and companies. The remainder of the alienated land was held by the government.

Since self-government and independence there have been some changes. The government has acquired more land for development and what are described as "public purposes". On the other hand, some areas have been returned to the original customary land-owners. This includes both unused government land and, under the plantation redistribution scheme, foreign-owned property. Dealings between customary land-owners and outsiders continue to be through the government which acquires the land and then allocates it by a system of leases. A similar system applies to the exploitation of forestry resources. The government purchases timber rights from customary land-owners for a certain period and then grants licences to commercial companies to cut and take out the timber. A proportion of the royalties paid by the companies is passed on to the customary land-owners. In the case of minerals, the situation is rather different as legally these belong to the state. However, land-owners may receive a mixture of occupation fees, compensation and a part of the mineral royalties as they do from the Bougainville Copper Corporation. Traditional mineral resources such as pottery clay, ochre, salt and stone for axes often belong to land-owning groups but could be developed by individual members.

4.3 TRADITIONAL CONSERVATION

The customary land tenure system and the associated subsistence economy traditionally contains many forms of resource management and conservation.

The shifting cultivation system with its long periods of fallow, ranging from ten to thirty-five years, is a means of maintaining soil fertility. In parts of the Highlands composting and mound building takes place for the growing of sweet potatoes. Many methods are used to prevent erosion when steep slopes are cultivated. This includes cultivation along the contours, the construction of terraces, placing rocks and logs across the slopes and gullies, and planting pitpit along the slopes.

Customary rules may prevent the felling of trees along river banks. There are also prohibitions against cutting down trees near villages. Other trees of special value, such as those used for making canoes, are also protected from indiscriminate felling. Ownership of economic trees is often shown by the use of signs such as blazes cut on the trunks. Trees which served as the habitat for certain types of wildlife are carefully protected. Bird of paradise display trees are especially important, as may also be the breeding grounds of megapodes and caves where bats live.

In the traditional system there are many means by which hunting is controlled. The killing of certain animals and birds may be prohibited during their breeding season. In the Marshall Lagoon area hunting assisted by burning the vegetation is rotated between different locations each year. In Chimbu province bats are only killed in certain caves every five years. Sometimes wild pigs and other animals are only hunted at times of feasts and ceremonies. If a group finds that wildlife is becoming scarce in a particular area they may ban all hunting for a set period.

Similar restrictions apply to fishing and collecting shells. Some reefs are protected and fishing or collecting shells is only allowed at certain times. Protected reefs may be marked in different ways, sometimes by stones, or by coconuts and leaves tied to sticks. In Manus owners of fishing and cowrie shell gathering grounds place iron posts or mangrove sticks to indicate these areas should not be fished until the numbers have increased. In Manus there are also clam gardens where the shells are collected and arranged in rows protected by stone walls until the clams mature. There may also be controls on the methods of fishing. On the island of Bauan, also in Manus province, the use of the lo a long rope of intertwined coconut fronds used in fishing with nets has been banned because it was catching too many small fish, the lo being actually burnt to ensure they were not used again. On the same island there are also restrictions on the use of bamboo traps and on the collection of clam shells.

In addition to the controls that village societies may consciously place bans on hunting and fishing to protect important resources, there are a great many associated traditional beliefs and practices that have a magic or religious basis. These have often proved extremely effective in protecting different species and types of habitat.

In many Papua New Guinean societies there are prohibitions or tambu against entering certain areas or hunting or felling trees in them. These may be the sites of old settlements, battles or cemeteries.

Sometimes they may be physical features such as mountain tops, caves, ponds which never run dry, thick forests or areas of large stones. These are the places of the spirits, ples masalai. Some may be places which still have ceremonial functions, at times connected with the preparation of medicines or magic, others are places for initiation ceremonies.

Knowledge and fear of these places is general throughout the society but there may be signs to warn people to keep out. Often these take the form of leaves or fibres tied to the post. Each linguistic group has its own names for the signs of which these may be different types to show variations of tambu. Some forbid entry, others hunting or gathering; some are the sign of a temporary ban following a death in the land-owning group.

Penalties for entering a protected area are severe; although generally inflicted by the spirits rather than the society. Offenders may suffer serious illnesses or death. In parts of the Sepik it is believed that their houses will be struck by lightening and whole villages suffer heavy downpours of rain.

Some areas are protected permanently. In others the restriction may often be for a set period as may happen after a death in the group. In the Collingwood Bay area the word damana is used to describe a one year period and sankon-saravit for a shorter period. In Manus the period may be for as long as a thousand days. In some cases only certain people are allowed to hunt or fish in the area; in the Esa'ala area of Milne Bay province these are known as toiya and only they are allowed to use the forbidden gwala areas. Other areas are only forbidden to certain groups, for example women from initiation areas.

A great many species of wildlife are not hunted or killed because of traditional beliefs. Sometimes this is because they are totems of the group or moiety. Examples are the goura pigeon among the Arapesh, hornbills in Northern Province and eagles, hawks and black crows in New Ireland. In the Mount Wilhelm area, the Kulkare tribe regard the wild dog as a sacred animal and ancestor of the tribe; in addition each family with the group also has its own animal or bird. In many other areas wild dogs are regarded as guardians of a group and descended from its ancestors. In some groups pythons also have a similar status. Many other birds and animals are regarded as ghosts or spirits. Owls are nearly always protected for this reason, as are often birds around houses and those that eat insects in gardens. In parts of Enga, unknown or rare species of birds are not killed because they are thought of as wandering or distant spirits. The cuscus is also protected in some areas as a spirit of the dead.

There are also strong prohibitions on eating certain wildlife, in addition to those regarded as totems or spirits. Eating animals may bring misfortune, illness or deformity. Flying foxes, snakes, frogs and different species of marsupials are not eaten in many societies. In the Kainantu area bats and swallows are not eaten because it is believed they will cause parents to have ugly children with minute noses. Pregnant mothers in the Trobriand Islands do not eat sharks for fear they will have babies with flat shark-like noses. Boys of the Zia tribe

in Morobe do not eat bandicoots because they believe it will make them smell similar to the animal and cause them to be unpopular with girls. Often the restrictions only apply to certain groups in society, usually children or women. In parts of Central Province young women do not eat crabs because they fear this causes deformed babies. In parts of New Ireland it is believed that children should not eat bushfowl eggs or they will get grey hairs. In the Collingwood Bay area women and children are not supposed to eat cassowaries as this causes sores on the children. The Masing people believe that if women eat wild pig it will give them lice (Rappaport 1967). There are an infinite number of taboos on food, especially for pregnant women, and while they do not give wildlife complete protection, they may help to reduce hunting.

There are also temporary bans on hunting and eating wildlife at particular times of the year. These may coincide with certain agricultural activities. For example, in parts of the highlands cassowaries may not be hunted during the taro planting season and in some coastal areas turtles are not hunted during the yam harvest.

Many of the traditional practices and beliefs have been effective in protecting wildlife and conserving natural resources in the past. In many cases they are still in force today, although their effectiveness may vary depending on the strength of a group's social controls and beliefs. An example of action at village level was given me from Keia village in Milne Bay province: the people were concerned about the growing scarcity of wildlife in their area so they prohibited the use of shot guns in the area. They also imposed temporary bans on other forms of hunting in certain areas, sometimes marked by fences or felled trees, in other cases indicating the way was forbidden with signs such as grass knots. Rumours of spirit activity were also started to keep hunters out of certain areas. For many villagers, even those who have become Christians, the spirits are still the best guardians of the forest and its wildlife.

Traditional beliefs and techniques have helped to protect the environment in the past and are often still operative. However, present day pressures associated with population increase and mobility, the growth of the cash economy and new hunting techniques, have resulted in many types of wildlife becoming scarce and in danger of extinction. Many areas of forest are also being destroyed by shifting cultivation, logging operations and commercial agricultural projects. Traditional controls are no longer sufficient to deal with these threats. New legislation and methods of environmental management have proved necessary. Papua New Guinea's environmental legislation is described in the next section. In discussing its implementation and effectiveness, it still remains important to remember the significance of customary tenure and traditional beliefs and practices which in some cases have been integrated into recent laws and procedures.

4.4 PROTECTED AREA LEGISLATION

At present there are three statutes which may be used for the establishment of protected areas in Papua New Guinea. These are the National Parks, Conservation Areas and Fauna (Protection and Control) Acts.

Each contains measures for establishing different types of protected area and each is administered by separate sections of the public service.

4.4.1 National Parks Act, 1982

This Act replaced the amended 1971 Act which in turn had superceded the original National Parks and Gardens Act of 1966. The objectives of the legislation are clearly stated:

> "to provide for the preservation of the environment and of the national cultural inheritance by-
>
> (1) the conservation of sites and areas having particular biological, topographical, geological, historical, scientific or social importance."

The constitutional basis for the legislation is also provided by reference to the fourth National Goal and section 25 of the Constitution.

The Act clearly designates the Director of National Parks as being the individual responsible for its administration and the management of parks, as well as defining his functions and duties. This differs from the previous act where the powers were designated to a National Parks Board.

The Act contains provisions for the reservation of government land and for leasing and accepting gifts of land. It does not, however, provide any guidelines for the procedures for identification and purchase of protected areas.

The power to make relevant regulations is contained in the Act and some of them are listed. They include powers to control hunting, fishing, sports, vehicles and domestic animals. There are law enforcement provisions: staff are authorised to remove people who have broken the rules and there is authority to impose fines.

The National Parks Act is a comprehensive one in that it covers different areas and types of protected area with one piece of legislation. This is in contrast with the piecemeal approach which requires separate and specific legislation for each park. In Papua New Guinea there are a number of different categories of park (e.g. provincial parks, nature reserves, historical sites), but these are never listed or explained in the Act. This absence of definitions in the legislation itself provides considerable flexibility in the establishment of parks but it does not provide much guidance in their management and it has also resulted in a confusing multiplicity of labels. There is in fact a need for the role of scientific planning and management to be recognised and the provision of a management plan for each park should be a statutory requirement.

Another limitation of the Act is that it tends to operate in isolation. There are no provisions for either public education or participation;

there is no requirement for any advisory body although in practice the National Parks Board still acts in this capacity. In addition it does not provide any mechanism for co-ordinating with other natural resource management or land use planning agencies. There are no references to other types of protected area or to other legislation which exists to protect wildlife and the environment.

4.4.2 Conservation Areas Act, 1978

This Act has similar objectives to the National Parks Act; the initial wording is actually the same in both cases. However, the Conservation Areas Act is rather longer and to some extent remedies the deficiencies of the other legislation. For example it includes provisions for a National Conservation Council to advise on the selection and management of conservation areas and also "to encourage public interest in and knowledge of conservation areas and conservation generally".

The Act outlines procedures for the recommendation, declaration and keeping a register of conservation areas. It also states that a management committee should be formed for each area. This committee should contain representatives of the land-owners and of the relevant provincial and local government bodies. It would be responsible for the preparation of a management plan, making recommendations on rules and for the appointment of rangers.

Conservation areas established under this legislation do not have to be on public land, but can be developed on land which is privately owned or held under systems of customary tenure. The main environmental protective safeguards are provided by the management plan and by the stipulation that any development or changes in land use must be in accordance with the plan or with written approval from the Minister. To gain this approval an application must be made and details of any adverse environmental impact specified. Whether these safeguards are adequate to secure the long-term protection of the conservation areas is doubtful, especially if resource development proposals lead to political pressures or the prospect for the land-owners of short-term monetary rewards. At present the effectiveness and character of these conservation areas is still only a matter for conjecture; due to financial and staffing constraints the Act has not yet been implemented.

4.4.3 The Fauna (Protection and Control) Act, 1966

This Act is mainly concerned with the protection of certain species of wildlife considered to be endangered; subsidiary legislation lists the protected fauna which can only be hunted by indigenous Papua New Guineans using traditional hunting methods for customary non-commercial purposes. The Act also contains provisions for the establishment of three types of reserve for conservation purposes; these are classified as sanctuaries, protected areas and wildlife management areas.

In sanctuaries all wildlife is protected except for certain specified animals which may still be hunted. In protected areas the reverse procedure is followed; certain specified fauna is protected and hunting of other types of wildlife is allowed.

The wildlife management areas represent an attempt to involve customary land-owners in the control of wildlife resource exploitation. The Act provides for the declaration of these areas and the establishment of wildlife management committees to administer them. The committees advise on the making of rules for "the protection, propagation, encouragement, management, control, harvesting and destruction of fauna" in their areas. Certain species are protected altogether whereas the hunting of others is controlled by a system of licences and royalties. Each area has its own set of regulations which vary according to their needs and particular circumstances.

Sanctuaries, protected and wildlife management areas can all be established on customary owned land. Their great advantage would seem to be that the people become involved in the conservation of their own wildlife, it is not something which is being forced on them from outside. Their effectiveness would seem to depend on how comprehensive the regulations for each area are and how well they are enforced.

4.4.4 Other Environmental Legislation

As stated in the previous section, the Fauna Protection and Control Act contains provisions for the protection of certain species which can only be killed by traditional methods and for non-monetary purposes. This excludes the use of the shot gun and also other modern hunting aids such as the nylon net. Species at present protected under this legislation are as follows:

> all species of Birds of Paradise, Goura Pigeon, Salvadori's Teal, New Guinea Eagle, Osprey, three types of Egret, Boelen's Python, Brown and Rainbow Trout less than 8 inches long. Bugong, Long-snouted Echidna, Leather-back Turtle and seven species of Birdwing butterfly.

Crocodiles are protected under separate legislation: the Crocodile Trade Protection Act, 1974. This contains restrictions on the size of crocodiles that can be killed. Those with a belly width of over twenty inches should not be hunted and there should be no trading in skins over this size. This rule protects the larger animals of breeding size. Young crocodiles are protected by a regulation limiting the minimum belly width to seven inches. The trade in skins is controlled by a system of licences and there are provisions for an export levy to be paid to the government. The government has also played an active role in crocodile skin production by helping village people set up crocodile farms.

Customs regulations prohibit the export of any flora and fauna without permits issued by the relevant government departments (the Offices of Forests and Environment and Conservation). Papua New Guinea is a party to the Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES). This gives added protection to species such as turtles and dugong which are listed in Appendix 1. It is not yet a party to the World Heritage Convention, although two areas, Long Island and the volcanic caldera on Karkar Island have been identified as

natural sites of world heritage quality. Papua New Guinea has participated in the Man and the Biosphere programme; although no reserves have been established, there have been studies of the rain forest ecosystems in the Gogol Valley in Madang province.

A full list of Papua New Guinea's legislation which has some environmental significance is provided at the end of this section. Some of the legislation is only of limited relevance to conservation and the establishment of protected areas. Nevertheless some of the acts and associated regulations and procedure do have particular significance. For example under the Forestry Act, environmental safeguards are provided for in the agreements between the government and the companies. Logging is not allowed within 20 metres of any permanent watercourse and this is extended to 50 metres in the case of major rivers. This assists in the maintenance of water quality and prevents erosion; it also helps to create biological corridors for the protection and movement of wildlife. In order to maintain slope stability and prevent erosion, logging is not allowed on slopes over a certain steepness, usually 25° or 30°. The conditions of the agreements also require that safe-guards be taken against erosion along roads, blockage of streams and pollution from saw-mills. The interests of the customary landowners are protected in different ways. They retain rights of access, gardening and hunting. They are still able to gather wood for fuel, fences, houses and canoes. Fruit trees and other economically important plants are excluded from the timber agreement. Logging is not allowed near villages; cemetaries and other sacred areas are also protected.

Another important statute is the Environmental Planning Act which requires the proponent of a particular development project to assess and report on the environmental impact and implications of the project.

Some environmental legislation, as in the case of the Conservation Areas Act, is not fully implemented; the Environmental Contaminants Act, designed to prevent, abate and control pollution, comes into this category.

There is no comprehensive land use planning organisation or procedure in Papua New Guinea. The Town Planning Act provides for a zoning system for urban land use. The Land Act gives some control over use of government land through its leases which are granted for the following specific purposes: agricultural, pastoral, business and residential, mission, town subdivision and special purposes. The leases are subject to development conditions and any use other than that specified may lead to the forfeiture of the lease. Section 27 of the Act also gives the Minister for Lands power to reserve from leasing land required for a special purpose. This allows government land to be reserved for national parks as for other types of natural resource conservation and development.

4.4.5 List of Environmental Statutes

Papua New Guinea's environmental legislation is listed below with the relevant dates. Acts passed before 1976 are incorporated in the Revised Laws of Papua New Guinea and the Chapter Number of each of these is given.

Conservation Areas Act, 1978	
Continental Shelf (Living Resources) Act, 1972	
Crocodile (Trade Protection) Act, 1974	
Cultural Development Act, 1982	
Dumping of Wastes at Sea Act, 1979	
Environmental Contaminants Act, 1978	
Environmental Planning Act, 1978	
Fauna (Protection and Control) Act, 1966	Ch. No. 154
Fisheries Act, 1974	Ch. No. 214
Forestry Act, (Amalgamated), 1973	Ch. No. 216
Forestry (Private Dealings) Act, 1971	Ch. No. 217
Industrial Safety, Health and Welfare Act, 1961	Ch. No. 175
International Trade (Flora and Fauna) Act, 1979	
Land Act, 1962	Ch. No. 185
Mining Act (Amalgamated), 1978	
Mining (Bougainville Copper Agreement) Act, 1967	Ch. No. 196
Mining (Bougainville Copper Agreement) Amendment, 1974	
Mining (Ok Tedi Agreement) Act, 1976	
Mining (Ok Tedi Supplemental Agreement Act 1980, 1981, 1983	
National Cultural Property (Preservation) Act, 1965	Ch. No. 156
National Parks Act, 1982	
National Water Supply and Sewerage Act, 1982	
Petroleum Act, 1977	
Poisons and Dangerous Substances Act, 1967	Ch. No. 231
Prevention of Pollution of the Sea Act, 1979	
Public Health Act (Amalgamated), 1975	Ch. No. 226
Tuna Resources Management (National Seas), 1977	
Town Planning Act, 1959	Ch. No. 204
Water Resources Act, 1982	
Whaling Act, 1974	Ch. No. 225

4.5 NATIONAL PARKS

Seven areas have been officially declared and gazetted as national parks. Two have been designated as full national parks: McAdam and Varirata. The McAdam Park has an area of 2,080 hectares and is located in Morobe province on the steep northern side of the Bulolo River; it was initially reserved to protect the last natural stands of hoop and klinki pine in the area. The Varirata Park has an area of 1,063 hectares and is located on the Sogeri Plateau in Central Province. Its proximity to the national capital, Port Moresby, makes it a popular place for outdoor recreation and visitors.

The other five parks are smaller and have been declared under different designations. Two small islands off the East New Britain coast, Nanuk and Talele, have been designated as a provincial park and nature reserve, respectively. Cape Wom in the East Sepik province was the site of the Japanese surrender in the country at the end of the Second World War and has been declared an international memorial park. Another historical reserve associated with the war is at Namenatabu near Port Moresby. The Baiyer River Sanctuary in the Western Highlands is a rather different type of protected area as a large number of birds of paradise and other endangered wildlife species are kept and bred in captivity there.

In addition to the parks which have already been gazetted, other areas have been proposed; in some cases they have been investigated and negotiations started with the land-owners. In four areas the negotiations have been completed but formal gazettal has not yet occurred. These are the Mount Wilhelm national park, Mount Gahavisuka provincial park, the Horseshoe Reef marine park and the Kokoda Trail national walking track.

Delays in developing parks may be due to the land tenure system and to the procedures necessary for the acquisition of land. Varirata and McAdam Parks were both developed on land which already belonged to the government, but most of the new areas proposed for parks are on land at present held under customary systems of tenure. This means the land must be purchased or leased by the government, a procedure involving investigation, negotiation with the land-owners and their consensus agreement, survey and valuation of the land, the drawing up of the transfer documents and the arrangements for the final payment. This is common practice by the government for both purchasing and leasing of land; it is one which requires the co-operation of several government departments and is one which is often subject to delay, one major reason being the need for survey. In the case of national park development, however, some of the delays seem to have been excessive. Mount Wilhelm, for example, was first proposed in 1969 and although now nearly all the arrangements have been completed, it has still to be officially declared.

There are also cases, such as Lake Dakataua in West New Britain, where initial investigations and negotiations were not followed up and plans for a park have had to be abandoned. Another example of administrative delays is the proposed park at Mount Brown and Mount Miria in Central Province. This park was first suggested by the land-owners in 1975, but in spite of several subsequent requests has yet to be visited and investigated by National Parks Service officers, partly as a result of its inaccessibility. Delays over the Horseshoe Reef Marine Park seem to have been mainly due to difficulties in attempting to apply procedures for establishing terrestial reserves to marine ones and to administrative delays in preparing notices for gazettal.

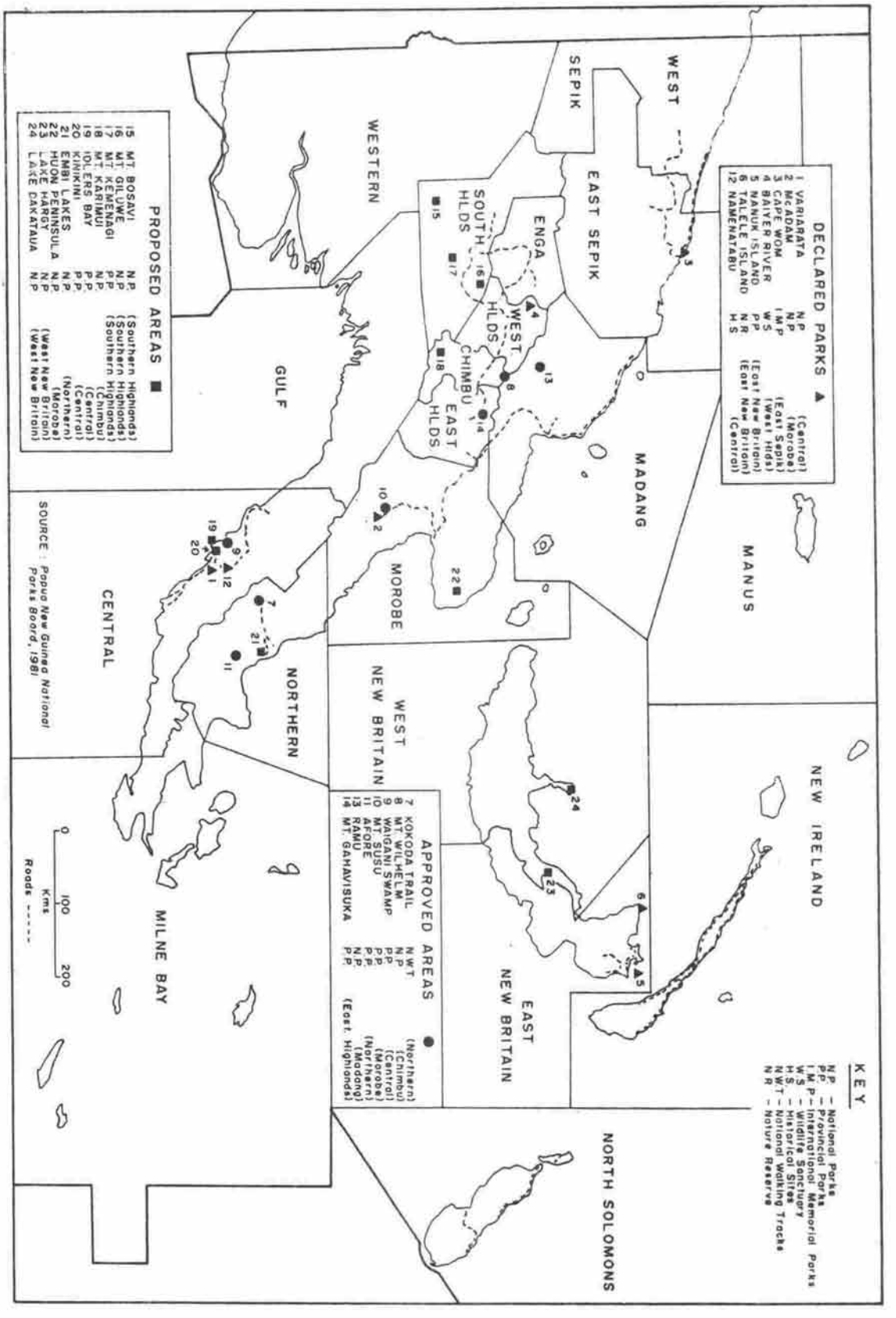
The National Parks Service has suffered from managerial problems and also financial restraints imposed by the 1982 national budget which reduced expenditure on environmental projects generally and led to the phasing out of the new two National Parks Service sections concerned with investigations and education. The establishment has been reduced to 27 permanent officers; the total budget for 1983 was K338,800 ($393,008). The status of the National Parks Service has already changed from that of a semi-independent statutory body to being a branch of the Office of the Environment and Conservation. Closer supervision by its Director and association with the Wildlife branch should lead to a better use of resources at all levels.

4.6 WILDLIFE MANAGEMENT AREAS

In wildlife management areas the customary land-owners become involved in the protection of the wildlife resources on their land. The initiative

FIGURE 4.1

NATIONAL PARKS CONSERVATION AREAS
IN PAPUA NEW GUINEA



to establish an area usually comes from the land-owners when they become disturbed about some important species becoming scarce and about the over-exploitation of wildlife. In some cases they are concerned because traditional rules are being ignored, for example animals and birds may be hunted during the breeding season. They may also be worried about the effects of new hunting and fishing methods, such as those using shot-guns, and by an increase in commercial hunting. Hunting by outsiders may also be another grievance; to the land-owner these outsiders may range from members of neighbouring clans to government officers and foreign tourists. Rights to hunt are usually closely defined in the customary system, but are not always easy to control, especially in sparsely populated areas or those with roads running through the clan territory. A group may well see the establishment of a wildlife management area as giving them greater security of tenure and protecting their rights, something which is important in a system where there may be no registered titles or clearly marked boundaries.

Land-owners discuss these problems with government field officers in the area who in turn should report to the Wildlife Division in the Office of Environment and Conservation. If possible a wildlife officer will then visit the area and hold further consultations with the local people.

If the land-owners remain interested, they can then form a management committee to decide on the rules and boundaries of the area. When these have been approved by the local people and the government, the area will then be officially declared by the Minister of the Environment. The declaration, which is subsequently gazetted, will include information on the title of the area, the legal boundaries and the names of the management committee members. Later the rules will be drawn up and also published in the National Gazette. The procedures involved are generally flexible enough for each area to be treated as a special case and for the rules to deal with particular local problems.

Eleven wildlife management areas have now been established and gazetted. In addition there are sanctuaries at Balek and Crown Island in Madang province and a protected area at Baniara in Milne Bay.

The first and largest wildlife management area to be developed was Tonda, approximately 5,900 square kilometres in size and located in the sparsely populated south-west of the country. It is a region which is rich in wildlife; there are large numbers of wallabies and deer, a great variety of birds and abundant fish. The management committee have made rules that control hunting by outsiders who must now buy a licence and pay royalties to hunt deer, shoot duck or catch fish.

There are two wildlife management areas in West New Britain province at Pokili and Garu. The main aim of these areas is to protect the megapodes who lay their eggs in ground warmed by volcanic action. The eggs have traditionally been a source of income and food for the local land-owners, who have recently become perturbed about over-collection of eggs, hunting of the birds and destruction of their habitat by tree felling. The rules of the areas now forbid shotguns, dogs and logging; the number of eggs gathered is controlled and collecting by outsiders is not allowed.

There are also two management areas on islands in the Milne Bay province. One is around Lake Lavu on Ferguson Island. It covers an area of approximately 50 square kilometres, about a third of which is water. It is in a region of rugged relief and generally unsuitable for agriculture. There is considerable wildlife much of it concentrated in and around the lake; it includes crocodiles, fish, eels, waterfowl, pigs and possums. The local people were concerned that some species were becoming scarce; there were also complaints that, in the past, European hunters had killed crocodiles and then, after removing the valuable skins, had thrown the meat in the lake causing putrification and pollution of the water. These and other outsiders had also failed to pay royalties to the landowners for crocodiles and other animals killed. A committee was formed with representatives from each of the seven villages in the region. The rules they made stated that only the traditional hunting methods should be used; they also forbade the collecting of any crocodile eggs.

The other management area in Milne Bay province is located at Sawataetae on the northern side of Normanby Island. It is 700 hectares large and is a coastal area of plantation, forest and mangroves. It has an especially interesting range of birds including egrets, ospreys, hornbills, parrots and goura pigeon. Many of these species were becoming scarce partly as a result of indiscriminate shooting by outsiders. The rules of the area restrict the taking of firearms into the area to the landowners. They also forbid the starting of fires except those to clear gardens and make the land-owners responsible for the control of the burning.

Another management area where the lighting of all fires is forbidden is at Zo-oimaga, an area of low hilly land to the north-west of the town of Kwikila in Central province. It has a vegetation of lowland rain forest, secondary regrowth and grassland. The fauna of the area includes agile and forest wallabies, cuscus, megapodes and birds of paradise. Both the Raggiana and King Birds of Paradise are found and fifteen of their display trees have been identified. It was concern about the intensive hunting of the birds of paradise that led the local people to establish a management area. In addition to the prohibition on fires, the rules state that no shotguns are allowed in the area or within 1½ kilometres of it, and that nobody is allowed to hunt wildlife except the land-owners who are allowed to kill one or two animals a month for food during April, August and December.

The Mojirau wildlife management area was established after people from five villages in the East Sepik province complained about wildlife becoming scarce because too many shotguns and dogs were being used, and that outsiders were hunting on their land. The latter problem had become worse since a road had been built from Wewak to Angoram which enabled hunters to use vehicles. The management area is 5,079 hectares and is in a flat undulating lowland of rain forest and grassland. The wildlife includes birds of paradise, goura pigeons, hornbills, cockatoos, cassowaries, magapodes, wild pigs, cuscus and tree kangaroos. The rules of the area state that only customary land-owners are allowed to hunt and have shotguns; also that no dogs or camping should be allowed. There are also proposals for a two-mile buffer zone around the area where hunting should only be allowed on special occasions and for ceremonies.

The wildlife management area at Ranba on Long Island, off the coast of Madang province, is a region of considerable scientific interest. It is the site of a large volcanic explosion which left a crater lake. It has a variety of wildlife including green, hawksbill and leather-back turtles. The rules restrict the killing and sale of turtles which may only be caught by those with customary rights to do so or those authorised by the traditional land-owners. Turtle sales are controlled and forbidden during the breeding months of May, June and July. Other fauna may only be hunted by the land-owners, and the use of shotguns is forbidden. Unfortunately these rules do not always seem to have been followed and there have often been cases of turtles being disturbed and killed during the breeding season. There has been criticism of the management committee for not enforcing the rules and failing to prosecute offenders. Another problem is that Long Island is a place where the people feel they have had few of the advantages of development and recently there has been pressure to allow logging operations which would bring some employment and income from timber rights purchase fees and royalties. These pressures have been resisted to date but they do illustrate the problems of maintaining protected areas where the local people have few sources of income and employment.

The Bagiai wildlife management area on Karkar Island is also in Madang province. It covers the centre of the island including the high volcanic peak and crater of Mount Uluman. The area also includes coastal waters and reefs plus two small islands and is approximately 13,760 hectares in size. The initiative for the establishment of this management area came from the islanders themselves and their local government council. They were concerned at the increase in the number of shotguns in the area, the decline in wildlife, overfishing and soil erosion resulting from deforestation. The committee drew up a list of rules which prohibited the use of firearms except for killing wild pigs on one's own land and eagles when they were attacking poultry. Otherwise traditional methods of hunting had to be used and these only by people with customary rights to the land. In the case of fishing, commercially manufactured nets were not to be allowed nor were kerosene or hurricane lanps for the purpose of attracting fish at night. Additions to the rules were also later discussed. These included size restrictions on the mesh of nets and the use of derris root poison for fishing. It was decided to leave these issues to the discretion of the groups owning the reefs. There was also a suggestion that entrance fees should be charged to visitors who wished to visit the volcano, traditionally a sacred place; this has not yet been implemented. In an effort to increase participation and educate people in the aims of the area, conservation meetings were held in the villages of the area. As in other wildlife management areas there was some dissatisfaction that local courts had failed to prosecute those breaking the rules; officials and magistrates were often uncertain of the rules and the relevant sections of the Fauna (Protection and Control) Act.

At present there is only one wildlife management area in the Highlands region; this is at Siwi-Utame in the Southern Highlands. It is an area with a wide range of birds and animals which are protected by rules forbidding most types of hunting and the felling of trees. In contrast to most other areas, offenders have been frequently fined by the management committee or village courts.

Maza is of interest as it is the only completely marine wildlife management area. It covers an area of approximately 184,230 hectares off the coast of Western Province. A large part of it is formed by coral reefs which lie to the west of the mouth of the Fly River. The establishment of the area followed negotiations between the people of the area and the government concerning the hunting of dugongs. In 1976 the dugong had been included on the list of species protected under the Fauna (Protection and Control) Act; this meant that it could only be hunted by traditional methods and for traditional purposes. Soon afterwards a local fisherman was fined and prosecuted for selling a dugong in the market at Daru, the provincial headquarters. The local people then requested exemption from the Act and there was considerable political pressure at provincial level to allow the continued sale of dugong meat in Daru. The government eventually agreed on condition that the local people made some attempt to manage and control dugong hunting. This was accepted and a management area was declared in 1979. The rules were as follows:

(a) Dugongs can be caught with traditional hand-harpoon methods from canoes;

(b) Nets cannot be used for catching dugong except during May, June and July and in the immediate area of Daru Island. It was also stated that the mesh size should not exceed ten inches;

(c) A person should use his best endeavour not to take catch or kill a mother or baby dugong within the area;

(d) Dugongs taken in the area may be only sold in Daru Market and should be inspected beforehand by a Wildlife Officer, a member of the Management Committee or somebody authorised by them.

There was concern that these rules were not strong enough, especially as net fishing was unpopular with the people themselves. In 1981 new rules were gazetted. These forbade the use of nets, except for catching barramundi perch, and the mesh size was reduced to 15.2 centimetres, or 5.1 centimetres in the case of the reefs around Bobo and Daru islands. The new rules also forbade the catching and killing of mother and baby dugong in the area and stated only one dugong could be brought for sale at one time and that it must be over 2.4 metres long. A royalty of K5.00 must be paid on each dugong sold. In addition the rules included turtles which could only be sold in Daru market and for which a royalty of K1.00 had to be paid.

The policing of a marine protected area posed many difficulties and in 1981 the Chairman of the Management Committee expressed concern to the Wildlife Division over the activities of commercial fishermen from outside the area; they were using crowbars to break open coral reefs in the area to obtain crayfish. There were also complaints about Torres Straits Islanders using rifles to hunt dugongs. By this time research was also indicating a decline in dugong numbers in the area, especially those of breeding age. Suggestions were also made that the people might be encouraged to take up other activities rather than dugong and turtle fishing. Deer hunting, deep sea fishing, the tourist industry and poultry farming were all suggested as possible alternatives. At present the wildlife management area seems to have slowed down the decline in the numbers of dugongs and turtles, but it is still not

providing fully effective menagement or protection of marine resources.

The great advantage of wildlife management areas in general is that local people are involved in their initiation and management; they are not imposed by the government from the outside. There are no problems of transfer of land, all rights are retained by the customary owners. Traditional methods of management and hunting are encouraged, and the wildlife resources of a particular area can be protected. One limitation would seem to be that although they may be effective in restricting the activities of outsiders, they do not always provide rigid enough controls over hunting by members of the group themselves. The rules have often proved difficult to enforce and there is a need for government support and sanction combined with programmes of environmental education. In addition, most of the areas need some form of management plan which will control land use and prevent destruction of the habitat as well as the wildlife. The plan should help secure rural development that will provide employment opportunities and services for those living in and around the management areas. In all cases the aim should be to emphasise sustainable utilisation of renewable resources.

4.7 REFERENCES

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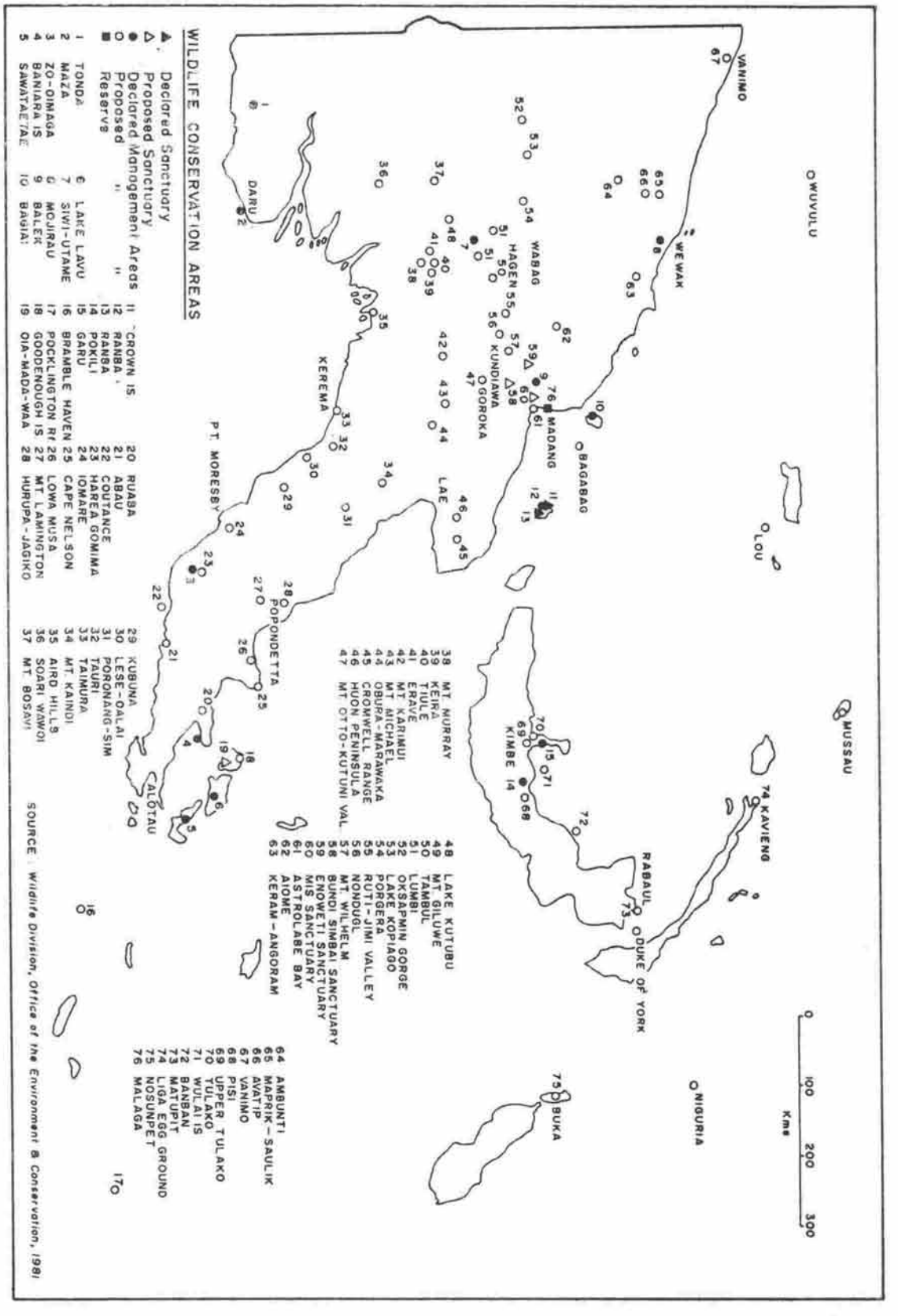
TABLE 4.1

WILDLIFE MANAGEMENT AREAS IN PAPUA NEW GUINEA

Name	Province	Area in hectares	Date established
Tonda	Western	590,000	1975
Maza	Western	184,230	1979
Zo-Oimaga	Central	1,488	1981
Lake Lavu	Milne Bay	5,000	1981
Sawataetae	Milne Bay	700	1977
Pokili	W.New Britain	N.A.	N.A.
Garu	W.New Britain	8,700	N.A.
Ranba	Madang	41,922	1977
Bagiai	Madang	13,760	1977
Mojirau	E. Sepik	5,074	1978
Siwi-Utame	S. Highlands	12,540	1977

FIGURE 4.2

WILDLIFE CONSERVATION AREAS IN PAPUA NEW GUINEA



CHAPTER 5

CASE STUDIES OF PROTECTED AREAS IN PAPUA NEW GUINEA

5.1 NATIONAL PARKS

5.1.1 McAdam National Park: competing land use and tenure

This national park is located in the Morobe province between the towns of Wau and Bulolo. It occupies an area of approximately 2,080 hectares on the Western side of the Bulolo river valley. It is an area of steep and often precipitous relief rising from 670 to about 1,980 metres high. It is of particular interest because of its vegetation of primary forest which still contains the hoop and klinki pine which before commercial logging had covered much of the region. Because of the rugged nature of the terrain and difficulty of access the park area had not been subject to exploitation, but by 1950 it was being threatened by timber interests and the gardening activities of indigenous labourers working on the gold mining leases along Bulolo river. A proposal was made to the Minister for External Territories in Australia that the area should become a flora and fauna reserve. This was supported by J.N. McAdam, the Director of Forests, who pointed out to the Government Secretary that under Section 68 of the Land Ordinance it was "possible for the Administrator to reserve for sale or lease, either temporarily or permanently, any Administration Land for public purposes".

The land had been originally acquired by the colonial government because it was considered waste and vacant. Land titles in New Guinea had been largely destroyed at the onset of the Japanese occupation of Rabaul during the Second World War, but provisional titles were secured in 1954 under the Land Titles Restoration Ordinance. In 1959 the Secretary for Law stated that "inquiries at the Office of the Commissioner of Titles indicate that no native rights are involved and that Final Orders in favour of the Administration are delayed only pending settlement of various claims in respect of mining tenements over the same land".

Discussion on the establishment of the park went on until 1962 when it was finally gazetted, although for some time no logging had been allowed in the area. The park was initially administered by the Department of Forests and named after McAdam who had died earlier in 1959. In 1970 control over the park was transferred to the newly formed National Parks Board.

No logging or hunting was allowed in the area of the park, but problems were still caused by the activities of miners and squatters who made temporary gardens. In 1971 the Broken Hill mining company applied for a prospecting licence in an area which included the park, but this application was later withdrawn after opposition from the National Parks Board who were attempting to stop all future mining in the area by establishing a reservation under the Mining Ordinance. Most of the existing gold mining tenements are along the alluvial sands and gravels in the valley bottom where there was some confusion about the park

boundaries; these had initially excluded the mining area but in 1965 were amended so that they ran along the Bulolo River. Generally the existing tenements have now been excluded by placing the park boundary 100 metres from the river, but problems still occur when the miners clear forest to make gardens. In 1977 two miners complained to the Mining Warden in Wau that the Park Ranger had illegally destroyed their food gardens.

There have also been gardens made further in the park by Watut people who had moved in from the west. The Assistant District Commissioner and the Park Ranger visited this group in 1975 and found there were seven families who had made ten houses and planted about four hectares of land with coffee and subsistence crops. They agreed to move out when they had harvested their crops, although subsequent reports by the Ranger indicate that some of them have tended to be slow in leaving.

Although the area of the Park had been originally considered waste and vacant with no customary land-owners, the possibility of some financial payment being made to the traditional owners has caused several disputes among rival groups in recent years. In 1973 the Minister for Lands proposed that some of the government land in the area should revert to native ownership. In the case of the McAdam National Park, he proposed:

> "The Government to retain control for a cash settlement, squatters to be removed, and all people to respect the park and no further incursions to be allowed".

It was the prospect of a cash settlement that stimulated a number of claims to the traditional and historical ownership of the land.

Three main groups claimed customary rights to the area and an entitlement to part of the compensation payments. The Biangai, who now live in the upper part of the valley around Wau, claimed they had once settled in the area and argued that the presence of ginger and pandanus in the forest indicated there had previously been villages there. Another group, the Manki from the Watut valley to the west, also claimed that they had once hunted and made gardens in the area. Later a third group, the Nautis from the upper part of the Watut valley also made a similar claim. Attempts at mediation between the three groups failed and in 1978 the case was heard by a local land court. The court decided in favour of the Biangai and Manki "because of their ancestors" who had "the right of hunting and making gardens in that area". It was stated the land had been divided in half between them and payments should be made accordingly. The court decision also stated that the Nautis agreed with the decision but claimed that the Manki could share their money with them "because both clans have been together and fought with the Biangai in that disputed land". Since then the squatters have moved outside the park, although they still harvest some coffee from within its boundaries. Some progress is being made with the establishment of footpaths and other facilities in the park, although the rugged relief and difficulties of access which once helped to protect the flora and fauna of the area are now proving to be obstacles to development.

5.1.2 Lake Dakataua: a failure to communicate

Lake Dakataua is located in the northern part of the Willaumez Peninsula in West New Britain. It is a caldera lake in an area of volcanic activity; natural features include hot springs, mud flows and dormant volcanoes. The main natural vegetation is lowland rain forest and there is a variety of wildlife which includes crocodiles in the lake.

The area around the lake is sparsely populated. The main village is called Bulu Miri and it has about 150 inhabitants. The people live mainly by subsistence agriculture, hunting and fishing; shell collecting is also a source of income.

In nearby areas of West New Britain there had been considerable economic development associated with the timber industry and oil palm growing. It was feared that the unique natural environment of the area around the lake might be destroyed unless measures were taken to protect it.

Original suggestions for a park included both Lake Dakataua and Mount Bola to the south, but the latter was excluded because timber rights had already been purchased for part of the area. Investigations began in 1974 when a meeting was held between National Parks officers and the customary land-owners at Bulu Muri village. Leaders of three clans and nine sub-clans were present and they agreed to lease land to the government for a park.

In 1975 a submission was made to the Cabinet by Mr Stephen Tago, who was then Minister for the Environment and Conservation. It proposed a park of approximately 10,350 hectares which would include the lake and the land around it. Other government departments were consulted and raised few objections; there were not thought to be any valuable minerals or other resources in the area.

At this stage, when it seemed likely that the park would be established, a group of local land-owners started to protest against it. They seem to have been led by a local government councillor who had been absent from the meeting when the park was first discussed. It was decided that the Minister himself should visit the area. He held another meeting at the village attended by about a hundred people and left satisfied that all had agreed to the park. There do, however, still seem to have been some doubts among the land-owners. Among the questions they asked were:

(i) Would they or the government get the entrance fees from visitors to the park?

(ii) How long would their land be alienated for?

(iii) Would the National Parks Board build a road to the park from the nearest town, Talasea?

(iv) Would their traditional rights to hunting be allowed?

Only a week after the meeting, a group of eleven men visited the office of the Provincial Commissioner and expressed their concern about their lack of knowledge and understanding in relation to the proposed park development. The National Parks Board were again asked to send an

officer to hold another meeting with the people. The Board were not able to send anybody at that time because of shortages of staff and travel funds, and since then there has been little progress in establishing the park.

The Lake Dakataua case exemplifies some of the difficulties in negotiations with customary land-owners. There is the need for general agreement within the group to the transfer of land. There are problems caused if land-owners are absent during the early investigations and meetings. There are the obstacles caused by dissension within the group and by the political aspirations among its members. There is also the difficulty that land-owners may have in understanding the implications of park development and natural resource conservation. The land-owner generally perceives the establishment of a park as a means by which he can get greater benefit from the resources of the area. In addition to the rent or purchase price, there may be income from tourists or from employment in the park. There may also be the opportunity to obtain roads and other government services. However, if other types of development, such as a timber project, seem to offer greater monetary rewards and services, then it is inevitable that many rural people from poor and disadvantaged areas will prefer this type of development.

The education and extension role of National Parks officers is obviously important in helping to explain the objectives and implications of park development. There is a need for full discussion during investigations and to follow these up when problems arise. Lack of staff and finance have too often been restraints in preventing park investigations and establishment.

5.1.3 The proposed Horseshoe Reef Marine Park: a procedural puzzle

The attempts to establish Papua New Guinea's first marine reserve illustrate some of the problems in attempting to apply the procedures for terrestial protected areas to marine ones.

The Horseshoe Reef is as its name implies elliptical in shape and forms part of the Papua Barrier Reef off the south coast of the country. It is located near the entrance to Bootless Bay to the east of Port Moresby.

The initiative to develop the park came from an Englishman and his Papua New Guinean wife who manage a company known as Tropical Diving Adventures. They use the reef for scuba diving excursions and training and are also anxious to see that its resources should be protected. They first wrote to the Director of the National Parks Board in 1978 suggesting a park should be established; this received a positive response and investigations were started.

Consultations occurred with the relevant government departments concerned, Fisheries and Maritime Transport, who both stated they had no objections. There were also discussions with the people of the two nearby coastal villages of Tubusereia and Barakau, who claimed traditional fishing rights on the reef. In a meeting held on 7th August 1979 the villagers stated that they were in favour of the establishment of a park. They also agreed that spear-fishing and any collection of shells or coral from the reef should be forbidden, but said that they wished to be consulted and possibly involved in any economic ventures associated with the park.

A submission was then made by the National Parks Director to the Department of Lands to have an area of two hectares gazetted as a national park under Section 27 of the Lands Act which states:

> The Minister may, by notice in the Gazette, reserve for a purpose specified in the notice, from lease... land...which in his opinion is or may be required for that purpose.

The following rules were proposed for the park:

1. The taking of corals, live shells, lobsters or any marine invertebrates, by any means, should be forbidden.
2. All forms of spear-fishing should be prohibited.
3. The taking of reef fish should be limited to Tubusereia and Barakau people using traditional methods.

There was a delay of several months before a reply was received from the Department of Lands who indicated there would be a need to accurately define and survey the boundary of the park and also queried whether the local people would require any compensation for loss of rights in the area. It was also stated that the area of the reef was nearly 400 hectares rather than two as originally proposed.

Finally in July 1981 an area of 395.9 hectares of "land" below the high water mark was declared under Section 83 of the Land Act to be not customary land. This declaration appeared in the Government Gazette and many of the people involved, including National Parks officers, assumed that the park had now been declared and started to make plans for its development.

There was some confusion about the exact status of the park and in 1982 the matter was referred to the Office of the Legislative Counsel. He informed the National Parks Service that the further steps required were for the land to be gazetted under Section 27 of the Land Act which reserved the land for a specified purpose and only then could the area be committed to the maintenance, control, care and regulation of the Director of National Parks under Section 4 of the National Parks Act. Needless to say, this last declaration had also to be published in the Government Gazette.

5.2 WILDLIFE MANAGEMENT AREAS

5.2.1 Tonda Wildlife Management Area: an attempt by land-owners to control hunting

This is the largest of the wildlife management areas. It has an area of approximately 5,900 square kilometres and is located in the extreme south-west of the country. It stretches inland for about fifty kilometres from the Torres Strait with the Indonesian frontier forming its western boundary and the Mai Kussa River its eastern one.

The region is low and flat, rarely rising more than twenty metres above sea level. The main rivers are the Bensbach and the Morehead which

meander across the plains in the western half and the tidal estuaries of the Wasi and Mai Kussa which join to form Strachan Island in the east. There are large areas of swamp and during the wet season the lower regions are inundated by floodwaters. These gradually recede in the middle of the year leaving marshy depressions, small lakes and lagoons.

The total annual rainfall averages between 1500 and 2000 millimetres but there is considerable seasonal variation. The wet season is generally from November to March while there is much less rain during the middle of the year. The dryness of the latter season varies; in 1980 there was a severe drought with serious effects on the people and wildlife of the area, whereas in 1983, the year I visited the area, there had been some rain throughout the period. The characteristic vegetation is savanna grassland with a coastal fringe of mangroves and further inland melaleuca forest, mixed woodlands and isolated pandanus palms.

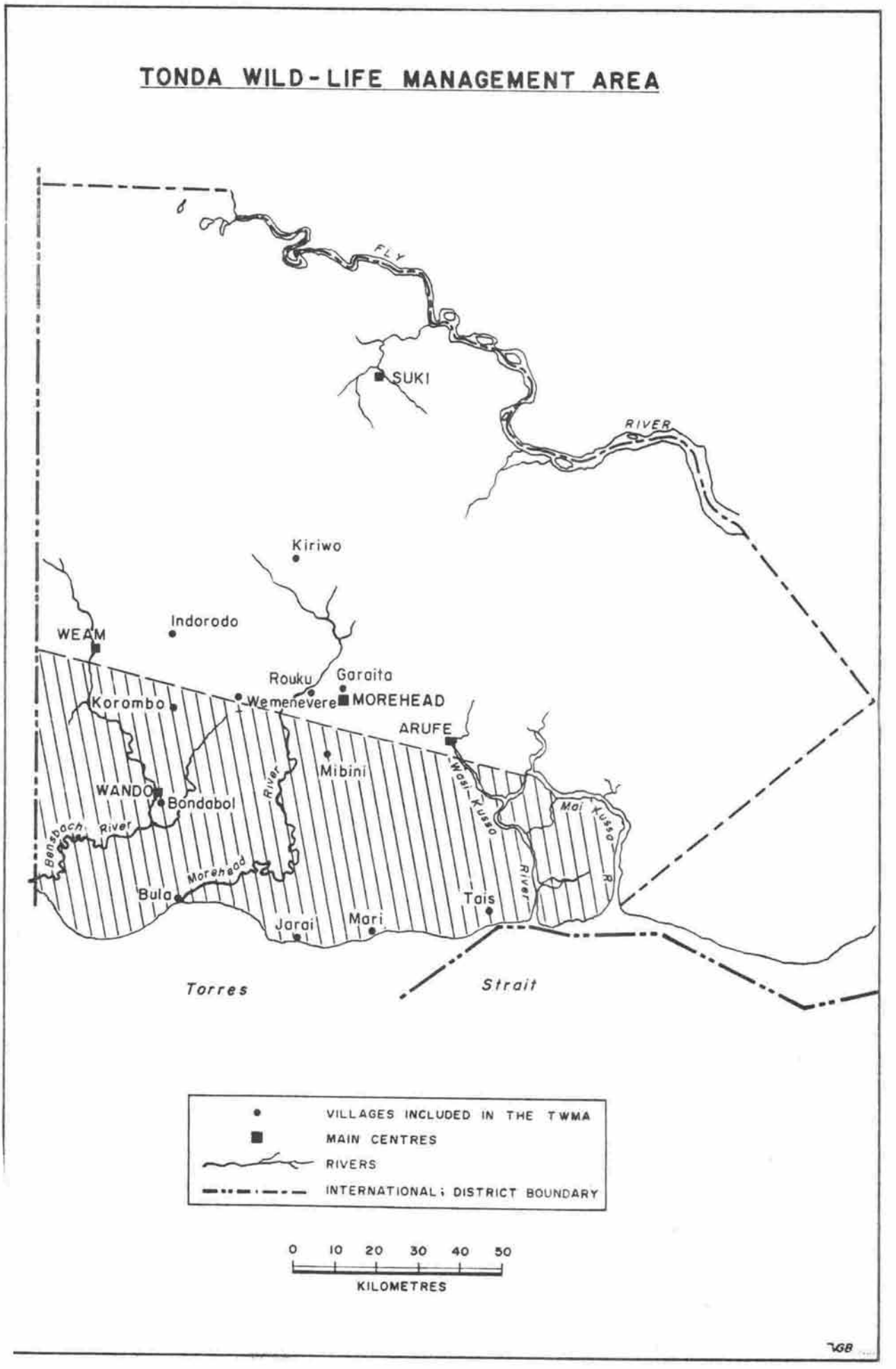
The whole region is rich in wildlife. There are large numbers of rusa deer; these animals were originally introduced into neighbouring areas of West New Guinea by the Dutch sixty years ago. Since then they have multiplied and large numbers have migrated eastwards into Papua New Guinea. Today, there are an estimated 60,000 deer in the wildlife management area with the largest concentration on the floodplains of the Bensbach River and the adjacent Bula Plains. In addition, the agile wallaby is very common throughout the region and there are also wild pigs, cuscus, bandicoots, forest wallabies and echidna. Both freshwater and saltwater crocodiles occur; turtles and large monitor lizards abound along the rivers. The snakes include several species of python and poisonous ground snakes such as the papuan black. Fish are plentiful in the rivers and swamps; the Bensbach is especially rich in barramundi, a large species of perch.

Probably the most spectacular feature of the area is its birdlife. There is a profusion of species. These include large numbers of different types of heron, egrets, cormorants, ibis, large flocks of magpie geese and ducks, and spectacular large birds such as the pelican, cassowary, jabiru, brolga and bustard. Birds of prey are common, especially the white-breasted sea eagle and the whistling kites. If you travel further up the rivers there are large numbers of colourful parrots, lorikeets and kingfishers; on the same journey downriver in the evening their place will have been taken by owls, nightjars and frogmouths. One of the most interesting birds is the megapode, a bush fowl which builds large mounds of earth and leaves in which it lays its eggs to be incubated by heat from the sun and the rotting vegetation.

The whole region is very sparsely populated; statistics for 1980 gave a total population of 1,239, an average density of only 0.21 per square kilometre. It has been suggested the population was once greater and that it might have been reduced by natural disasters such as an epidemic or tidal wave, or alternatively by tribal fighting. The present population is fairly mobile and I saw evidence of villages that had been abandoned and moved to other places. At present there seem to be thirteen villages in or near the management area.

The soils of the region are mainly clay, acidic and poorly drained. The most fertile are the alluvium along the river banks and here small gardens, enclosed by fences to keep out pigs and deer, are cultivated in the dry

FIGURE 5.1


TONDA WILD-LIFE MANAGEMENT AREA
FLY
RIVER
SUKI
Kiriwo
Indorodo
WEAM
Rouku
Garaita
Korombo
Wemenevere
MOREHEAD
ARUFE
Mibini
WANDO
Bondabol
River
Wasi-Kusso
Mai Kusso R
Bensbach River
Morehead
Bula
Tais
River
Jarai
Mari
Torres
Strait
VILLAGES INCLUDED IN THE TWMA
MAIN CENTRES
RIVERS
INTERNATIONAL; DISTRICT BOUNDARY
0 10 20 30 40 50
KILOMETRES
GB

season. There is also some shifting cultivation in the forest areas, operating with a fallow period of 15-30 years. The main crops grown are yams, taro and sweet potatoes, but there are smaller quantities of other vegetables, corn, tabacco and fruit; sago is also collected in some areas. There are no important cash crops and surveys of the land use potential indicate that most of the region is unsuitable for agricultural development.

Hunting plays an important part in the subsistence and cash economies. Wallabies, wild pigs, cassowararies and other animals are hunted by traditional methods using bows and arrows, spears, snares and dogs. Initially the people were unwilling to eat deer as it was not part of the traditional diet but venison is now becoming increasingly popular. Fishing provides another important source of food, as do turtle and megapode eggs. Wildlife also has other uses, for example bird plumes are used for decoration and the skins of monitor lizards in the making of kundu drums.

Crocodile skins provide a source of income. The killing of crocodiles and the trade in their skins is controlled by the government through the Crocodile Trade Protection Act which restrict trading to licensed traders and limits the size of the crocodiles involved to those with a belly width of between seven and twenty inches, thus protecting immature and breeding animals. In the villages there are also four small crocodile farms where young ones are reared until they reach maturity. In somewhat similar fashion I also saw young cassowaries in captivity in one of the villages. At one time cassowaries were actually airlifted from this area to the Southern Highlands where they are in great demand for ceremonial purposes.

There have also been various proposals by private companies and the government to start deer farming and export the meat. One government project had actually been started and large pens were constructed on the plains near the Bensbach River. However, cuts in public expenditure following the 1981 budget caused the abandonment of the scheme.

At present the most important commercial enterprise is based on the Bensbach Wildlife Lodge. This provides accommodation and also organises hunting and fishing for tourists. During recent years the Lodge has been reported to be running at a loss because of the decline in the number of tourists which has mainly resulted from high air fares, the world economic recession and in particular the difficulties (drought, bush-fires, floods, low prices) faced by the Australian farming community who were the main overseas visitors. The lodge is under expatriate management but it provides employment for eleven people from the local area and occasional work for several others.

Concern over hunting by outsiders was the main reason for the establishment of the wildlife management area. This was officially declared in 1975 following discussions between the local people and government wildlife officers. Its main aims were to protect traditional hunting and land rights, as well as to develop and manage the natural resources of the area. A management committee was formed with representatives from each of the villages and a set of by-laws were drawn up. These restricted hunting by outsiders to deer and duck and required a licence for

hunting and fishing. The number of deer and duck that could be killed was limited to five in each case, and royalties had to be paid on these and all fish caught.

The royalties for killing deer are on a sliding scale ranging from 15 kina[1] for the first deer to 60 kina for the fifth. They are one kina for each duck and 30 toea for each kilogramme of fish caught. At one stage the management committee appointed two young men from the area to act as agents to collect the royalties but this does not seem to have been very successful and the task has reverted to the manager of the wildlife lodge.

Half of the royalties collected are paid to individual owners of the land where the hunting or fishing takes place. To some extent this represents an individualisation of land tenure as traditionally hunting rights tended to be collective over the group territory. In an area where land disputes are rare mainly due to the low pressure of population on land, it is interesting that the payment of royalties has in one case led to a dispute which was settled through mediation. Not all the people benefit from these royalty payments. Recently payments have been made to fifteen men from six different villages. This money is often distributed among relatives but not to the whole village or clan. At present therefore these payments only benefit a relatively small part of the population of the management area, although it is possible that the opening up of new areas for hunting and fishing by tourists may allow more villages to benefit.

The other half of the royalties collected and the licence fees are deposited in a bank trust account and intended to be used for the development and welfare of the whole area. At the last meeting of the management committee it was stated that there was K19,514 in this account and there was considerable discussion on how the money might be used. Business development officers have been consulted and it has been suggested that some form of company or business group should be started, but this has yet to be established.

It was suggested to me by a member of the management committee that it was time royalty levels were raised due to the general rise in prices since they were fixed. The current cost of licences and royalties is fairly low relative to comparable expenses in Australia and other countries from which the tourists come.

At present hunting by tourists does not seem to pose a threat to wildlife resources in the area. It is confined to deer, duck and two species of barramundi; there is little evidence of the numbers of any of these being depleted. The manager of the wildlife lodge estimates that tourists shoot about four hundred deer a year, these are mainly stags prized for their spread of antlers. Shooting deer within one kilometre of the Bensbach River is also forbidden, thus reducing the impact of hunting along one of the main routes used by visitors.

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[1] One kina = $1.1 (U.S.); there are 100 toea in a kina.

In the past one cause of conflict with the customary land-owners has been the landing of light aircraft on the plains. It was regarded by them as a threat to their territorial rights and to the wildlife. In 1981 this resentment flared up in an incident when a plane's tyres were slashed and other equipment damaged; this resulted in a court action in which twenty-one men were prosecuted and fined.

Another long-standing grievance of the land-owners concerns hunting by government officers. This is sometimes authorised to collect blood samples from the deer for health inspection purposes, but at other times it is illegal. There have been complaints about officials from Morehead, the district headquarters, shooting deer along the road from there to Bensbach. It is felt that they should buy licences and pay royalties in the same way as other outsiders. One suggestion has been that a gate should be constructed across the road and all vehicles inspected before they leave the area.

The impact of the villagers' hunting on the wildlife is at present limited by the low population density and the fact that it is mainly for subsistence purposes and uses traditional methods. There seem to be few of the customary restraints on hunting that exist in certain Papua New Guinean societies such as taboos on killing certain species or hunting in particular areas or at certain seasons. The only restrictions appear to be bans on the food that pregnant women eat; these vary in different villages but often forbid the eating of certain animals such as crocodile, python and cuscus. Nevertheless hunting is rarely in excess of immediate needs and the only areas where wildlife is becomeing scarce are in the proximity of the villages and roads.

One subject for concern is the killing of animals by dogs. Some of these are wild feral dogs while others are village dogs which are left to roam the plains much of the time. They hunt in packs, young and female deer frequently being their victims; the dogs rarely eat much of the animals they kill but leave their carcasses for the scavengers. Because of the danger of the introduction of rabies and other diseases from nearby Indonesia the dogs also pose a health threat. Proposals have been made to reduce their number but little has yet been done.

Changes in hunting methods could lead to more animals being killed. At present the number of shotguns is limited, but recently there has been an increase in the number of permits issued. Some gill nets are also now being used for catching fish in the rivers.

The proximity of Indonesia also causes problems. Poachers from Irian Jaya have been found setting nets across the mouth of the Bensbach River. At times when the barramundi migrate and breed this could have serious effects on their numbers. In addition there have been cases of these poachers also killing deer and catching crocodiles. Some smuggling of outsize crocodile skins also occurs across the border.

At present the government's role in helping the people manage and protect their wildlife resources is very limited. The Wildlife Branch was once very active in the area; they assisted the development of the management area, initiated the deer farming project and encouraged crocodile and butterfly farming. Cuts in public expenditure and restructuring of

government departments have led to a complete run-down of all these activities. There is now only one wildlife officer in the area and he is unsure of his position, role and functions. He receives little funding, supervision or guidance; he is unable to make patrols or do much extension work. In his own words, "normal yearly operations have entirely arrived at a stop".

The management committee itself meets very infrequently; at the time of my visit in September 1983, there had been no full meeting for sixteen months although one was planned in the near future. One of the problems is that the villages of the area are very scattered and transport difficulties make it difficult for members to attend. It has been suggested that sitting and travelling allowance should be paid to the committee, but this has not yet been considered appropriate. Certainly the management committee seems to need more government advice and support if it is to be effective.

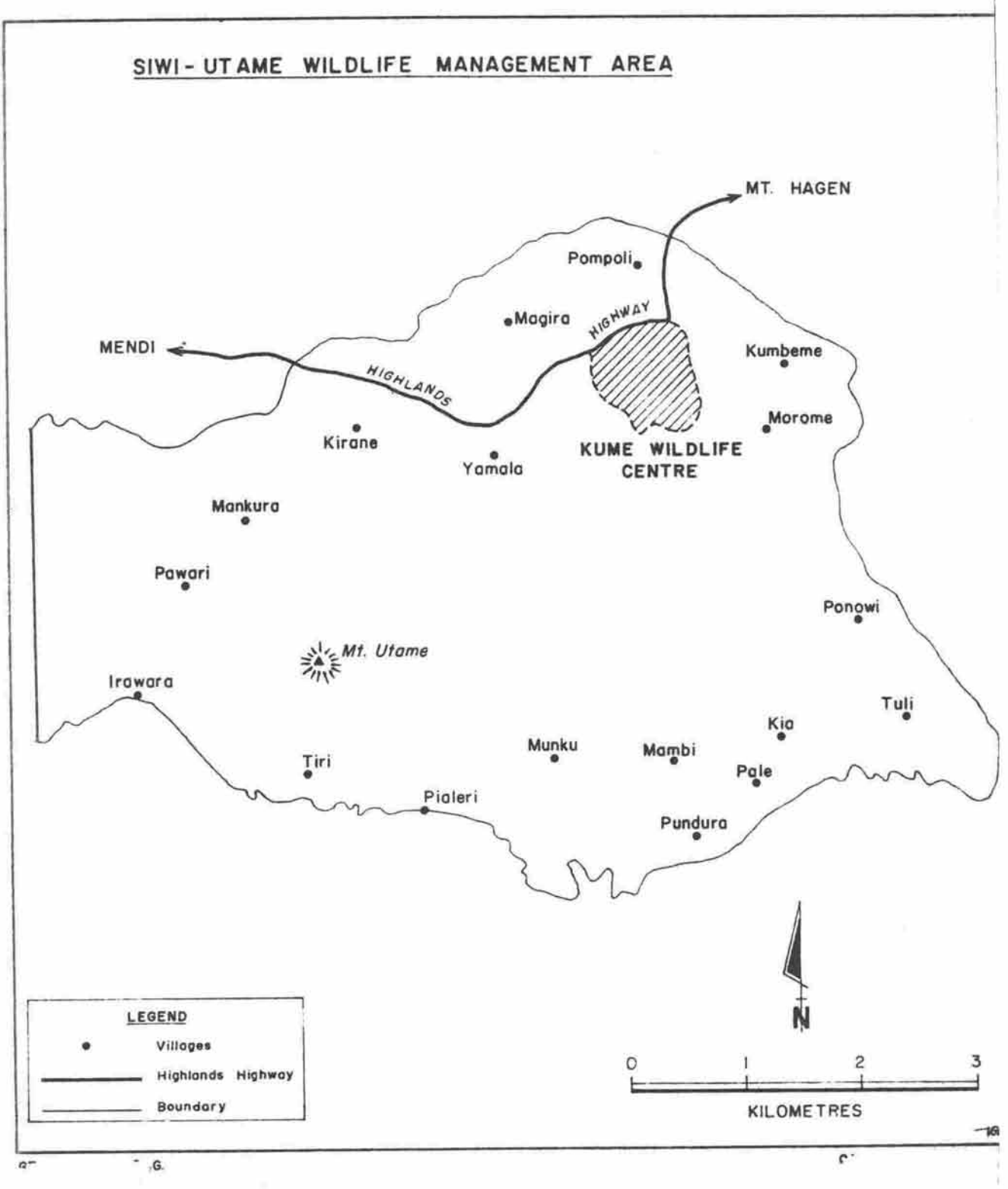
The next few years are likely to be crucial to the development of the Tonda wildlife management area. The fact that it is near the Indonesian border gives it certain strategic significance and there is likely to be more road-building and other development in the border regions. The changes may benefit the people in terms of the provision of services and employment possibilities; it is also possible that they may have an adverse effect on the wildlife of the area. These wildlife resources not only give the area its unique character, they are also necessary for the support of the people. Their long-term interests will best be served by policies which protect rather than impoverish the natural environment.

5.2.2 Siwi-Utame Wildlife Management Area: successful involvement of local people

This area is situated in the Ialibu district of the Southern Highlands. It is located to the south of Mount Giluwe, a large mountain massif which rises to a height of 4,368 metres above sea level. The main road between Mendi, the provincial capital and Mount Hagen in the Western Hagen runs through the northern part of the area.

The total area of Siwi-Utame is approximately 12,540 hectares. Its boundaries are partly marked by rivers: the spectacular fast-flowing Anggura River to the north and west, the Mambu in the south and Yorlo and Iaro rivers to the east. It is an area of steep relief ranging from 1,800 to 2,317 metres in altitude and derives its name from two small mountains, Siwi and Utame. It is in a region of high rainfall with an average of 3,000 mms. a year. Because of the high altitude, temperatures are lower than for most of Papua New Guinea, averaging 16°C. The natural vegetation of much of the area is rain-forest, but on the lower slopes of the hills continuous clearing has resulted in conversion to grassland. In the central part of the wildlife management area there is dense primary forest and it is here that the greatest variety of fauna is found. One reason that Siwi-Utame is such a favoured habit for wildlife is that it has one of the largest continuous areas of forest in a densely populated region.

FIGURE 5.2


SIWI - UTAME WILDLIFE MANAGEMENT AREA
MT. HAGEN
Pompoli
Magira
HIGHWAY
MENDI
HIGHLANDS
Kumbeme
Morome
Kirane
Yamala
KUME WILDLIFE CENTRE
Mankura
Pawari
Ponowi
Mt. Utame
Irawara
Tuli
Kia
Munku
Mambi
Tiri
Pale
Pialeri
Pundura
LEGEND
Villages
Highlands Highway
Boundary
N
0
1
2
3
KILOMETRES

The wildlife of the area is rich in birds. Seven types of birds of paradise has been recorded in the area with the Princess Stephanie, King of Saxony, Blue and Superb being the commonest species. Other birds in the area include cassowaries, bower birds and the New Guinea Eagle. Mammals include tree kangaroos, bush wallabies, bandicoots, cuscus and different types of possum. In the past all these species have been hunted, with the exception of the bower bird which was protected in its nesting area because of traditional beliefs concerning its magic powers, especially with regard to its assistance in finding wives for young men.

There are 19 villages in the area and the total population is approximately 6,000. All speak the Kawabi language. The main occupation is subsistence farming with sweet potatoes and taro being the main crops. More temperate vegetables such as European potatoes and cabbages are also grown. There are very few sources of cash income. Vegetables, woven hats, bags, baskets and trays are sold at roadside markets. Some of the younger people work on plantations in other parts of the country. The area has four primary schools and four aid posts and is served by the main highway, otherwise there has been little social or economic development.

The first discussions on the need for a wildlife management area began in 1974. Negotiations continued and the boundaries, mainly natural features such as rivers, were decided upon. Finally in January 1977, the wildlife management area was officially declared and gazetted.

The rules restrict hunting in the area and forbid the use of bows and arrows, shotguns, slings, metal traps and dogs. The taking of eggs is also prohibited and rules were made later forbidding the damage and removal of trees without the permission of the land-owners. There are also general rules restricting the number of trees that provide fruit or shelter for wild life; bird of paradise display trees in particular are protected.

Siwi-Utame is one of the few wildlife management areas where a relatively large number of people (an estimated number of thirty-five) have been charged and prosecuted for breaking the rules. This has occurred at several different levels. Some offenders have been fined by the committee or by village courts; others have been brought before local courts and serious cases (e.g. killing birds of paradise with a shotgun) are heard by district courts. The fines charged locally have ranged from K5 to K1,000.

Siwi-Utame has a wildlife management committee which consists of fourteen members representing different villages. Members of the committee each have a badge, but do not receive any cash payment in spite of several suggestions they have made to this effect. Committee meetings used to be held an average of twice a year, but none have been held since the beginning of 1983.

A feature of the development has been the establishment of a wildlife centre at Kume in a four hectare area adjacent to the highway. At Kume there are several pens where cassowaries are reared. Most of these have been bought when young from other parts of the Southern Highlands

such as Mount Bosavi. They are fed on sweet potatoes and concentrated foodstuffs and then sold when mature. They are in considerable demand for ceremonies and bride prices and are sold at a price averaging K8 a kilogram. At the time of my visit, 22nd-23rd October 1983, there were twenty-two cassowaries. I saw one of the largest being caught and sold for K330 as part of the pride price for a girl from Enga.

In addition to the cassowaries, the Kume centre has an information centre with a few booklets and charts, a picnic place and a small hut where visitors can spend the night. A recent development has been the start of an orchid farm. The centre has attracted a small number of visitors, scientists and educational parties; an entry fee is charged for visitors.

Some of the money necessary for the construction of facilities at the centre has come from provincial rural development funds. The actual purchase of the land was made by the national government, although to date only K2,000 of the agreed price of K6,000 has been paid. There was also a proposal in 1981 that a central area of about 2,400 hectares of primary forest, where there are no villages, should be purchased by the government as a bird of paradise conservation area. The land-owners agreed and requested a sum of K48,000 for the land, but there has been no further progress with the proposal as the necessary funds have not been available.

There have generally been few problems caused by competing land use in the area. In 1982 a proposal to start a logging project was refused with the agreement of the land-owners. Population pressure has led to some areas of forest near the village of Kirune being cleared for subsistence cultivation. The people of the area seem to have kept to the rules restricting hunting and there have been few incursions by outsiders. The fact that the main road from Mendi to Mount Hagen runs through the area has had some adverse effects on wildlife. There have been cases of people using vehicles shooting birds from the road. They are usually outsiders from other Highlands provinces and difficult to apprehend. If signposts were erected where the road crosses the boundaries of the area they could help to draw attention to the rules.

In comparison to some other protected areas in Papua New Guinea the Siwi-Utame wildlife management area seems to have been a success. The people of the area are aware of the need for conservation and are involved in the management and protection of their wildlife resources. Their rules not only protect the fauna of the area, but also the habitat. All seem agreed that since the establishment of the area, the numbers of wildlife have increased and many of the threatened species are becoming more common. There has been some loss of momentum since the end of 1981 when budget cuts reduced the effectiveness of the Ministry of the Environment and Conservation and the Wildlife Officers were transferred to the Department of Primary Industry. The provincial government has proved sympathetic and given assistance, but the people of the area feel the lack of national government support. The result has been that during the last two years there has been less activity, fewer management committee meetings and less rigid enforcement of the rules. At this stage tangible evidence that the national government is prepared to continue to give assistance and direction to the wildlife management area would greatly reinforce what has been already done by the people themselves to protect their natural environment.

CHAPTER 6

FIJI

6.1 INTRODUCTION

Fiji consists of 300 islands, 18,376 square kilometres of land in 142,600 square kilometres of ocean. It is a country of considerable physical diversity; there are mountains of volcanic origin in the interior of many of the islands and also coastal alluvial lowlands, mangrove swamps, coral reefs and atolls. The natural vegetation of tropical rain forest covers 48 per cent of the total land area. Clearing and burning of the forest has resulted in extensive tracts of talasiga grasslands especially in the western part of the main area of Viti Levu.

The population of Fiji is 671,712 (1983) of whom approximately half are of Indian origin. The average density of population is 36.5 per square kilometre. The rural economy is still largely subsistence with the emphasis on shifting cultivation and the growing of root crops such as taro (dalo) and cassava. The main cash crops are sugar cane and copra. Tourism plays a significant role in the economy as a source of employment and major foreign currency earner.

6.2 LAND TENURE

Native land owned by indigenous Fijians occupies 83 per cent of the total area. Part of this land is classified as reserved and may be only used by native Fijians; other areas may be leased through the Native Land Trust Board. Crown and freehold land occupy the remaining areas.

During the pre-colonial period there were considerable variations in customary tenure and territorial boundaries were constantly changing. There often seem to have been three main types of land use rights:
(i) Yavu - the exclusive rights of an occupant to a house site;
(ii) Gele - the right to cultivate land which belonged to the extended family and was subject to rendering services to the tribe and paying sevu (first fruits) to the chief;
(iii) Veikau - rights to forest land belonging to the community and were distributed by its chief. Individual rights could be acquired by cultivation after requesting permission and giving sevu.

Three types of group were generally identified with land ownership. These were the yavusa, mataqali and tokatoka. Following cession to Britain in 1974, the Council of Chiefs recommended that the mataquali should be regarded as the significant proprietary group and although this does not always appear to have been realistic or in accordance with the facts (France 1969), it provided the basis for the recording of rights by the Native Land Commission and for much of the subsequent land policy and dealings.

Traditional fishing rights exist to beaches, reefs and areas of sea adjoining the land owned by a group. These rights extend as far out to sea as the outer edges of barrier and fringing reefs. The rights are

often controlled by the chiefs of the different groups and outsiders are usually not allowed to fish without permission; sometimes yaqona (kava) or a portion of the catch has to be offered to the owners to obtain this approval. These traditional fishing rights together with the areas and boundaries involved have been recorded by the Native Fisheries Commission. Section 135 of the Fisheries Act charges the Commission with the duty of "ascertaining what customary fishing rights in each province are the rightful and hereditary property of native owners". Fiji is one of a number of countries in the South Pacific where customary marine tenure seems to be in conflict with the introduced law which classifies the foreshore, land below the high-water mark, territorial waters and the land under them as all being Crown land. However, in Fiji the Native Fisheries Commission has helped to recognise and strengthen traditional rights and generally prevent disputes.

Group control within the traditional land and marine tenure systems provides some management of natural resources. The Fijian concept of vanua is one which recognises the close association between people and their land. In the Lau Islands there was a traditional office known as that of vaka vanua; the role of the office-holder was to act as custodian of forest products and crops. He controlled harvesting and could place a taboo on the collection of foods which were scarce. In the same area there were also ndau ni nggoli who controlled fishing and prevented the over-exploitation of marine resources. Thompson (1949) reported that the latter position was still effective in declaring restrictions on times and areas for fishing and turtle hunting.

Kinship groups also still identify themselves with a particular bird or animal and it is usually forbidden by custom for them to kill or eat this species. Taboos on hunting and fishing may also occur after the death of a chief. For example, in 1983 a one year taboo was imposed on fishing off the island of M'bau when the remains of its high chiefs were dug up for reburial in a newly built mausoleum.

Other customary controls on fishing are more directly related to the need to ensure a regular supply of food. Some species are not caught while they are breeding, other inshore fish are only caught during periods of bad weather. The exclusiveness of traditional rights have also helped to prevent over-exploitation as has the practice in certain areas of restricting fishing to specialist groups; in the Lau Islands these specialist fishermen are known as gonedau.

Controls within the land and marine tenure systems still have some effect in controlling over-exploitation of resources. The protection of indigenous rights and the operations of the Native Land Trust Board have helped to counteract some of the most destructive aspects of development. Nevertheless in many areas they have not been sufficient to prevent environmental degradation and the destruction of forests and wildlife.

6.3 CONSERVATION LEGISLATION

Existing conservation legislation is generally inadequate; its development has been piecemeal, few resources have been allocated to enforce it

and there are many important areas still not covered. The statute which deals with wildlife is the Birds and Game Protection Act, a colonial ordinance originating in 1923. This prohibits the hunting of most birds except certain scheduled species (these are mainly introduced such as the Mynah, Bulbul and Starling). Some other species of birds and animals are classified as "game" and their hunting is subject to certain conditions such as the possession of a licence and the observance of quotas and a closed system.

The Forests Act is significant in that it contains provisions for the establishment of areas of reserved forest and nature reserves on Crown land. In addition it enables parts of native land to be declared protected forest.

Forest reserves cover an area of 19,988 hectares (Dunlap and Singh 1980), 2½ per cent of the total forest area. The reserves may be on unalienated Crown land or on long-term native leases. Over these areas the government is able to exercise management controls and reserve the land for forestry. Although much of the reserved forest is in mountainous areas which are unsuitable for cultivation, there have been problems of competing land use demands. There may be squatting by farmers and encroachment from adjacent leases. A rather more unusual dilemna was posed by a Hindu sect who wished to clear forest and establish a temple in the Koroutari Reserve where they had discovered a cobra-shaped rock which they claimed to be a manifestation of their particular snake god. This particular problem was solved when a cyclone blew down a tree which knocked off the god's head. Other types of pressure and demands for dereservation have occurred in forests near Suva when land has been required for urban housing, factories and rubbish dumping.

Nature reserves have been established on unalienated Crown land and are areas where both the natural vegetation and wildlife are protected. These reserves are listed and described in the Section 6.4.1.

National Parks legislation has been proposed for Fiji (Dunlap and Singh 1980 and the 1981-1985 Development Plan) but it has not yet been enacted. However, the National Trust Act, 1970, provides for a Trust "to promote the permanent preservation for the benefit of the nation of lands (including reefs), buildings, furniture, pictures and chattels of every description having national, historic, architectural or natural interest or beauty"; and "to protect animal and plant life". The Trust has powers to accept gifts, lease and purchase land. It has been involved in various aspects of conservation work and is at present involved in the development of two protected areas: the Garrick Memorial Reserve and the Yadua Taba Crested Iguana Sanctuary.

6.4 CONSERVATION AREAS

6.4.1 Nature Reserves

These are on Crown land and administered by the Department of Forests. They are generally areas where indigenous natural vegetation and wildlife are completely protected. There is no permanent settlement and generally no development or other form of land use. The reserves are as follows:

(a) Nandarivatu has an area of 93 hectares and is covered by a vegetation of dense rain forest containing several rare and endemic plant species. It is in an area mainly enclosed by pine plantations. Access is by a road along the northern side and a footpath to the east. It is located in the mountainous interior of the main island of Viti Levu near Naqarabuluti and Tomaniivi reserves. The three reserves were established during a period from 1956 to 1958.

(b) Naqarabuluti is 279 hectares and covers a mountainous region of rain forest. It is also known as Mount Lomalagi and its summit has an altitude of 1,127 metres. An overgrown tract leads to a disused fire watch tower near the summit.

(c) Tomaniivi (Mount Victoria) is the highest mountain in Fiji and reaches an altitude of 1,323 metres. There is a trail to the summit which together with the reserve is indicated by a notice board. The reserve has an area of 1,322 hectares.

(d) Three small reserves are located in the Bay of Islands near Suva in the south-east of Viti Levu. Draunibota (Cave Island) and Labiko (Snake Island) have a combined area of 2.18 hectares and were proclaimed in 1959. Vuo (Admiralty Island) was declared a year later; it has an area of 1.2 hectares. The location of these islands with their attractive setting and proximity to Suva makes them popular for recreational purposes. It has also led to some disturbance of wildlife and threat to the conservation status of the reserves. Yachting and hotel interests have requested land on Vuo, while in the past there have been suggestions that part of Draunibota might be used as a naval squadron base.

(e) Vunimoli is an area of 18.7 hectares of rain forest on Vanua Levu, the second largest island of Fiji. The reserve was established in 1966. It has a wide range of timber species and birds in a relatively small area, but has not yet been developed for research or recreational purposes.

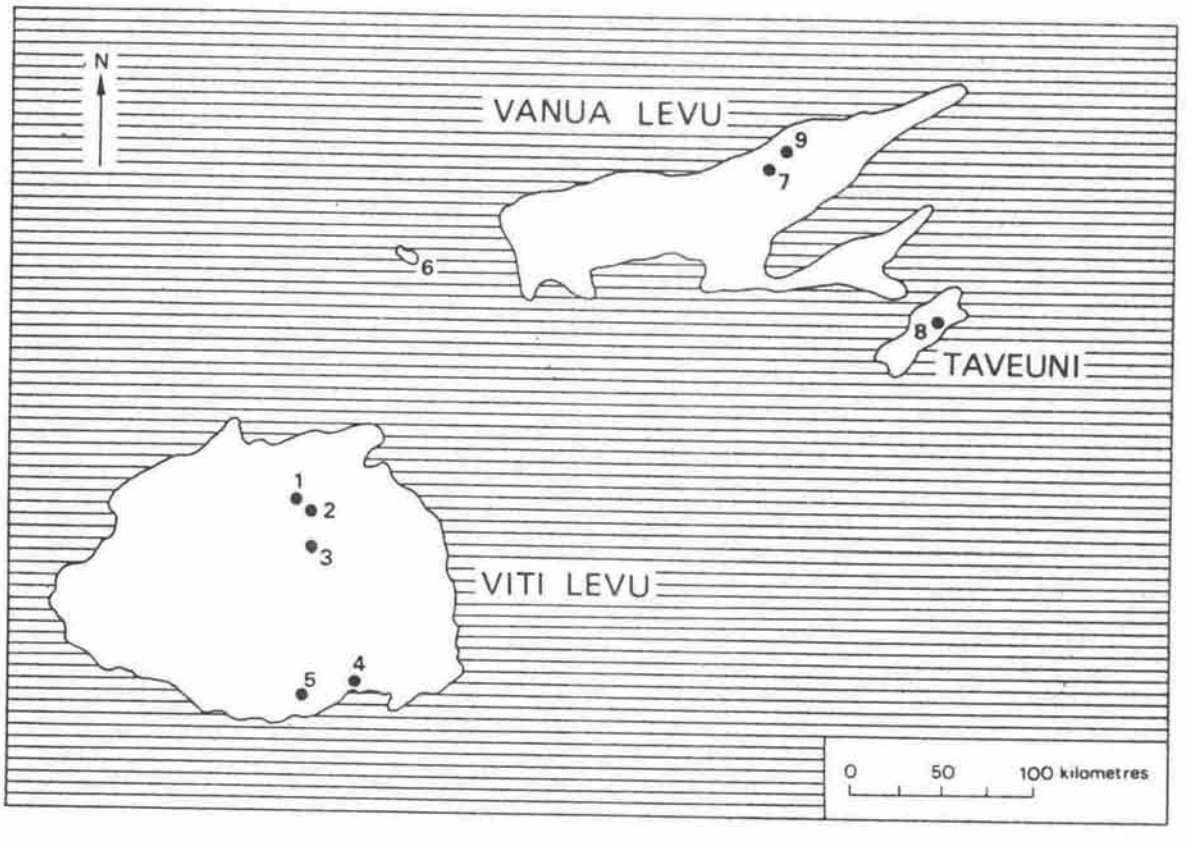
(f) Ravilevu has an area of 4,020 hectares and is the largest of the reserves. It is located on the inaccessible mountainous eastern side of the island of Taveuni. No full inventory has yet been done of the forest and wildlife species of the area, but several endangered birds (including the Blue-crested Broadbill, Black Island Thrush, Satin Flycatcher and several types of parrot and doves) have been reported. The Ravilevu nature reserve is adjacent to the Taveuni Forest Reserve, a large area of 11,291 hectares which covers most of the interior of the island and includes its main volvanic peaks and the crater lake of Tagimauchia. There has been dispute over the land tenure status of the forest reserve and demands that part of it be returned to the native land-owning groups to be used for agriculture and commercial logging, but to date the government has resisted the pressures, although there have been some minor encroachments and clearing around the fringes of the reserve.

(g) Koroutari nature reserve is located on Vanua Levu and has an area of 18.7 hectare.

(h) Kioba nature reserve is on Kadavu Island and is 14 hectares in size.

FIGURE 6.1

Nature Reserves and Sanctuaries in **FIJI**



1 Nadarivatu Nature Reserve
2 Naqarabuluti Nature Reserve
3 Mt. Tomaniivi Nature Reserve
4 Draunibota, Labika and Vuo Island Nature Reserves
5 Garrick Memorial Reserve
6 Yadua Taba Iguana Sanctuary
7 Vunimoli Nature Reserve
8 Ravilevu Nature Reserve
9 Koroutari Nature Reserve

6.4.2 Other Conservation Areas

In addition to forest and nature reserves, the Department of Forests administers the Colo-i-Suva Forest Park. This is not usually considered a protected area because many of the trees have been introduced and planted there. It does, however, have facilities such as nature trails and picnic places and attractions in the form of waterfalls and bathing places. Its proximity to Suva makes it popular as a recreation area for both local and overseas visitors.

The National Trust have powers to acquire and develop areas for conservation purposes. The Garrick Memorial Reserve is a 427 hectares area of freehold land that was donated to the Trust in 1983. It is an area of mixed forest in southern Viti Levu; it is not yet being managed or developed by the Trust.

The National Trust was also involved in the establishment of the Yadua Taba Crested Iguana Sanctuary. This is of particular interest because it is on native land. Yadua Taba is a small island off the south-west of Vanua Levu. It has an area of approximately 70 hectares; much of this is covered by grassland, secondary growth and casuarina, although there are a few pockets of rain forest. The island is steep-sided and rocky and reaches an altitude of 120 metres.

Yadua Taba is uninhabited but ownership rights are claimed by the Nakorolevu mataqali who have a village on the neighbouring island of Yadua which is separated from it by a shallow channel which is approximately 110 metres wide.

Yadua Taba is of scientific interest because it is the home of the rare Crested Iguana. Particular local conditions which seem to favour the species are the low rainfall, especially in the cooler months, and the absence of predators. The fact that the iguana is not found on the nearby island of Yadua is probably because of the presence of introduced cats and pigs. On Yadua Taba the only threat has been from semi-wild goats and their destruction of the natural vegetation. The people in the area do not kill or eat the Crested Iguana because it is their totem. Generally there is a great deal of fear of the iguana; in some parts of Fiji it is taboo to even mention its name. The changes of colour promote fear; there is also a local belief that the iguana will jump out of trees and attach itself so fiercely by its claws to the bodies and limbs of passers-by that it can be only loosened by fire or saltwater. This belief seems to be partly based on the fact that the female of the species will occasionally spring out of its nest to defend it; it is probably also because of confusion with another lizard, the Large Fijian Gecko, which has pads which stick strongly to human skin. Another belief associated with the Crested Iguana is that it will die if removed from Yadua Taba, this was no doubt reinforced by the death in captivity of nine iguana collected in 1979.

Once the existence of the Crested Iguana became known to the outside world it bacame necessary to protect it against over-collection. Negotiations were begun between the National Trust and the land-owners and financial assistance was requested from the World Wildlife Fund and the International Union for the Conservation of Nature. In 1980 an

agreement was signed between the National Trust and two chiefs, Ratu Meli Ramatai and Ratu Alifereti Ramatai, representing the land-owning mataqali. The Trust agreed to pay the land-owners an annual sum of $1,500 to maintain the island as a nature reserve, act as wardens and prevent unauthorised people from landing on it. The land-owners agreed not to endanger the Crested Iguana or its habitat in any way; there was to be no burning of vegetation or grazing of goats on the island. The National Trust agreed to catch the existing goats and provide fencing so that they could be transferred to Yadua. Any goats which could not be captured were to be shot and compensation paid to the owners.

The agreement has been carried out and most of the goats removed although there are reported to be some remaining which have not yet been shot. An initial grant was provided by the World Wildlife Fund; this helped to pay the cost of fencing.

6.5 LAND TENURE AND FUTURE CONSERVATION AREA DEVELOPMENT

Yadua Teba seems to be a successful example of a reserve developed on customary land. Several factors appear to have favoured its development. There was no permanent settlement on the island. Its location makes it relatively inaccessible and it has no particular resources which might subject it to pressures for economic development. The Crested Iguana itself had traditional significance to the local people as a totem and it was not hunted or killed, it was generally feared and avoided. The rarity of the Crested Iguana and the scientific interest that it caused facilitated the raising of funds at both national and international levels. Whether this type of agreement between land-owners and the National Trust could act as a model for establishing other reserves might well depend on the existence of similar special factors and considerations.

Another attempt by the National Trust to come to a similar agreement with land-owners has not yet been successful. This was a proposal to develop the Waisali Forest Reserve on Vanua Levu. This is an area of 120 hectares located by the Labasa-Savusavu highway near its highest point where it crosses the island's spinal range of mountains. It is an area of tropical rain forest of particular interest because of its stands of Dakua. In addition there is a variety of other types of vegetation and birdlife which include the Long-legged Warbler, Red-breasted Musk Parrot, Orange Dove and Silktail. The construction of the trans-insular highway has made this area more accessible; it is under threat from commercial logging operations as it is within the area of a large timber concession granted by the government, through the Native Land Trust Board, to Fiji Forest Industries Ltd. Negotiations for the establishment of a reserve have involved the company, the Native Land Trust Board, the Department of Forests, the National Trust and the land-owners, the Waisali mataqali.

Under the proposed agreement on the Waisali Forest Reserve, the company have agreed to surrender the area from their concession. The land would be leased from the owners with a premium being paid in addition to the annual rent. The Department of Forests would manage the reserve in

perpetuity subject to funds being available. All vegetation and wildlife would be protected and no firearms allowed in the area. The negotiations now seem to have come to a standstill, however, because in addition to their rent the land-owners are now demanding compensation for the timber royalties they would otherwise have obtained, a sum estimated at $32,850. At present funds for this purpose and the development of facilities at the reserve are not available and various international organisations have been approached for assistance, although in the past such bodies have generally been reluctant to becoming involved in compensation payments.

The problem of compensating land-owners for not developing their land is not unique to Fiji. However, in Fiji and other countries of the South Pacific it has a special significance. For many of the land-owners, their natural resources represent the only possibilities of obtaining any form of cash income. If these resources are not to be exploited, alternative opportunities for earning income must be made available. Entry fees to parks and reserves are one possibility; they are already charged at some waterfalls and other places of scenic and recreational interest. Employment of guides, as already happens at Tomaniivi and the Taveuni Forest Reserve, might be a means of employment that could be extended and land-owners could also be employed as rangers and wardens. The provision of accommodation for visitors and selling artifacts could also be other ways that local people earn money from the development of conservation areas on their land. In addition, government could help by promoting suitable development projects for those protecting the natural resources on their land. Conservation projects are more likely to be generally accepted if they are part of integrated land use and rural development planning designed to bring benefits to village people.

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CHAPTER 7

WESTERN SAMOA

7.1 INTRODUCTION

Western Samoa consists of the two main islands of Upolu and Savai'i plus seven much smaller islands. The total land area of the country is 2,836 kilometres.

The islands are of volcanic origin; the most recent lava flow occurred in 1905 of Savai'i. As a result much of the country is mountainous with Mount Silisili, 1860 metres, being the highest point. The coastal lowlands are the most economically developed and are at their most extensive in western Upolu.

The natural vegetation is one of lowland and mountain rain forest, with additional small areas of cloud, riverine, swamp, mangrove and beach forest (Dahl 1980). Some deforestation has occurred as a result of commercial timber operations and the clearance of land for agriculture. There is now concern over the need to protect water catchment areas (De Von Nelson 1983), prevent soil erosion and to preserve traditional economic trees. The government has a reafforestation programme with the emphasis on the planting of fast-growing eucalyptus species.

Bats are the only mammals indigenous to Western Samoa. There are two species: the flying fox and the sheath-tailed bat. Bird-life is more varied and there are 48 different species. Reptiles include the non-venomous Pacific boa, several types of lizard and the green and hawksbill turtles.

The population of Western Samoa is 159,000 (1982) with an average density of 54 people per square kilometre. The high rate of natural increase, 2.7 per cent (1979) is partly offset by emigration giving an average annual growth rate of 0.8 per cent. Population pressure on land is greatest in the lower-lying areas of Upolu.

7.2 LAND TENURE

The country's Constitution (1960) states that "all land in Western Samoa is either customary land, private freehold, and, or public land". The relative proportion of these different types of tenure can be seen in Table 7.1.

Customary tenure is dominant over most of the country. Under this system land is owned by the aiga or extended family. They elect a chief or matai who has pule, the right to allocate land and determine its use.

TABLE 7.1

LAND TENURE IN WESTERN SAMOA

Tenure	Area in km^2	% of total
Customary land	2,282.8	80.5
Private freehold	104.2	3.7
Western Samoa Trust Estates Corporation	129	4.5
Public land	320.3	11.3

Source: Sutter, 1971.

Within the customary system there are five different categories of land. There are the village house lots which are for residential purposes but also used for growing breadfruit and vegetables. Then there are the plantation plots used for growing the main cash crops: coconuts, bananas and cocoa. Further inland and higher up the hill-sides are the family sections where mixed crops are grown and land or crop rotation is practised. The fourth category of lands are those which belong to the village as a whole and not the individual aiga. Rights to clear and cultivate this land require the permission of the fono, a village council composed of all its matai. The fifth category are the district lands, claimed by the traditional political district councils which were of more significance in the past than they are at present. District lands are usually far inland in the mountains and have generally only been used for hunting and collecting forest products.

Customary land is generally not registered unless it is subject to a lease agreement, although matai titles are registered. Land boundaries are not usually surveyed or marked, but as elsewhere are formed by natural features. In the case of village and district lands in particular these may be vague and uncertain; recent interest in commercial logging has sometimes led to boundary disputes. These may be decided by mutual agreement, if not they are heard by the Land and Titles Court.

Legislation which enables government acquisition of customary land includes the Takings of Land Act, 1964, and Article 102 of the Constitution. The first gives the government the power to obtain land for public purposes by negotiation or compulsory processes; in fact, as elsewhere, the government has shown itself very reluctant to use the latter procedure. The Constitution further states that customary land may be only acquired compulsorily for public purposes. In the case of leases, customary land may be leased for an authorised purpose if the lease is in accordance with

(i) Samoan custom and usage;
(ii) the desires and interests of the owners;
(iii) the public interest.

7.3 CONSERVATION LEGISLATION

The Agriculture, Forests and Fisheries Ordinance, 1959, and the Forests Act, 1967, made the relevant government departments responsible for the conservation, protection and development of natural resources, especially soil, water and forest.

The Protection of Wild Birds Regulation imposed in 1981 under the Animals Ordinance of 1910 gives absolute protection to fifteen species of bird and partial protection to three types of pigeon which may be only killed between 1st April and 31st October. Species covered by the schedule are as follows: Australian Gray Duck, White Browed Rail, Sooty Rail, Flat Billed Kingfisher, Crimson-crowned Fruit Dove, Many Coloured Fruit Dove, Friendly Quail Dove, Samoan Triller, Island Thrush, Samoan White Eye, Mao, Red Headed Parrot Finch, Cardinal Honeyeater, Samoan Broadbill, Blue Crowned Lory, White Throated Pigeon, Pacific Pigeon, Tooth-billed Pigeon.

The exploitation of marine resources is regulated through the Fisheries Protection Act, 1972, and the Exclusive Economic Zone Act, 1977, which controls fishing by foreign vessels. The Fish Dynamiting Act, 1972, prohibits all use of dynamite for fishing. Legally, all marine areas, below the high-water mark, belong to the State, but this is in reality often modified by a recognition of the customary rights of adjacent villages.

National parks can be established through the National Parks and Reserves Act, 1974. Under this statute the Head of State may declare any public land to be a national park provided "(a) that it is not set aside for any other public purpose; and (b) that it is not less than 1,500 acres and that it is an island". The Act also declares that parks "should be preserved in perpetuity for the benefit and enjoyment of the people of Western Samoa". The legislation contains provisions for the establishment of historic, recreation and nature reserves. The latter can be on "any public land or any area of territorial sea ... for the protection, conservation and management of flora, fauna or aquatic life".

7.4 CONSERVATION AREAS

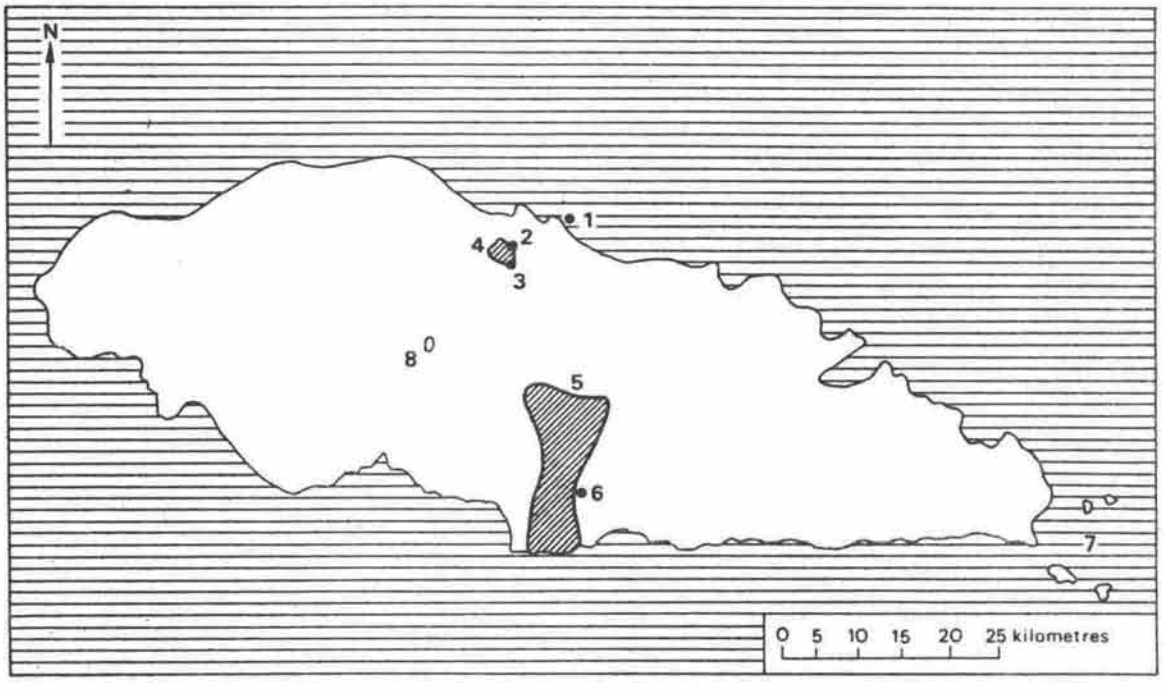
7.4.1 National Parks

Western Samoa has a relatively well developed system of parks and reserves. Up to the present time these have all been established on government land and are all located on the island of Upolu. For administrative purposes these protected areas are managed by the National Parks Section of the Forestry Division which is part of the Department of Agriculture and Forests.

Six areas are administered by the National Parks Section. Mount Vaea Scenic Reserve, Valima Botanical Garden and the Stevenson Memorial Reserve are contiguous and are sometimes described under one title as the Tusitala Historic and Nature Reserve (Tusitala, the teller of stories, was the Samoan name of Robert Louis Stevenson who spent the last years of his life and died at Valima). Mount Vaea has an altitude

FIGURE 7.1

National Parks and Reserves in **UPOLU, W. SAMOA**



NATIONAL PARKS AND RESERVES

1 Palolo Deep Marine Reserve
2 Stevenson Memorial Reserve
3 Valima Botanical Gardens
4 Mt. Vaea Scenic Reserve
5 O Le Pupu Pu'e National Park
6 Togitogiga Recreation Reserve

PROPOSED AREAS

7 Nu'utele Island group
8 Lake Lanoto'o

of 476 metres and overlooks the national capital, Apia. The reserve covers the eastern side of the mountain and has retained part of its natural forest vegetation plus a variety of wildlife. The Stevenson Memorial Reserve is a small area near the summit of the mountain which includes the writer's tomb. The Valima Botanical Garden has been planted with representative trees, shrubs and crops. These areas are near Apia and accessible to visitors, as also is the Palolo Deep Marine Reserve. On the southern side of Upolu are the O Le Pupu-Pue National Park and the Togitoga Recreation Reserve; the latter is a popular picnic area and has waterfalls and swimming pools on the Mataloa River. The development and management of the O Le Pupu-Pue National Park and of Palolo Deep are of particular interest and are examined in detail in the following sections.

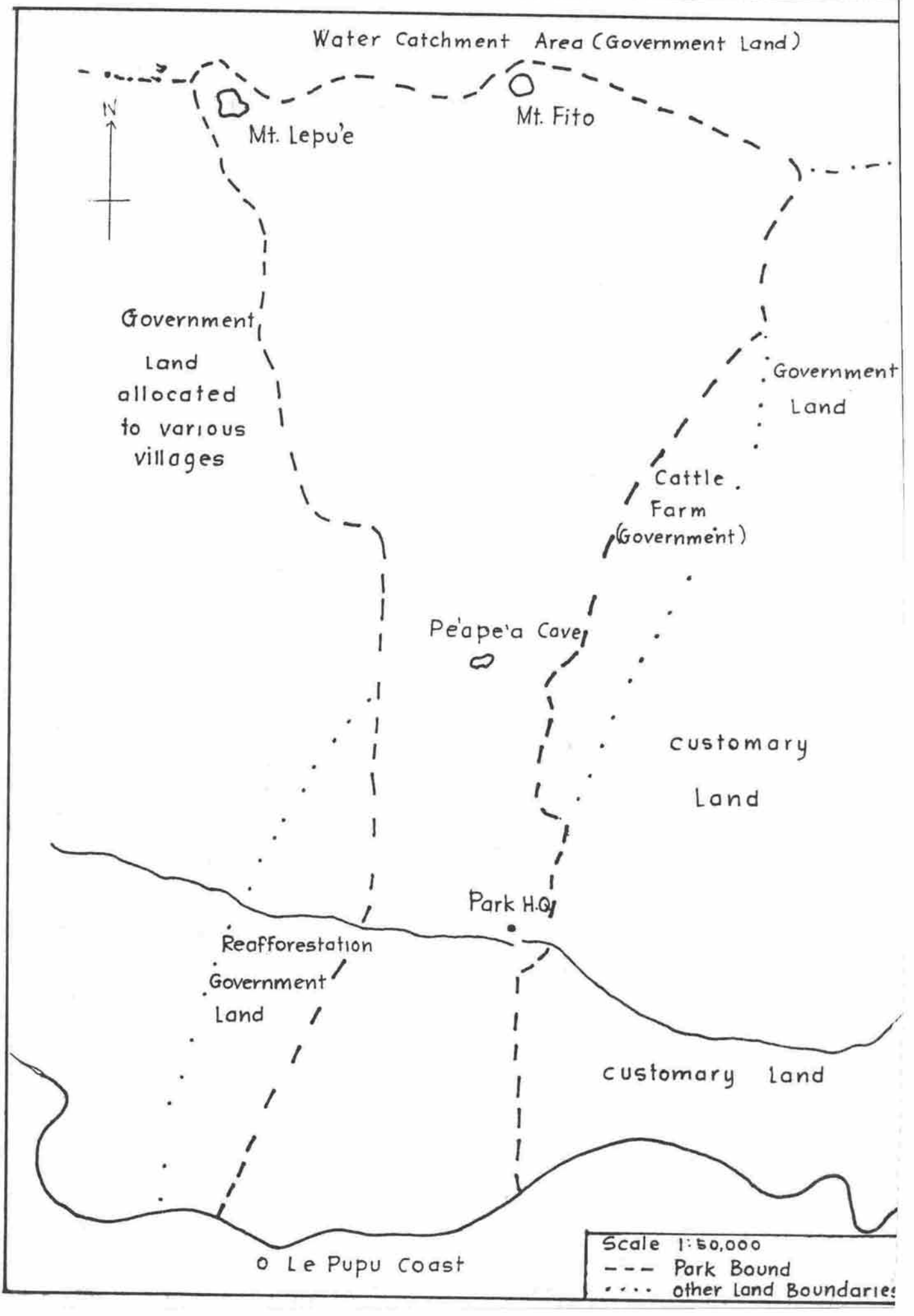
7.7.2 O Le Pupu-Pue National Park

The park was given its distinctive title because of the fact that it included both the Le Pupu coast on its southern margins and Mount Pue in the north. The park extends from the central watershed to the coast and includes a range of the vegetation and wildlife that are representative of many of the types that are found in the country. A recent survey by Ollier, Whistler and Amerson (1972) records 42 species of birds, five of mammals and four of reptiles as being found within the park. Volcanic action has given the park a distinctive geology and relief. Both Mount Pue and Mount Fito (the highest peak in Upolu, 1,116 metres, and also in the park) are of volcanic origin and have volcanic cones and craters. The most recent eruption from Mount Fito was probably about 3,000 years ago and have resulted in extensive lava fields with a network of lava tubes, some of which have formed caves. On the coast the hard resistant volcanic rock has resulted in a rugged coastline of cliffs, stacks, caves and natural bridges.

The park has an area of 2,857 hectares. It was established in 1978 on land belonging to the government. It also has the advantage of being partly bordered by government land which is used for water catchment protection, agriculture and forestry. This helps to create a buffer zone around the park, although there are other areas where it is bordered by customary land, part of which is cultivated. Squatters have created some problems by clearing forest and growing crops within the park boundaries. These encroachments started before the park was established, but there has also been some clearing more recently. This has in one area followed the construction of a track in the direction of Mount Pue from the main road running across the island. This track would be a logical point for developing access to the mountain area in the northern part of the park, but any improvement or extension to it would probably lead to more illegal clearing and hunting. The advantages and disadvantages of accessibility are also exemplified by the other roads within the park. The south coastal road runs through it and provides both a place of entry and a means of reaching the park headquarters and visitors' centre at Togitogiga. A smaller road leads down to the Le Pupu coast; this has a gate which is locked at night to keep out poachers. There is a footpath along the top of the cliffs and another within the park to the Pe'ape'a Cave, a lava tube cave which can be walked through for a distance of about 850 metres.

FIGURE 7.2

O LE PUPU-PU'E NATIONAL PARK AND SURROUNDING LAND TEN



The support of neighbouring customary land-owners is obviously important for the successful development of the park. One means of achieving this has been to employ local people to work in the park. The former caretaker was a matai from a nearby village and when he died his son was taken on in his place. Efforts have also been made at conservation education and the concept of national parks is gradually becoming better understood by the people of the area.

7.4.3 Palolo Deep Marine Reserve

Palolo Deep takes its name from the palolo worm, a marine invertebrate which is a traditional delicacy of the Samoan people. It is no longer as plentiful as in the past and is not usually found in the area of the reserve.

The Deep is a hole within the coral reef. It is about 200 metres in diameter and 10 metres deep. It has a variety of corals, fish and other marine life. It is situated close to Apia to the east of the main harbour; consequently it is very accessible to local and overseas visitors.

The reserve, an area of 22¼ hectares, was established in 1979 when Cabinet approved a submission that "the area known as Palolo Deep at Matautu and the surrounding reef off Pilot Point including an access strip to it to be set aside as Palolo Deep Marine Reserve under Section 9 of the National Parks and Reserves Act of 1974". With regard to land tenure, the Submission stated: "As all areas below mean high tide level and out to the 200 mile limit are in effect Government land a proclamation can be made without difficulty". Land access to the reserve was a rather different matter, but this was resolved by the use of a narrow strip of land adjacent to a government house.

Involvement of local land-owners in the management of the reserve has been achieved by the employment of a woman from the neighbouring village as caretaker. In practice, her position tends to be a nominal one in that the work is done by her family, in particular one of the older sons. They look after the area and are gradually improving its facilities which include a changing room, shower and observation platform. In addition, they make a small income from the hire of masks, snorkels and flippers to visitors.

All marine life is protected in the reserve, but the caretaker's family report that there are occasional problems with illegal fishing. The close proximity of the urban area, port and factories also means there is some pollution risk. Nevertheless, at present the marine reserve seems an example of successful development with limited resources.

7.5 LAND TENURE AND FUTURE CONSERVATION AREA DEVELOPMENT

Existing reserves and parks have been developed on government land. Many of the other protected areas that have been proposed are on customary land. If there is to be any expansion of parks and reserves it will need either the government to spend considerable amounts on land acquisition or else the use of alternative approaches which leave the land under customary ownership.

A report by Holloway (1975) recommended a total of 59 parks, reserves, historical and wildlife sanctuaries and recreation areas should be established. This would involve 14,165 hectares of customary land. Three alternatives were considered: government purchase of the land which would be only possible with outside financial assistance; leasing which might not provide the necessary security of tenure; and thirdly the dedication of customary land. Under this last procedure the agai would retain the ownership of the land but dedicate the rights of usage to the park management authority. The dedication of church land in Samoa is suggested as a precedent for this.

A later report (Dahl 1978) also discusses alternatives:

> The present National Parks and Reserves Act, 1974, allows for the creation of parks and reserves only on Government land. Once the park concept is better understood and supported by the general public, it may be desirable to amend the Act to permit the extension of conservation measures to important national features that are not in public ownership. A number of methods have been developed elsewhere in the Pacific to permit this while respecting traditional family ties to the land. These have included the creation of a National Trust, the establishment of management areas on customarily held land, long-term leases, and the voluntary surrender of certain development rights. It should be possible when the time comes to develop a legal formula acceptable to the traditional land owners of Western Samoa.

None of these alternatives have yet been adopted although there have been negotiations with land-owners in certain areas. There are in fact three areas where conservation areas could be established in the near future. These are the Nu'utele Islands, Lake Lanato'o and Mount Silisili.

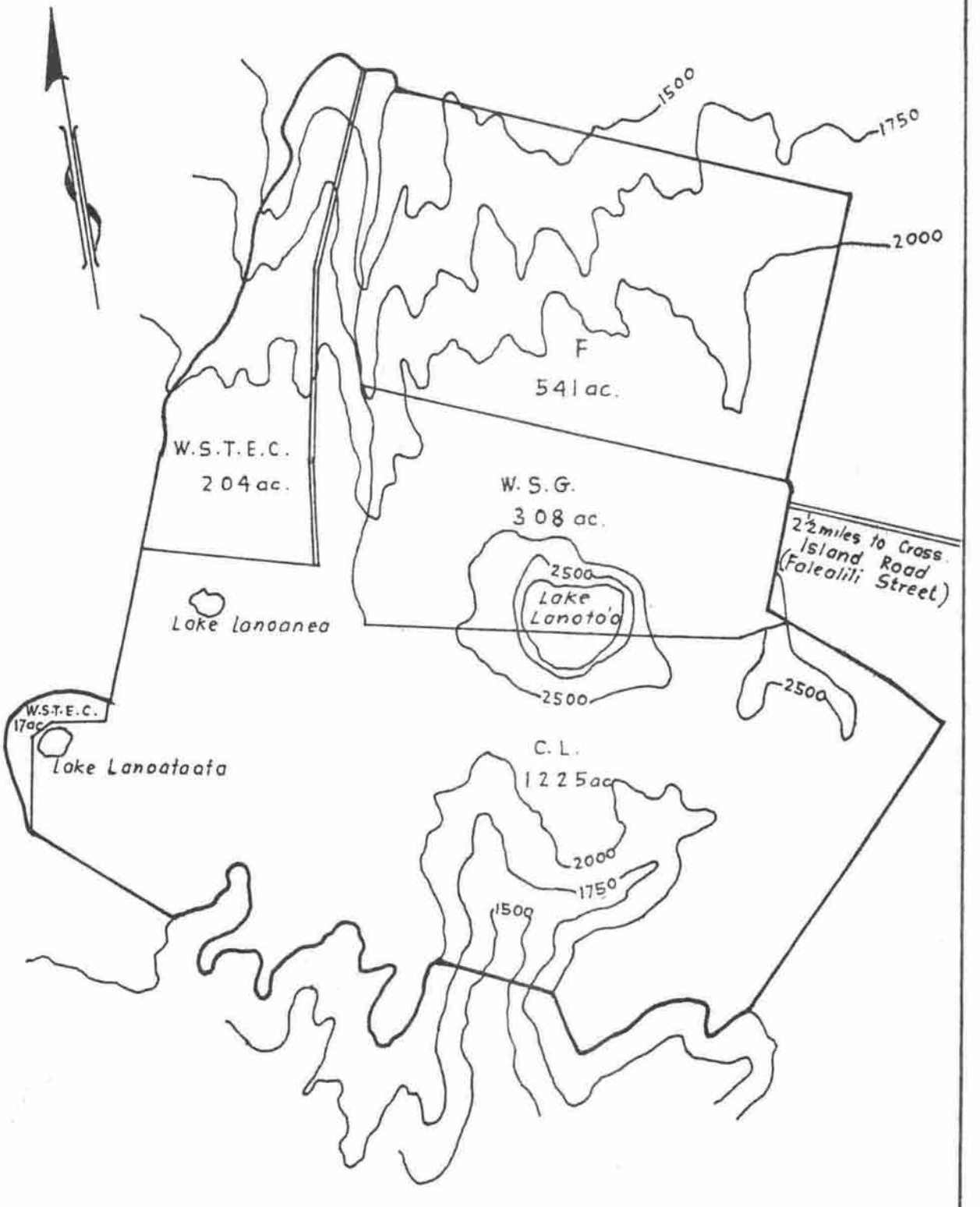
The Nu'utele group consists of four islands with a combined land area of 168 hectares off the eastern end of Upolu. They are scenically attractive and important as bird and turtle breeding areas. All are uninhabited, but there are areas which have been planted with coconuts and goats have been introduced on two of the islands. One of the islands, Namu'a, is already owned by the government.

The Lake Lanoto'o area contains three crater lakes and has a vegetation which includes upland reed and rush swamps, upland swamp forest and primary high forest. It has a varied fauna which includes goldfish which have been introduced into the main lake. The area has considerable significance for watershed protection; in particular it includes the headwaters of the Fulu'asou system which flows north to Apia. An area of 1,050 hectares has been proposed as a park. The area contains a mixture of government, freehold and customary land.

A third park would be the Mount Silisili region on Savai'i. Not only would this park include the highest mountain in the country, it would also contain many other volcanic cones and features. It has large areas of highland forest and a variety of vegetation and wildlife species.

FIGURE 7.3

Proposed
Lake Lanoto'o National Park



Scale : 1 : 20,000

CL - Customary Land: F - Freehold : W.S.G. Western Samoan Govt.
Source: Department of Lands and Survey, 1976

Most of it is uninhabited, but is claimed as customary land by neighbouring villages. There are also over 600 hectares of government land in the area.

Mount Silisili is an example of an area where there has been very little permanent settlement or cultivation in the region and much of the customary land may be categorised as village or district land. These are the areas where individualisation has not yet developed and where the fono still has control over land use. Some communal control should be possible in protecting these areas for conservation purposes. Three possibilities could be developed further with the matai encouraged to act as trustees for the protected areas. Dedication of land is also possible in these cases as is the exchange of customary for unused government land.

In some parts of Western Samoa a charge is sometimes levied on visitors for the use of beaches, bathing pools and "sliding rocks". This practice has been criticised in that it is restricting access to natural resources that many feel should be free; it is also one that is open to abuse and extortion. On the other hand, it may be justified if local people maintain and protect the resources and areas involved. If properly organised with notice-boards and authorised caretakers and guides it could provide the basis for the management of smaller reserves, historical sites and recreation areas. These would complement the protected area system developed by the government.

In considering the expansion of the government protected area system I have been mainly concerned with problems of land tenure, but another major constraint that has to be considered is the administrative capacity of the management authority. In Western Samoa the National Parks Section is operating with relatively limited resources. The staff consists of a Superintendent, two rangers and fifteen labourers. The annual budget has been reduced from WS$ 28,000 to WS$ 23,000 in 1984. Western Samoa has the basis of a good system of parks and reserves that has benefited in the past from external assistance from New Zealand and international organisations. It is important that some outside assistance should continue to be available if the system is to develop.

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CHAPTER 8

AMERICAN SAMOA

8.1 LAND TENURE

American Samoa is considerably smaller than Western Samoa; it has a population of 36,000 (1982) and a land area of approximately 200 square kilometres. There are strong American influences in its administrative and legal system, but its land tenure is very similar to that of Western Samoa.

A large proportion of the land, 92 per cent, is held under customary tenure, with rights to use aiga land being allocated by the matai. There is also some individually owned customary land which is held in perpetuity and not subject to the trusteeship of the matai. Neither this nor communal land may be alienated to outsiders, although both types may be leased for periods of up to 55 years. There is also some freehold land, less than one per cent; this was granted by the Supreme Court before 1900 when all further alienation was prohibited.

The general concern to protect Samoan customary land is shown in Section 3 of Article 1 of the Constitution:

> It shall be the policy of the Government of American Samoa to protect persons of Samoan ancestry against alienation of their lands and the destruction of the Samoan way of life and language, contrary to their best interests. Such legislation as may be necessary may be enacted to protect the lands, customs, culture and traditional family organization of persons of Samoan ancestry, and to encourage business enterprises by such persons. No change in the law respecting the alienation or transfer of land or any interest therein, shall be effective unless the same be approved by two successive legislatures by a two-thirds vote of the entire membership of each house and by the Governor.

The Government of American Samoa has power to eminent domain (Title VII of the Revised Code, 1961) under which it may take land for public purposes upon just payment to its owners. In fact both the federal and American Samoan governments have been reluctant to use these powers and have only acquired a small amount of land, about one per cent. In addition, tidal reclaimed land also belongs to the government.

According to United States federal law, the American Samoan government owns all submerged lands from the mean high tide line out to the limit of the territorial sea. Under this legislation Samoans are free to fish anywhere in their territorial seas but in practice many villages, especially those in the more isolated areas, claim traditional rights

as far out as the edge of the reef and may exclude other fishermen from these waters. Where this happens the villagers may have their own traditional rules to conserve marine resources and control fishing. Certain methods may be prohibited; these include the use of nets, poisons and dynamite (the last two are also covered by government regulations). Fishing may also be forbidden at certain times of the year, especially the fish breeding seasons.

8.2 CONSERVATION LEGISLATION

American Samoa is an unincorporated territory of the United States and although its government is semi-autonomous certain federal legislation, regulations and policies are applicable. These include the following statutes: the Marine Protection, Research and Sanctuaries, the Marine Mammal Protection, Fishery Conservation and Management, Endangered Species and Coastal Zone Management Acts.

The main agency administering parks and reserves is the American Samoa Department of Parks and Recreation. This department has been especially concerned with the development of recreational facilities. It has designated and classified five parks and Matu'u Bay for these purposes, also the Alava Ridge Trail has been classified as a territorial or community park and Blunt's Point as an historical park. In the parks system seashore preserves are provided for and defined as "all land including underwater land and water areas ... extending from the mean high waterline seaward to ten fathoms".

For conservation purposes, there are at present two areas in American Samoa of particular interest. These are Rose Atoll and Fagatele Bay.

8.3 ROSE ATOLL

Rose Atoll is a national wildlife refuge. It consists of two small islands with a combined land area of 8 hectares surrounded by 650 hectares of reef and lagoon. It is an important breeding area for seabirds, hawksbill and green turtles, and has a rich variety of marine life.

The atoll is very isolated and the islands mark the easternmost limit of the Samoan group. The area is administered by the United States Fish and Wildlife Service and the American Samoan Department of Marine Resources. All birds and marine life are protected, fishing is prohibited and access is restricted; a permit is required to visit the atoll. Since the refuge was established in 1973 there has been little human disturbance of the area; there is no permanent settlement and scientific research to the breeding seabirds and turtles comes from the introduced Polynesian rat.

8.4 FAGATELE BAY NATIONAL MARINE SANCTUARY

This is a proposed marine sanctuary with an area of 66 hectares. It is located on the south coast of Tutuila Island and is approximately 12 kilometres south-west of Pago Pago Harbour, the main centre for development and settlement in American Samoa.

Fagatele Bay itself is formed by the remains of a volcanic crater and bordered by steep cliffs. It provides habitats for numerous species of fish and invertebrates while the sea cliffs serve as nesting places for a variety of birds. The wildlife of the area includes a number of endangered species such as the hawkesbill turtle.

The coral reefs around American Samoa suffered badly from the depradations of the crown-of-thorns starfish during the late 1970s; a major objective of the sanctuary is to protect the reefs in the bay which were relatively undamaged and are especially productive and rich in life.

The bay is being developed as a marine park by the Development and Planning Office in cooperation with the Department of Parks and Recreation, the Office of Marine Resources and the National Oceanic and Atmospheric Association. The management plan is at present being reviewed and it is expected that the park will be declared in 1985. When the regulations are finally drawn up, it is anticipated that fishing and the collection of marine life will be prohibited within the core area of the bay, but subsistence fishing will be allowed in the outer zone. As envisaged at present, the protected area will only cover the area below the high-water mark and not the surrounding cliffs.

Local fishermen and land-owners have been consulted about the sanctuary and are reported to support the proposal. In the past local customary rules have restricted fishing by outsiders, especially for commercial purposes, and have also reinforced the government bans on the use of dynamite and chemical poisons.

No compensation is being paid for the marine area, but the access to it may have other implications. At present land access is by a track from the main road and by a path down the steep southern side of the bay. At one point on the track there is a chain which is kept locked to control access and prevent intrusions by nocturnal revellers. The chain is usually unlocked for visitors to the bay, but it is possible that entry fees might be suggested at a later date. Present plans for the park development envisage that most visitors will come by boat from the nearby centre of Leone. This would prevent complications and also give the park authority greater control.

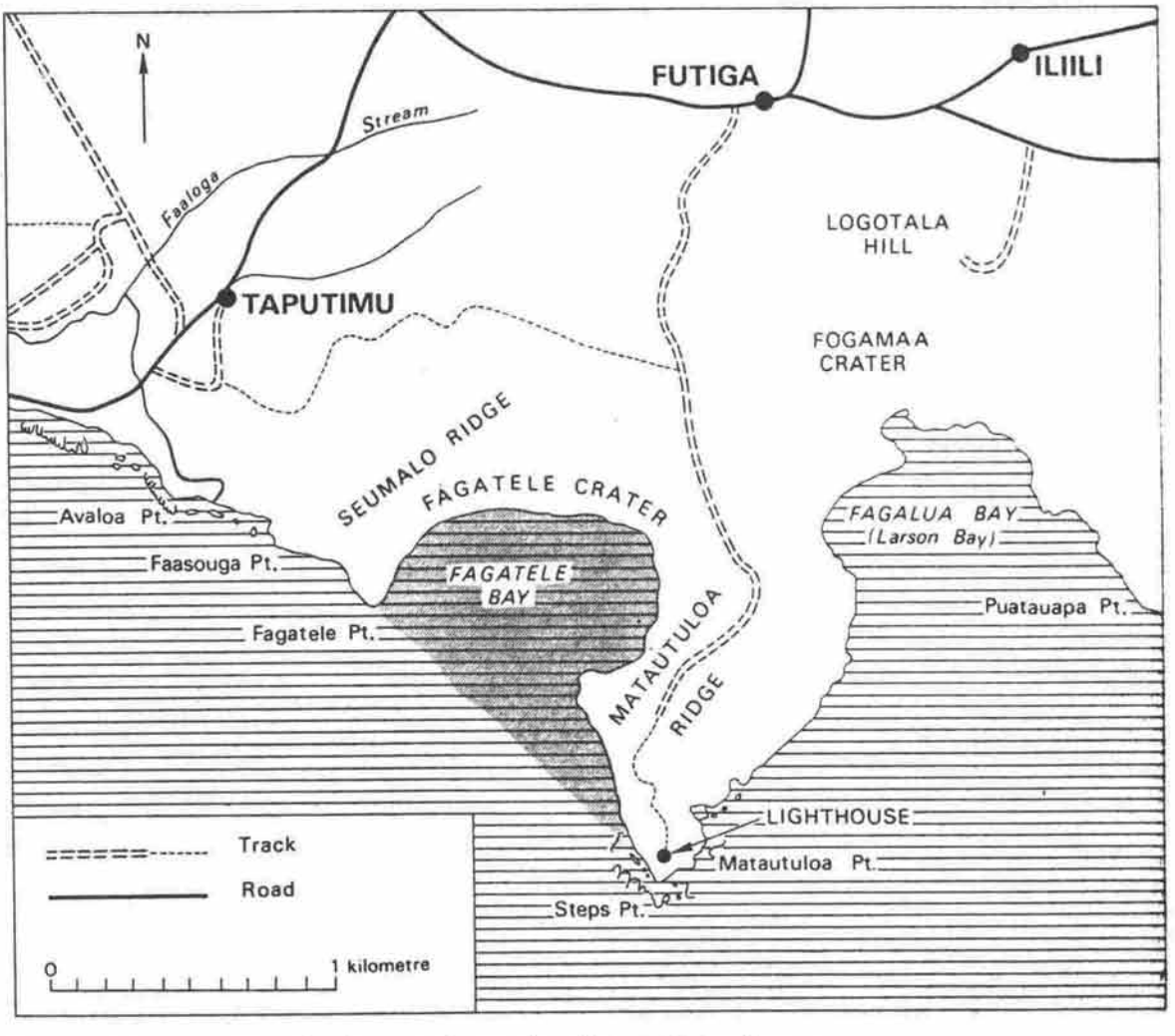
8.5 LAND TENURE AND CONSERVATION AREA DEVELOPMENT

Fagatele Bay is a development that is supported by the local land-owners who have in addition expressed an interest in being involved in the management of the sanctuary. The protection of this and other marine and coastal areas has the advantage that the government already has the legal rights and legislation to develop and conserve them.

Acquisition of land for terrestial reserves is much more difficult. The government may condemn (acquire) land for public purposes, but is very reluctant to do so and for political reasons rarely uses its compulsory powers. It has, for example, proved difficult for the Department of Parks and Recreation to increase its supply of land for recreational purposes.

FIGURE 8.1

Location of Fagatele Bay, **AMERICAN SAMOA**



Source: Management Plan For Proposed Fagatele Bay National Marine Sanctuary

Easements are possible in some cases, but they may involve compensation for crop damage. The Alava Trail provides a walking track which runs through customary land with the agreement of the aiga involved. The trail facilities have still to be developed and there are no regulations to restrict other types of land use. Some hunting takes place along the trail and patches of land, often on steep slopes, have been cleared for taro cultivation.

The possibilities for developing customary land for conservation areas seem to be limited, although there has been one example of a matai donating a small piece of land for a recreation area. However, there are several sparsely inhabited areas which might be considered as suitable for national parks and reserves. These include the more mountainous parts of Tutuila and some coastal areas and offshore islands. One site which is being considered for development is the crater of Aunu'u Island, but no plan or request for funds have yet been made. The most suitable and extensive area for a full-scale national park would be Ta'u Island which is sparsely inhabited and few people visit the interior because of local fears of the spirits, aitu, that are supposed to reside there. The island contains a variety of forest types and bird species. Dahl (1980) recommended an area of 1,260 hectares around Lata Mountain on Ta'u as being suitable for a park.

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CHAPTER 9

TONGA

9.1 INTRODUCTION

The Kingdom of Tonga is a country of limited land resources but large amounts of ocean. Its islands have a total land area of approximately seven hundred square kilometres but cover 362,500 square kilometres of sea. Three-quarters of the islands are uninhabited; the population is concentrated on the southern island of Tongatapu with most of the remainder living on the Ha'apai archipelago and the island of Vava'u. The total population is 99,000 (1982) giving an average density of 142 people per square kilometre.

The topography of Tonga varies between flat limestone islands and higher volcanic ones. There are a number of different types of coastal and reef habitats, including stretches of elevated reef. There is atoll and beach forest but on Tongatapu much of the original lowland rain forest has been cleared; the most extensive area of forest is to be found on the neighbouring island of 'Eua. There are patches of mangrove especially along the edges of the more sheltered lagoons.

9.2 LAND TENURE

The present land tenure system had its origins in the mid-nineteenth century during the rule of King George Toupou I. He established the principle that all land legally belonged to the Crown and that all titles to land were by grant from the government. In addition the sale of land to foreigners was forbidden; this prohibition was later extended to include the selling of land to Tongan nationals. Leasing of land was permitted, but subject to government control.

Much of the land was in fact occupied by different chiefs. The legal code of 1862 had freed commoners from forced labour and compulsory contributions; instead it affirmed the principle that land should be allocated to those who needed it in return for tribute and rent. Later the most powerful chiefs were made nobles and granted hereditary estates (tofi'a). The rest of the land became royal estates or government land under the direct control of the Minister of Lands.

King George ToupouI was also concerned that all his citizens should have access to the land and instituted a system of tax allotments to every male Tongan tax-payer. These allotments generally each had an area of 3.3 hectares (8¼ acres or originally 100 fathoms square); they were to be used for farming and known as 'api tukuhau. There were also town allotments of ½ acre for houses.

The innovations have remained part of the present land tenure system. Section 3 of the country's Land Act states: "All land in the Kingdom is the property of the Crown". The Act also provides for life interests in tax allotments and hereditary estates; it states that the annual

rent for an allotment shall be 8 shillings. A Land Court hears cases concerning claims to tax allotments and disputes over the non-payment of rents.

At present about 60 per cent of the population live on hereditary estates Altogether less than half of those eligible for a tax allotment are able to get one (the 1966 Census revealed that only 42 per cent of adult males had allotments). Pressure of population on land has been a factor leading to emigration from Tonga. There have been demands for changes in the land tenure system, especially in relation to the hereditary estates, and a Royal Land Commission has been appointed to inquire into "all practices and usages relating to land".

Statistics showing the different types of tenure can be seen in Table 9.1. It is interesting to note that although it is government policy that all tax allotments should be registered, this has not happened in the case of a large number of those on the hereditary estates.

TABLE 9.1

LAND TENURE IN TONGA 1982

Nature of Tenure	Approx. Area in ha.	% of Total
Registered tax and town allotments	31,914,71	42.70
Total allotments not yet registered but already allocated	15,511.15	20.76
Government Leases	736.22	.98
Land leased by Tongan nationals	798.81	1.07
Land leased by Commodity Boards	111.75	.15
Government land	8,506.12	11.38
Hereditary Nobles' estates	5,189.70	6.9
Foreign leases	1,981.20	2.65
Charitable leases (churches)	2,129.53	2.85
Lakes and internal waters	2,963.52	3.97
Telekitonga and Telekitokelau islands	4,892.28	6.55
Total	74,734.97	100

Source: Annual Report of the Ministry of Lands, Survey and Natural Resources, 1982.

The legal and land tenure system in Tonga gives the government considerable powers to acquire and reserve land for public purposes. It is also of value for conservation that the foreshore is the property of the Crown and this is defined in the Land Act as "land adjacent to the sea alternatively covered and left dry by the ordinary ebb and flow of the tides and all land adjoining thereunto lying within fifty feet of the high water mark".

All territorial seas and internal waters are the property of the Crown and may be subject to government restrictions and regulations. Every Tongan has the right to fish in these waters. There are no traditional fishing rights giving villages or individuals exclusive rights to fish or gather shells in certain areas. Halapua (1982) states: "No fisherman has exclusive claim to the resources or the right to stop others from participating in their use".

The land reforms of the nineteenth century have also meant that there is no customary tenure of the type found in many other countries of the South Pacific region. There is not the same emphasis on control by the kinship group and it is difficult to identify traditional conservation elements in the system. There are now few traditional taboos to provide protection for certain areas or wildlife. Two exceptions are the flying fox and porpoise which often do seem to be protected by custom.

Before the introduction of Christianity in the nineteenth century, the natural world does seem to have played a more important part in the spiritual life and customs of the people. Cummins (1977) writes:

> It was believed that the gods communicated with men through the movements of living creatures. As a result of this belief, lizards, sea snakes, sharks, octupuses, doves and many other animals and birds were revered. These creatures were not universally respected, but only by the people whose family or clan god was represented by a particular animal. Hence the chief and people who held that the shark was representative of their god would not eat shark's meat. Similarly with those who revered the mullet or octupus.

Accounts of life in Tonga at the beginning of the nineteenth century often contain references to taboos on hunting or eating wildlife. Mariner (1827) suggests that these sometimes occurred to prevent food shortages after the great feasting that follows the death of a chief. He also writes that "primitive gods ... come in the bodies of lizards, porpoises and a species of water snake; hence these animals are much respected; their coming into porpoises is supposed to be for the taking care of vessels". A description of the myth concerning the origin of sea turtles from the severed head of one of the gods' daughters is given to explain why turtle was often prohibited food.

Today, with the exception of the turtle and flying fox, wildlife is no longer protected by traditional beliefs. Instead modern administrative procedures and legislation have been introduced to bring about environmental protection.

9.3 CONSERVATION LEGISLATION

Protection for turtles and certain species of birds is provided by the Birds and Fish Protection Act. At present the birds scheduled as protected under this statute are as follows: White-rumped Swiftlet, Wattled Honeyeater, Blue-crowned Lory, Red-breasted Musk Parrot, Long-tailed Cuckoo, Purple Fruit Dove, Megapode, Polynesian Starling, Sooty Rail, Friendly Ground-dove and Pacific Pigeon. Turtles are protected by a closed season during their breeding period from 1st November to 31st January.

The Forest Act enables forest reserves to be established and the Preservation of Objects of Archaelogical Interest Act protects historical, cultural and archaelogical sites. Other protective measures may result from royal decrees and cabinet or privy council decisions. For example, in 1978 a cabinet decision was made to indefinitely ban all whaling.

The most important legislation for the establishment of conservation areas is the Parks and Reserves Act, 1976. This provides "for the establishment of a Parks and Reserves Authority and for the establishment, preservation and administration of Parks and Reserves". It states that every park "shall be administered for the benefit and enjoyment of the people of Tonga and there shall be freedom of entry and recreation therein by all persons". In the case of reserves there shall be closer controls to enable the protection and preservation of the habitat and wildlife concerned.

9.4 CONSERVATION AREAS

Five parks and reserves have been established under the Parks and Reserves Act. All were gazetted in 1978 and are located on or near the island of Tongatapu. They are as follows:

(a) Ha'atafu Beach Reserve. This is an area of 8.4 hectares located in the north-west of Tongatapu. It is an area of beach, lagoon and reef which is a popular recreation area.

(b) Hakaumama'o Reef Reserve is located 14 kilometres north of Tongatapu. It has an area of 126 hectares and includes the reef and surrounding deep sea.

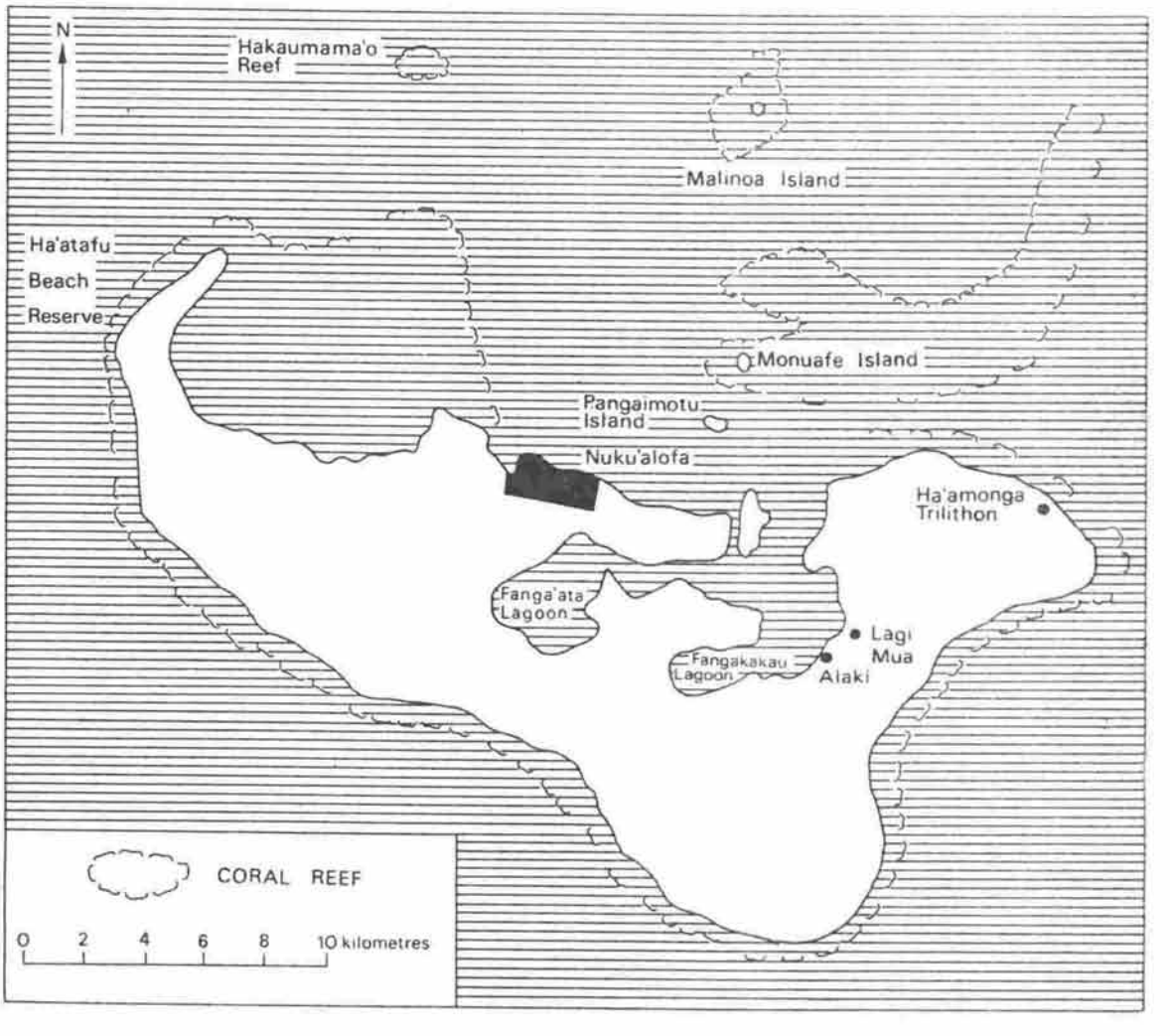
(c) Malinoa Reef Reserve and Island Park consists of an island and the surrounding reef which is rich in fish, octopus, clams and other shellfish. It is also of historical interest because it contains the graves of six men who were executed for attempting to assassinate Tonga's second Prime Minister, Shirley Baker, in 1886. The reserve and park have a total area of 73 hectares.

(d) Monuafe Reef Reserve and Island Park comprises a small island and reef; its area is 32 hectares.

(e) Pangaimotu Reef Reserve is close to Nuku'alofa and has an area of 48 hectares. It has a variety of marine environments including mangroves, a shallow fringing reef with extensive eel grass beds, and also an outer reef which extends into the Piha Passage.

FIGURE 9.1

Location of Reserves, Parks and Protected Areas.
TONGATAPU, TONGA



These reserves have been established on land or marine areas which are under government control. Land tenure does not seem to have caused any problems; management and enforcement of regulations is another matter. At the time of my visits to Tonga in 1984, there were no staff assigned to look after the reserves, although I was told two were in training. There has been only limited development of the areas. They have been publicised in a brochure produced by the Visitors' Bureau and there are signposts which include the rules prohibiting the destruction or removal of marine life. However, there are no means of enforcing these rules and people are not always aware of them; on the Ha'atafu Reserve collecting shellfish from the reef still occurs. If the reserves are to have real value in protecting marine life and its environment then there is a need for the allocation of more resources to their supervision and to public education.

In addition to the five reserves which have been described, there are a number of other areas with some protected status. On Tongatapu there is a large area of shallow partly enclosed sea, the Fanga'uta and Fangakakau Lagoons, which is important for its mangroves and as a breeding-area for fish. Here, no commercial fishing is allowed, the mangrove trees may not be cut down and no effluents are supposed to be discharged into the water. Subsistence fishing is allowed but there are controls on the methods used; fish fences cannot be constructed and the minimum size for the mesh of nets is 2½ inches. Vaipuua Lagoon in Vava'u is another area with similar controls where only subsistence fishing is allowed.

There are several other areas in Tonga that are protected because of their historical significance. On Tongatapu there are the royal tombs at Mala'akula; these are located on the King's land. At Alaki there is the point where Captain Cook landed from the "Endeavour" in 1977; this is marked by a monument and is in a small well-kept area which is owned and maintained by the King's brother, who is also the Prime Minister, Prince Fatafehi Tu'ipelehake. Nearby are the terraced tombs, the Langi, located at Mu'a which was one of the ancient capitals. These are enclosed and are on part of the hereditary estate of one of the nobles, the Honourable Kalaniuvalu, who is responsible for the maintenance of the area.

Another feature of considerable interest is the Ha'amonga Trilithou in the north-east of Tongatapu. It is an ancient stone gateway made from three massive slabs of coral. This monument is on government land and protected as a reserve. In the north-west of the island is Kanakupolu, the site of the crowning of the paramount chief, Tui Kanokupolu, in 1631. This is part of the royal estate and has been proposed as a national historical park. The fact that it is part of the King's land means there should be no obstacles to its development.

Another historical park has been proposed on Vava'u at Puono. This was the site of the proclamation of the Code of Vava'u, Tonga's first attempt at a national system of written law. The site is on government land and again there should be no objections or obstacles to its establishment.

Much of the natural vegetation of Tonga has already been destroyed and there is an urgent need to protect what is left. There is a small remnant of forest near the airport on Tongatapu on the estate of Prince Tu'ipelehake which he has agreed should be protected as a reserve. A much larger area

of rain forest on the island of 'Eua has also been proposed as a park. This is an area of 1,400 hectares and it includes spectacular coastal features and has a variety of wild birds. It has not yet been gazetted, but there is a need to establish a national park there as soon as possible.

There are also forests on the volcanic island of Ata which in addition has important seabird breeding areas. It has been suggested as a Biosphere Reserve; as it is uninhabited there appear to be no land tenure problems at present, but I was informed that its development as a protected area was doubtful because recent prospecting had discovered offshore mineral deposits.

The south and south-east coast of Tongatapu has many features of scenic, recreational and geographical interest. There are cliffs, raised coral platform, reefs, caves, blow-holes and natural bridges. This coastal strip is already government land as far as 50 feet inland from the high-water mark. If this strip was extended further it would enable a reserve to be formed along the coast. This would have recreational value and in addition should help to protect the surviving coastal vegetation.

Tonga is fortunate in that its political and legal system enable parks and reserves to be established with less opposition than in many other South Pacific countries. Legislation already exists for government land to be set aside for conservation purposes. On the other hand, there is considerable pressure of population on land resources. There is already a shortage of land for tax allotments and it would be prejudicial to the general welfare of the population if good agricultural land was to be withdrawn from production. Fortunately much of the land needed for conservation purposes is on land not considered to have much potential for agriculture. There are also possibilities for multiple land use in many protected areas. Tourism, recreation for local people, forest development, education, research and the conservation of natural resources are all compatible uses in one area if it is carefully managed.

The status of the nobles and of land on the hereditary estates is at present under scrutiny by the Royal Land Commission. If the estates are to have justification there needs to be emphasis on the responsibilities as well as the priviledges that go with this form of tenure. These responsibilities should include the protection of natural resources and the setting aside of land for conservation purposes.

9.5 REFERENCES

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CHAPTER 10

CONCLUSION

The provision of national parks and reserves in the South Pacific region is at present inadequate. Some countries have no protected areas and in the others only a small proportion of the total land area is covered.

Past development of parks and reserves has been dependent on the availability of public land. This is generally in short supply and subject to competing land use needs. Furthermore, government rights to this land may be disputed, especially in cases where it was acquired because it was considered waste and vacant. The return of alienated land to the original indigenous owners, as in Vanuatu, is another restraint on the use of public land. Governments have powers to acquire additional land for public purposes either by negotiation or compulsory processes, but have generally been reluctant to purchase large areas for conservation purposes.

In some cases international assistance has been given for conservation projects, although donor institutions have tended to be wary of funding land acquisition or compensation payments. In future, greater international involvement may be necessary to help secure some protected areas.

An alternative to parks and reserves on government land is the use of customary land. In 1975 the South Pacific Conference on National Parks passed the following resolution on parks and traditional land ownership systems:

> Being aware of the importance attaching to the traditional land ownership and tenure systems within many of the countries of the region;
>
> Realizing that many of those who own land or rights to land under these systems desire to ensure that their land is protected against destructive uses so that it may be conserved for use and enjoyment by future generations whilst wishing to retain their land ownership or rights;
>
> Being aware that there are methods for achieving this purpose including the granting of statutory conservation easements, the dedication of land for conservation use, the acceptance of covenants restricting forms of use of the land and the entering into suitable leasing agreements;
>
> The South Pacific Conference on National Parks and Reserves meeting in Wellington, New Zealand on 27 February 1975;
>
> Recommends that the Governments of the region use such methods to provide machinery to enable the indigenous people involved to bring their land under protection as national parks or reserves without relinquishing ownership of the land, or those rights in it which would not be in conflict with the purposes for which the land was reserved.

During the decade since this resolution there has been only limited progress on the development of the methods and machinery that were suggested. Parks and reserves are still mainly established on public land. Some attempts have been made to set up protected areas on land held under traditional tenure. The most significant of these developments have been the wildlife management areas in Papua New Guinea where the great advantage has been the involvement of land-owners in the initiation and management of the areas. However, the wildlife management areas have often suffered through lack of consistent government support and their effectiveness is often limited by the absence of any development or management plan and the provision of measures to protect the habitat as well as the wildlife. The Papua New Guinea Conservation Areas Act would remedy these shortcomings and provide a broad basis for protecting all types of areas. Unfortunately it has yet to be implemented in Papua New Guinea, but nevertheless it does provide some sort of model for other countries interested in legislation to protect areas of customary land. It is significant that the reasons why the Act has not yet been implemented relate to administrative capacity and the shortage of staff and funds rather than land tenure problems.

The possibility of establishing protected areas on customary land has also been propounded in other Pacific countries. Proposals for a national park network in Western Samoa (Holloway 1975) include suggestions that customary land-owners might be prepared to dedicate land for conservation purposes as they had done for churches. In Fiji the Yadua Taba Crested Iguana Sanctuary has been developed on customary land, but the attempts to establish the Waisali Forest Reserve illustrate some of the problems which may arise if land-owners have to forgo what are regarded as the advantages of development.

Many customary groups welcome conservation measures that reinforce their own rights and exclude outsiders from exploiting local resources. The fact that customary land is unregistered makes the declaration of a conservation area an alternative means of defining and securing their territory. The problem then becomes one of deciding which rights are compatible with environmental protection. Should hunting, fishing and collecting be allowed in the conservation area? In strict national parks and reserves these activities will generally be excluded but in conservation areas on customary land they form an important element in the life-support systems. Nevertheless there must be some control over the activities to prevent over-exploitation. This can sometimes be achieved by an insistence on traditional methods as happens in Papua New Guinea under the Fauna (Protection and Control) Act. Often there are prohibitions on the use of shotguns, nylon nets and other modern devices such as pressure lamps as an aid in fishing. Moratoria on hunting and fishing when wildlife or fish become scarce or during breeding systems are traditional controls that should continue to be used. Taboos which protect wildlife and parts of the natural environment should be continued, even although the sanctions may become secular rather than supernatural. Niue seems to be one example where taboos or tapu protecting areas of forest have been effective and it has been suggested they should be used as a basis for conservation on the island (Leonard 1977).

Commercial logging operations are often a threat to the conservation of customary land and it is important that programmes for establishing parks and reserves should be closely integrated with those for the management and protection of forest resources. At present land-owners who agree to the felling of timber receive considerable financial benefits in the form of royalties, rentals and timber rights purchase fees. It would be more equitable and reduce local pressures to log important conservation areas if a proportion of these payments went to land-owners of these areas.

The management of customary areas is likely to be most effective where traditional group controls on land use rights are strongest. The fact that many potential conservation areas are in uncultivated and isolated areas is fortunate because it is in these areas that individual rights are less defined and there are collective rights of hunting and collecting. Traditional authority may be exercised in different ways: hereditary or elected chiefs, councils or by general consensus. Whichever method is used it is important that it should be involved and if possible incorporated into park and reserve management. Individuals may be employed in the role of wardens, rangers, guardians and undertakers; their authority can be reinforced by the issue of badges and uniforms.

In future it should prove possible to increase the number of parks and reserves on customary land. There needs also to be a strengthening of both traditional and modern environmental controls on other areas of customary land. A realistic model for protected area development in the South Pacific region would seem to be as follows:

(a) A limited number of full national parks established on government land (e.g. O Le Pupu Pue). These would be fully protected and adequately staffed with recreational and interpretative facilities.

(b) Nature reserves and sanctuaries strictly controlled by government with access limited and wildlife species protected (e.g. Rose Atoll).

(c) A network of traditional conservation areas on customary land (e.g. wildlife management areas in Papua New Guinea). These would be managed by local land-owners who would make their own regulations. Some hunting and fishing would be allowed, but the emphasis should be on the use of traditional methods for subsistence purposes. This category could also include recreational sites, such as beaches and waterfalls, on customary land.

(d) Larger areas which would stay under customary tenure but which would be subject to land use and development controls. In particular areas of forest, water catchment areas and coastal zones would be protected in this way. In some countries of the region legislation exists to provide this protection although it is not always fully implemented (e.g. the Papua New Guinean Conservation Areas Act).

Development of these four types of protected area should be coordinated as closely as possible, preferably within a regional planning framework. It would be equally applicable to marine and terrestial areas. It has the advantage of operating within the tenure system and represents an evolution from the existing protected area systems in some countries. It is development that should prove practical with present resources

and would not involve excessive additional public expenditure. However, there is a need for strong and consistent government support; staffing must be adequate, links with customary land-owners maintained, regulations must be understood and enforced, education programmes are essential. In particular, conservation must not be seen as something which blocks progress for rural land-owners but rather as the basis for sustainable development.

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APPENDIX 1

GLOSSARY OF VERNACULAR TERMS USED

Aiga (Samoa)	- kinship group, land-owning unit
Aitu (Samoa)	- spirits
'Api tukuhau (Tonga)	- rural tax allotment
Ariki (Cook Islands)	- high chief
Dalo (Fiji)	- taro
Damana (PNG)	- one year prohibition on hunting (Collingwood Bay)
Fono (Samoa)	- council of chiefs
Gele (Fiji)	- right to cultivate land
Gonedau (Fiji)	- traditional specialist fishermen (Lau Islands)
Kanaks (New Caledonia)	- indigenous inhabitants
Koperu (Cook Islands)	- mackerel
Kundu	- drum
Lelepa (Vanuatu)	- landing place
Lo (PNG)	- long rope of coconut fronds used in fishing (Manus)
Matai (Samoa)	- chief
Mataipo (Cook Islands)	- chief
Mataqali (Fiji)	- land-owning group
Ndau ni nggoli (Fiji)	- traditional marine resource controller (Lau Islands)
Pitpit (PNG)	- cane
Ples masalai (PNG)	- place of the spirits
Pule (Samoa)	- right to allocate land
Puna (Cook Islands)	- nuclear family
Ra'ui (Cook Islands)	- customary prohibition
Sankon saravit (PNG)	- temporary prohibition on hunting (Collingwood Bay)
Sevu (Fiji)	- tribute or first fruits given to chief
Talasiga (Fiji)	- grasslands
Tambu (Melanesia)	- customary prohibition taboo
Tapere (Cook Islands)	- units of land
Tapu (Polynesia)	- customary prohibition, taboo
Taunga koperu (Cook Islands)	- traditional boundary to marine territory, the site men stood for mackeral fishing

Tofi'a (Tonga)	- hereditary estate
Tokotoa (Fiji)	- kinship group
Unga (Cook Islands)	- commoner
Vaka (Cook Islands)	- tribe
Vaka vanua (Fiji)	- traditional land controller (Lau Islands)
Vanua (Fiji)	- land
Veikau (Fiji)	- right to forest land
Yaqona (Fiji)	- kava
Yavu (Fiji)	- right to house site
Yavusa (Fiji)	- widest kinship group

APPENDIX 2

IUCN LIST OF ANIMALS OF CONSERVATION CONCERN FROM THE SOUTH PACIFIC REGION[1]

Papua New Guinea

Heinroth's Shearwater
Peregrine Falcon
Black Coral
Lichen Weevil
Meek's Graphium
Goliath Birdwing Butterfly
Queen Alexandra's Birdwing Butterfly
Black-lipped Pearl Oyster
Horse's Hoof Clam
Southern Giant Clam
Giant Clam
Scaly Clam
Long-beaked Echidna
Doria's Tree-kangaroo
Goodfellow's Tree-kangaroo
Black Dorcopsis Wallaby
Black-spotted Cuscus
Stein's Cuscus
Woodlark Island Cuscus
Clara Bandicoot
Dugong
Coconut Crab
Loggerhead Turtle
Green Turtle
Olive Ridley Turtle
Leatherback Turtle
New Guinea Plateless Turtle
New Guinea Crocodile
Manus Green Tree Snail
Saltwater Crocodile

French Polynesia

Black-lipped Pearl Oyster
Hawksbill Turtle

French Polynesia - Marquesas

Marquesas Pigeon
Marquesas Ground Dove
Ultramarine Lorikeet
Hatutu Polynesian Warbler
Eiao Polynesian Warbler

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[1]Source: IUCN Conservation Monitoring Centre (Cambridge, 1984).

French Polynesia - Marquesas (continued)

Eiao Flycatcher
Nukuhiva Flycatcher
Uapou Flycatcher
Hivaoa Flycatcher

Kiribati - Phoenix Islands

Coconut Crab

Pitcairn

Scaly Clam

French Polynesia - Society Islands

Society Islands Pigeon
Tahiti Lorikeet
Moorea Polynesian Warbler
Tahiti Flycatcher
Moorean Viviparous Tree Snail (14 species)
Hawksbill Turtle

Tokelau

Hawksbill Turtle

Tonga

Horse's Hoof Clam
Scaly Clam
Humpback Whale
Loggerhead Turtle
Hawksbill Turtle
Fiji Banded Iguana

French Polynesia - Taumotu

Tuamotu Sandpiper
Society Islands Pigeon
Society Islands Ground Dove
Tahiti Lorikeet
Black-lipped Pearl Oyster
Scaly Clam
Coconut Crab

French Polynesia - Tubuai

Rapa Fruit Dove

Tuvalu

Horse's Hoof Clam
Giant Clam

Tuvalu (continued)

Scaly Clam
Fluted Clam
Coconut Crab
Leatherback Turtle

Western Samoa

Peregrine Falcon
Tooth-billed Pigeon
Scaly Clam
Hawksbill Turtle

Caroline Islands

Truk Micronesian Pigeon
Ponape Short-eared Owl
Truk Monarch
Ponape Greater White-eye
Truk Greater White-eye
Ponape Mountain Starling
Black-lipped Pearl Oyster
Banda Shell
Horse's Hoof Clam
Southern Giant Clam
Giant Clam
Scaly Clam
Hawksbill Turtle
Leatherback Turtle
Saltwater Crocodile

Guam

Marianas Gallinule
Guam Rail
Marianas Fruit Dove
Giant Micronesian Kingfisher
Marianas Crow
Black Coral
Triton's Trumpet
Tree Snail
Southern Giant Clam
Giant Clam
Marianas Flying Fox
Guam Flying Fox
Dugong
Coconut Crab
Red Belly Goby
Hawksbill Turtle

Mariana Islands

Marianas Mallard
Micronesian Megapode

Mariana Islands (continued)

Marianas Megapode
Marianas Gallinule
Marianas Fruit Dove
Rota Bridled White-eye
Scaly Clam
Marianas Flying Fox
Guam Flying Fox
Humpback Whale
Coconut Crab
Red Belly Goby

Marshall Islands

Radak Micronesian Pigeon
Triton's Trumpet
Black-lipped Pearl Oyster
Horse's Hoof Clam
Giant Clam
Scaly Clam
Humpback Whale
Coconut Crab
Hawksbill Turtle

Pacific Islands (Trust Territory)

Marianas Mallard
Micronesian Megapode
Palau Megapode
Palau Nicobar Pigeon
Truk Greater White-eye
Palau Blue-faced Parrotfinch
Palau White-breasted Wood Swallow
Dugong
Hawksbill Turtle

Fiji and Rotuma[1]

Macgillivray's Petrel
Peregrine Falcon
Barred-wing Rail
Long-legged Warbler
Pink-billed Parrotfinch
Triton's Trumpet
Horse's Hoof Clam
Coconut Crab
Hawksbill Turtle
Black-lipped Pearl Oyster
Leatherback Turtle
Fiji Banded Iguana
Fiji Snake
Saltwater Crocodile

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[1] In addition, the Fijian National Trust list the following as being rare and endangered: Sooty Rail, Vanua Levu Silktail, Grass Owl, Red-throated Lorikeet, Ogea Flycatcher, Jungle Fowl, Taveuni Free-tailed Bat, Monkey-faced Fruit Bat, Crested Iguana.

New Caledonia

Peregrine Falcon
Kagu
Cloven-feathered Dove
Giant Imperial Pigeon
Uvea Horned Parakeet
Horse's Hoof Clam
Southern Giant Clam
Scaly Clam
Fluted Clam
Dugong
Loggerhead Turtle
Hawksbill Turtle
Olive Ridley Turtle

New Hebrides (Vanuatu)

Peregrine Falcon
Santo Mountain Starling
Horse's Hoof Clam
Giant Clam
Dugong
Hawksbill Turtle
Saltwater Crocodile

Solomon Islands

Beck's Petrel
San Cristobal Mountain Rail
Gizo White-eye
Meek's Graphium
Black-lipped Pearl Oyster
Horse's Hoof Clam
Giant Clam
Dugong
Loggerhead Turtle
Hawksbill Turtle
Olive Ridley Turtle
Leatherback Turtle
Saltwater Crocodile

Cook Islands

Tahiti Lorikeet
Rarotonga Flycatcher
Black-lipped Pearl Oyster
Hawksbill Turtle

American Samoa

Short Samoan Tree Snail
Mt. Matafao Different Snail
Hawksbill Turtle

AC
01065

MFN
1154