FIJI

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BIODIVERSITY STRATEGY AND ACTION PLAN

OCTOBER 1999

CONSULTATION

The formulation of the Fiji Biodiversity Strategy and Action Plan (FBSAP) incorporated a wide variety of material from diverse sources, but principally consisted of:

- *Recommendations of reports from Six Technical Groups;*
- *Recommendations of six Community Workshops; and,*
- *Contributions from the members of the FBSAP Steering Committee.*

Several Drafts of the FBSAP have been intensively discussed by members of the FBSAP Steering Committee since the first Working Draft was distributed in September 1998. Steering Committee members comprise and represent a wide cross-section of Government Departments, Agencies, Statutory Bodies, Non-government Organisations and Private Individuals. All Government Ministries and Departments in anyway involved in Biodiversity management were provided with copies of the Working Draft and invited to the two-day First National Workshop which was held in Suva in October 1998.

Consideration of the outcome from the First National Workshop by the Steering Committee resulted in a Final Draft being circulated in February 1999. A nation-wide publicity programme was carried out in preparation for discussion of the Working Draft at Six Regional Biodiversity Workshops.

At the same time a Facilitator, Mr Robin Yarrow, was commissioned to ensure that all Government Ministries were fully aware of the Draft FBSAP and had the opportunity to comment if they wished. Subsequently the Second National Workshop was held in August 1999 specifically to hear the views of the Public Sector.

This Draft is now considered by the FBSAP Biodiversity Steering Committee to be ready to be presented as a Draft but representing the Final FBSAP for consideration by the Cabinet of the Government of the Fiji Islands. If endorsed, it will published in an attractive format and widely circulated.

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ABBREVIATIONS AND ACRONYMS

Note – In this report `Fiji' is used, for brevity sake, to represent `the Fiji Islands' as required by the 1997 Constitution.

– A Glossary is provided with the References at the end of the Document.

AGO	Office of the Attorney General
BSC	Biodiversity Steering Committee
CITES	Convention on International Trade in Endangered Species
DCE	Department of Customs & Excise
DFI	Department of Fisheries
DFO	Department of Forestry
DL	Department of Lands
DOA	Department of Agriculture
DOE	Department of Environment
DOT	Department of Tourism
EIA	Environmental Impact Assessment
ESD	Ecologically Sustainable Development
FAB	Fijian Affairs Board
FBSAP	Fiji Biodiversity Strategy and Action Plan
FETA	Fiji Eco-Tourism Association
FLIS	Fiji Lands Information System
FM	Fiji Museum
FP	Fiji Pine
FR	Forest Reserve
FSC	Fiji Sugar Corporation
FTIB	Fiji Trade & Investment Board
GIS	Geographical Information System
HC	Hardwood Corporation
IDA	Internal Demarcated Area
MAAF	Ministry of Agriculture, Forestry and Fisheries
MOE	Ministry of Education & Technology
MOF	Ministry of Finance
MOH	Ministry of Health
MORD	Ministry of Rural Development
MR	Department of Mineral Resources
NCSD	National Council for Sustainable Development
NEMP	National Environment Management Project (1991-93)
NES	National Environment Strategy
NGO	Non Government Organisations
NLC	Native Lands Commission
NLTB	Native Lands Trust Board
NR	Nature Reserve
NT	National Trust for Fiji
PRV	Private Sector
RC	Rotuman Community
RSNS	Register of Sites of National Significance
SDB97	Sustainable Development Bill (1997)
SDB99	`Revised' Sustainable Development Bill (1999)
SPC	Secretariat of the Pacific Community. Commission (with GTZ)
SPREP	South Pacific Regional Environment Programme
SPRH	South Pacific Regional Herbarium
SPRIG	South Pacific Regional Initiative on Forest Genetic Resources
TFRO	Traditional Fishing Rights Owners
TOR	Terms of Reference
UNDP	United Nations Development Programme
USP	University of the South Pacific

1 INTRODUCTION

BIODIVERSITY – A DEFINITION

The definition of Biodiversity for the purpose of the Fiji Biodiversity Strategy and Action Plan is as follows:

The variety of life forms, the different plants, animals and micro-organisms, the genes they contain, and the ecosystems they form. It is usually considered at three levels; genetic diversity; species diversity, and ecosystem diversity.

1.1 OVERVIEW OF THE FIJI BIODIVERSITY STRATEGY AND ACTION PLAN

The Fiji Biodiversity Strategy and Action Plan comprises six chapters:

Chapter 1: An introduction to how and why the Plan has been prepared, specifically in respect of the Convention on Biodiversity and related Fijian plans or proposals;

Chapter 2: An overview of Fiji's Biodiversity emphasising which species or groups require specific attention because of their endemic, culturally important or threatened status.

Chapter 3: A review of the benefits of biodiversity conservation in particular the economic benefits.

Chapter 4: A strategic framework for biodiversity management with Focal Areas and accompanying Objectives and Actions including:

Goal and Guiding Principles

Focal Areas for Action

Focus 1: Community Support – Awareness, Involvement and Ownership;

Focus 2: Improving Our Knowledge;

Focus 3: Developing Protected Areas;

Focus 4: Species Conservation;

Focus 5: Control of Invasive Species;

Focus 6: Capacity Building and Strengthening;

Chapter 5: Implementation considerations including the Administrative Framework and Financing Biodiversity Conservation; and,

Chapter 6: Priority Project Profiles.

Following the main text is a list of References and a Glossary while the Attachments include a full portion of the text from the Convention on Biodiversity which details the requirements for National Strategies and Action Plans; a list of the 32 reports which were produced during the course of the preparation of the FBSAP; summary report of the six Regional Biodiversity Workshops and the Preliminary Register of the Sites of National Significance.

1.2 OBLIGATIONS OF THE CONVENTION ON BIODIVERSITY.

The Convention on Biological Diversity was signed by Fiji and more than 150 other nations on 5 June 1992, at the United Nations Conference on Environment and Development in Rio de Janeiro. The Convention came into force in December 1993 and as of February 1999, 174 countries and the European Union have ratified the convention. Fiji is, therefore, a Contracting Party to the Convention.

Box 1.1

AN OVERVIEW OF THE CONVENTION ON BIOLOGICAL DIVERSITY

Objectives:

The conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilisation of genetic resources, including by appropriate access to genetic resources and by appropriate transfer of relevant technologies, taking into account all rights over those resources and to technologies, and by appropriate funding (*Article 1)*

Obligations:

The Convention obliges governments to take a number of measures, these include:

- Monitoring and identification of biodiversity
- Environmental Impact Assessments;
- National Strategies, plans or programmes to conserve and use the components of biological diversity sustainably; and
- The integration of biodiversity policy into relevant sectoral or cross sectoral plans, programmes and policies.

A Process:

The Convention is not a static treaty, but rather a process by which its Contracting Parties agree to take certain actions at the national level.

Some Features of the Convention:

- Recognition of national sovereignty over biodiversity and biological resources;
- Recognition that biodiversity is essential to our planetary life-support systems and that it makes an important contribution to a nation's economy;
- Requires developed countries to assist developing in biodiversity conservation;
- Recognition of the role of indigenous and local communities in protecting biodiversity;
- Promotes the fair and equitable sharing of the benefits arising from the use of genetic resources;

The Convention constitutes an historic commitment by nations of the world to address directly the detrimental impacts of human activity on biodiversity. It is the first time that biodiversity is comprehensively addressed in a binding global treaty, the first time genetic diversity is specifically recognised and the first time that the conservation of biodiversity is recognised as a common and pressing concern of humankind. A cornerstone of biodiversity conservation is inter-generational equity, the assurance that future generations gain equal access to essential biological resources.

The Convention places clear obligations on Contracting Parties. Specifically, *Article 6. General Measures for Conservation and Sustainable Use* states that the Contracting Parties shall prepare national strategies, plans or programmes for the conservation and sustainable use of their biological resources. The Fiji Biodiversity Strategy and Action Plan (FBSAP) is Fiji's initial response to this obligation.

The contents of the Convention on Biodiversity which need to be addressed in National Strategies and Action Plans are summarised in Attachment 1.

1.3 PREPARATION OF THE FIJI BIODIVERSITY STRATEGY AND ACTION PLAN

1.3.1 Administrative Framework

The Fiji Biodiversity Strategy and Action Plan (FBSAP) is a nationally executed Project funded by the United Nations Development Programme. The responsibility for the preparation of the FBSAP was delegated to the Department of the Environment (DOE) of the Ministry of Local Government, Housing and Environment.

DOE responded to this appointment by drawing up, in conjunction with UNDP, Terms of Reference for the study and then inviting a broad spectrum of government and NGO agencies to sit on a Steering Committee which had overall responsibility for the preparation of the plan. The invited membership of the Steering Committee is indicated in Box 1.2.

Box 1.2

INVITED MEMBERSHIP OF THE STEERING COMMITTEE OF THE FIJI BIODIVERSITY STRATEGY AND ACTION PLAN.

Government Departments

1. Dept. of Environment (Chair)
2. Dept. of Forestry
3. Dept. of Agriculture
4. Dept. of Fisheries
5. Attorney General's Office
6. Dept. of Regional Planning
7. Ministry of Foreign Affairs
8. Ministry of Education - Curriculum Development Unit
9. Ministry of Finance - Customs Department

Statutory Bodies

10. National Trust of Fiji
11. Fiji Museum
12. Fijian Affairs Board
13. Native Land Trust Board

Non-Government Organisations

14. South Pacific Action Committee on Human Ecology and the Environment
15. World Wide Fund for Nature
16. Fiji Council of Social Services
17. Foundation of the South Pacific
18. Pacific Development Institute
19. Christian Youth Development Association of Fiji
20. Wainimate
21. Food & Nutrition Committee

University of the South Pacific

22 Biology Department
23 Geography Department
24 Institute of Applied Science
25 Marine Studies Programme
26 South Pacific Regional Herbarium

Others

27. United Nations Development Programme
28. FBSAP Consultant

The Steering Committee has met on the 2nd Thursday of each month since December 1997 and considers a pre-circulated agenda. As needed the Steering Committee appoints a Working Sub-Committee to consider and decide on issues or requirements which were either urgent or technical in nature.

In responding to the Terms of Reference for the Study, the Steering Committee endorsed the need for maximum consultation and capacity raising as possible.

1.3.1.1 Consultation

Wide consultation has been an important feature of the preparation of the FBSAP. In addition to the active role played by the large Steering Committee, the following were undertaken:

1. Six Community Biodiversity Workshops were held in a variety of settings (rural village to urban squatter settlement) on three islands;
2. A two day National Workshop to consider a Working Draft of the FBSAP;
3. A Public Awareness Campaign to elicit support and interest for the Draft FBSAP, this included the use of poster, radio, television and newspaper and was timed to coincide with the six Regional FBSAP Community Workshops;
4. Six Regional FBSAP Community Workshops were held, on three islands, to discuss and review the Draft FBSAP
5. A National Workshop to consider the Draft FBSAP.

1.3.1.2 Capacity Raising

Although the DOE retained clear administrative control and project management of the project, the Steering Committee allocated most of the work to be undertaken by NGOs and/or Technical Working Groups comprising local specialists. The Report was prepared entirely by local expertise with no international consultant requirements. Important features included:

1. Project co-ordination undertaken by a domestic NGO
2. The setting up of six Technical Groups consisting of the best local expertise (refer Box 1.3). These Groups were given the task of `Stock-taking', `Gap Assessment' and the drawing up of Sectoral Recommendations:
3. The 12 community workshops were organised and run by NGOs which organised themselves through their own network;
4. A series of Mini Workshops comprising Steering Committee Members and other invited participants to assist in the drafting of the Action Plan.
5. A Public Awareness campaign was run by a local NGO with a Suva-based media consultant,and,
6. A local Facilitator was hired to ensure that finalisation of the FBSAP was independently supervised and transparent.

1.3.1.3 Finalisation of the Report

Finalising the report to ensure that all Government Ministries and Departments were given the opportunity to comment on the FBSAP and to ensure that their comments were incorporated in a fair and transparent manner was considered very important by the Steering Committee. To ensure this an independent facilitator was hired and given responsibility for this process.

Box 1.3

TECHNICAL GROUPS OF THE FBSAP

1. **Marine Biodiversity .**
2. **Terrestrial Vertebrates and Invertebrates**
3. **Botanical Biodiversity**
4. **Traditional Resource Use and Conservation Practices**
5. **Value and Economic Benefits of Biodiversity**
6. **Priority Protected Area Site Selection**

1.3.1.4 Reports of the Fiji Biodiversity Strategy and Action Plan

A total of 32 reports have been contributed to the FBSAP, either by the Technical Groups or other FBSAP members or groups, these are listed in Attachment 2.

1.3.2 Context of the Preparation of the Fiji Biodiversity Strategy and Action Plan.

The Terms of Reference for the FBSAP make it quite clear that the document is to be drawn up in the context of existing Strategies, Policies and Plans. The most important amongst these are:

- Fiji: State of the Environment (GOF 1992)
- The National Environment Strategy (GOF 1993)
- Sustainable Development Bill (1997)
- Revised Sustainable Development Bill (1999)

The principal recommendations of the National Environment Strategy in respect of Biodiversity are summarised in Box 1.4.

The Sustainable Development Bill 1997 (SDB97) is based on recommendations of the National Environment Strategy following extensive consultation over a two year period, and may be considered to supersede it in respect of institutional and administrative details. However, it was not found possible to present the 1997 Bill to Parliament in its entirety and a 'Revised' Sustainable Development Bill 1999 (SDB99) is currently in the final stages of preparation for tabling in Parliament.

SDB99 has clear references to the administrative responsibility of the Department of the Environment (DOE) in respect of biodiversity (Box 1.5), this relates to the responsibilities of the National Council for Sustainable Development (NCSD) and the drawing up of a National Resource Management Plan. However, Part XVII of the SDB97 which sets out the provisions for protected areas and biodiversity protection (Box 1.6) is not included in SDB99. Other sections of SDB97 which are important in respect of sustainable use of biological resources are listed in Box 1.7.

It is anticipated that Part XVII and other parts of SDB97 will be the subject of further discussion and consultation before being tabled in Parliament as further revisions of the current SDB99. The FBSAP, while generally supporting the biodiversity related provisions of SDB97, recognises that further consultation is required but strongly advocates the need for this to be completed in the near future and effective legislation be put in place.

Box 1.4

PRINCIPAL RECOMMENDATIONS OF THE NATIONAL ENVIRONMENT STRATEGY IN RESPECT OF BIODIVERSITY AS A COMPONENT OF HERITAGE PROTECTION .

1) Instituting a Department of Conservation;
2) Statutory Register of Sites of National Significance;
3) Promotion of Natural Forest Management;
4) Moratorium on the establishment of Hardwood Plantations through the conversion of native forest;
5) Identification of priority sites for complete protection;

   Sovi Basin; Mount Evans Range; Tomaniivi-Wabu-Nadrau Plateau; Waisali;Vunivia;Tunuloa Silktail Reserve; Monu-Monuriki Islands; as yet unidentified reserves on Ovalau, Kadavu; as yet unidentified dryland palaeotropic seasonal vegetation on Viti Levu and Vanua Levu;
6) Total trade bans be instituted on known endangered and threatened species;
7) Fiji to become a signatory of CITES (Convention on International Trade on Endangered Species);
8) Review and reorganisation of the National Trust for Fiji;
9) Review of the status of the Sigatoka Sand Dunes.

(Source: GOF 1993)

Box 1.5

SECTIONS OF THE `REVISED' SUSTAINABLE DEVELOPMENT BILL (1999) RELATING DIRECTLY TO BIODIVERSITY AND SUSTAINABLE USE OF NATURAL RESOURCES

PART II - ADMINISTRATION:
- Section 12: Sustainable Development Policy Formulation
- Section 13 Powers, duties and functions of the Department

PART V - NATIONAL RESOURCE MANAGEMENT PLAN
- Section 53: Natural Resource Inventory
- Section 54: Natural Resource Management Plan

Box 1.6

PROVISIONS OF THE SUSTAINABLE DEVELOPMENT BILL (1997) IN RESPECT OF BIODIVERSITY

Part XVII - Biodiversity, Conservation and National Parks Management:

1. Provides for the establishment of a Conservation and National Parks Authority within the Department of Environment, with specific responsibility to implement various international agreements in the areas of biodiversity protection, conservation and habitat management, including:
   - *Convention on Biological Diversity*
   - *Convention for the Protection of Natural Resources and Environment in the South Pacific Region and Related Protocols (SPRFP Convention);*
   - *Convention on the ('Conservation of Nature (Apia Convention);*
   - *Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES Convention); and*
   - *Convention on the Protection of Wetlands of International Importance Particularly as Waterfowl Habitat (RAMSAR Convention).*
2. Defines the duties and functions of the Conservation and National Parks Authority.
3. Establishes the procedure for the formulation and implementation of a National Biodiversity, Conservation and Protected Areas Policy.
4. Establishes procedures to regulate biodiversity prospecting which includes a permitting process.
5. Provides procedures for the establishment of marine and terrestrial protected areas, including the process for the designation of protected areas on State Land, marine areas, Native Land and on private lands which shall be through an extensive consultative process with interested parties.
6. Requires the preparation of Protected Areas Management Plans for all protected areas designated on State or private lands.
7. Provides for the establishment of "buffer zones" where necessary to protect or screen certain portions of a protected area from surrounding forms of resource use.
8. Establishes a process for the designation of Sigatoka World Heritage Site through a broad-based public consultation process.
9. Provides for the designation of species contained in Schedule 16 as specially protected flora and fauna, and creates offences for the hunting or removal of such species.
10. Provides for the control on the import and export of foreign animals, plants, insects and organisms through the establishment of a permitting process.
11. Provides for the regulation of captive specially protected animals that are captive at the time the Act comes into force.
12. Provides for the protection of wildlife on private and native lands, with penalties for any violation.
13. Establishes a system of permits to regulate the trade of endangered species, thereby giving effect to the requirements under the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES Convention).
14. Provides for the enactment of regulations to give effect to the requirements of this Part

Box 1.7

PARTS OF THE SUSTAINABLE DEVELOPMENT BILL (1997) RELATING DIRECTLY TO SUSTAINABLE USE OF NATURAL RESOURCES

PART XII - RESOURCE MANAGEMENT - GENERAL

PART XIII - COASTAL RESOURCE MANAGEMENT

PART XIV - FISHERIES CONSERVATION AND MANAGEMENT

PART XV - SUSTAINABLE FORESTRY MANAGEMENT

PART XVI - ENERGY CONSERVATION

PART XVII - BIODIVERSITY, CONSERVATION AND NATIONAL PARKS MANAGEMENT

2 OVERVIEW OF FIJI'S BIODIVERSITY

2.1 A DEFINITION OF BIODIVERSITY

Biodiversity has been defined in slightly differing forms.

The definition for the purpose of the FBSAP is as follows:

> **The variety of life forms, the different plants, animals and micro-organisms, the genes they contain, and the ecosystems they form. It is usually considered at three levels; genetic diversity; species diversity, and ecosystem diversity.**

It is important in Fiji's context to specifically include the social element and in particular **"Protect and encourage customary use of biological resources in accordance with traditional practices that are compatible with conservation or sustainable use requirements".** Article 10c *Convention on Biological Diversity* (IUCN 1994).

2.2 STATUS OF BIODIVERSITY IN FIJI

2.2.1 Summary

The current status of Fiji's biodiversity is summarised in Table 2.1. There are two important points which are readily appreciated and very significant in respect of the FBSAP (refer Technical Group Reports 1,2,3).

- the lack of adequate knowledge in many important groups, this is particularly significant in Arthropods – insects and relatives; and,
- Fiji's endemic fauna and flora are almost exclusively terrestrial forest species

2.2.2 Rotuma

Rotuma's terrestrial biodiversity has elements which distinguish it from being merely a Fijian outlier as they are Central Pacific or Samoan in character. Similarly, Rotuma's marine fauna has Central Pacific affinities (Zug et al. 1988). Consequently, Rotuma requires special consideration in biodivesity conservation.

2.3 FIJI'S FLORA

The vascular flora of Fiji is regarded as an extension of the Indo-Malesian floristic province with about 90% of all seed plant genera found in Fiji being present in New Guinea (Balgooy 1971; Ash 1992). However, affinities do exist with Australia, Hawaii, New Caledonia, New Zealand and French Polynesia (Fuller 1997).

The total number of vascular plants known from Fiji is approximately 2600 of which approximately 1600 are native and 1000 are introduced. The current best estimate is that the Fijian flora consists of 310 pteridophytes (ferns and fern allies from Brownlie 1977) and at least 2225 seed plants (Watkins 1995). Based on Smith's Flora Vitiensis Nova (1979-1991), the endemism of Fiji's seed plants is estimated to be 56%, 893 of 1594 native species (FBSAP Technical Group 3 1998). Smith (1979-1991 records 934 introduced species but this is an underestimate based solely on herbarium specimens. The correct figure is likely to be well over 1000 introduced species.

There is a single endemic family, Degeneriaceae which has two species, and 10 of the approximately 450-470 genera are endemic. These are:

Degeneria (Degeneriaceae), *Alsmithia* (Arecaceae), *Neovetchia* (Arecaceae), *Gillespeia* (Rubiaceae), *Hedstromia* (Rubiaceae), *Readea* (Rubiaceae), *Squamellaria* (Rubiaceae), *Sukunia* (Rubiaceae), *Amaroria* (Simaroubaceae), *Pimia* (Sterculiaceae)

Table 2.1 Status of Fiji's biodiversity.

Group	Estimated total number of living, native species	Estimated number (%) endemic to Fiji	Number of extinct species	Number (%) of `threatened' species	Number of Introduced Species
TERRESTRIAL					
Birds [1]	56	27 (48%)	7	13 (23%)	11
Mammals [1]	6	1 (17%)	1	2 (33%)	5
Amphibians [2]	2	2 (100%)	1	2 (100%)	1
Reptiles [3]	26	10 (38%)	1	8 (31%)	0
Invertebrates	No reliable estimate	N/A	N/A	N/A	N/A
Macrolepidoptera - Butterflies, Moths [4]	400	17 (4%)	2	N/A	N/A
Cicadas [5]	15	14 (93%)	N/A	N/A	0
Phasmids Stick Insects [6]	19	12 (63)	N/A	10 (52%)	0
Odonata Dragonflies, Damselflies [7]	33	22 (67%)	N/A	N/A	?
Plants - Flora [8]	1594	893 (56%)	1	281 (18%)	936
Ferns [9]	303	90 (30%)	N/A	58 (19%) [8]	7
Palms [10]	24	24 (100%)	N/A	12 (50%)	6
***Psychotria* spp. Rubiaceae** [11]	76	72 (95%)	N/A	21 (28%)	0
AQUATIC					
Freshwater Bivalves, Gastropods and Crustacea [12]	61	7 (11%)	N/A	1 (2%)	3
Fresh and Brackish Water Fish [13]	91	Few, if any	N/A	N/A	10
Fish (freshwater and marine combined) [14]	1930	1	N/A	N/A	c.10
Marine Invertebrates [15]					
Echinoderms	240	0	N/A	N/A	N/A
Crustacea	262	1?	N/A	N/A	N/A
Gastropods – Cones	99	0	29	N/A	N/A
Gastropods – Cowries	71	0	4	N/A	N/A
Insects [16]	2	2 (100%)	N/A	N/A	N/A
Bivalves [17]	382	0	96	N/A	N/A

Sources: Refer Attachment 3 for the list of sources and comments.

As to be expected in an isolated island flora, genetic radiation and endemism in some groups is extreme. For instance the genus *Psychotria* (Family Rubiaceae) is represented by 76 species of which 72 are endemic.

Palms are the best studied floral group in Fiji and the group documents very clearly the presence of highly restricted ranges, yet recent work shows how poorly we understand even this well-studied group. Doyle and Fuller (1998) have revised the palm flora to consist of 30 described species in 15 genera of which 14 genera and 24 species are considered indigenous, and of these, all 24 species and one genus are endemic to Fiji. All but one of Fiji's endemic palms are forest species and the status of at least 12 (50%) are of conservation concern.

2.3.1 Adequacy of Our Knowledge of Fiji's flora.

Although Fiji's flora is well researched in comparison with those of other South Pacific archipelagoes, there remain many localities that have never or scarcely been collected. New plant species are being discovered regularly, even though current floral research is minimal. On the basis of the number of species known by only a single collection it seems probable that there could be up to 200 species that remain undocumented.

The floristic diversity of Fijian forests has not been adequately documented but it is greatly in excess of 100 species per kilometre square. It is likely that at least one thousand herbarium collections per 100 kilometre square are required to obtain a reasonable estimate of the floristic composition of an area and on this basis there are few, if any, areas in Fiji for which the species composition is adequately known (Ash and Vodonivalu 1989). As to be expected the distribution of Fiji's endemic species is skewed heavily in favour of the larger high islands (Viti Levu, Vanua Levu and Taveuni). Of the remaining islands, only Ovalau has significantly more endemic species than might be expected from its area. This probably reflects its status as a land bridge island formerly connected to Viti Levu in times of glacial maxima.

2.4 TERRESTRIAL AND FRESHWATER INVERTEBRATES

Fiji's invertebrate fauna has received little attention and many groups have not been studied at all. Research has tended to concentrate on those species of economic importance – plant pests etc. Literature on the other groups is scanty, well scattered in the scientific literature and not readily available in Fiji.

However, the following sections summarise some of the more readily available data.

2.4.1 Insects

Robinson (1975) suggested that the total number of insect species inhabiting the Fiji group is in excess of 3500.

Of the macrolepidoptera (butterflies and large moths), which is by far the best studied group, Fiji has 400 spp. with seven endemic genera. Fiji has more endemic genera and more endemic radiation than any other Pacific island group with the exception of Hawaii.
Fiji's cicadas is another group which has received relatively detailed study (Duffels 1988). The Fijian cicada fauna consists of 15 species, of which 14 (93%) are endemic. These include one endemic genus *Fijipsalta*. Tillyard (1929) recorded 33 species of Odonata (dragonflies and damselflies) from Fiji, of which 22 (67%) were endemic.

2.4.2 Molluscs and Crustacea

No review of Fijian terrestrial molluscs appears to have been undertaken, but Solem (1974) records 58 species for Viti Levu.
Haynes (FBSAP Technical Group 2) records 61 species of freshwater mollusc and crustacea of which 7 (11%) are endemic and one of which is an endemic monotypic genus, the medium sized snail which lives in the fast flowing headwaters of the Rewa River, *Fijidoma maculata*.

2.5 TERRESTRIAL VERTEBRATES

2.5.1 Birds

Birds are Fiji's most conspicuous wildlife with:

- Over 120 species recorded;
- 59 native, terrestrial, breeding species of which 26 are endemic (44%).
  There are seven endemic genera:- three species of the Musk Parrots, *Prosopeia* (the Tongan population is introduced); the Collared Lory or Kula, *Phygis*; three Fruit Doves, *Chrysoenas*; the Long-legged Warbler *Trichocichla*; the Silktail *Lamprolia;* the Fiji Warbler, *Vitia*; and the Kadavu Honeyeater*, Xanthotis*.
- 1 endemic breeding seabird – Fiji Petrel *Pseudobulweria macgillivrayi*;
- 1 inland migrant;
- 10 coastal migrants (waders of annual or very regular occurrence with a further 11 recorded as vagrants);
- 20 confirmed breeding seabirds (a further 18 have been observed in Fiji waters but there is no record of breeding); and,
- 11 introduced species are naturalised.

2.5.2 Mammals

Fiji's only indigenous mammals are bats of which there are six known species, four of which are large fruit bats (megachiropterans) and two are small insectivorous species (microchiropterans). One of the former, the Fiji Flying Fox *Pteralopex acrodonta* is endemic. Feral populations of domesticated species excluded, there are five other introduced species now naturalised (four rodents and the Indian mongoose *Herpestes auropunctatus*).

2.5.3 Reptiles

Fiji's terrestrial reptile fauna consists of:

- 2 snakes (incl. one endemic genus);
- 2 iguanas (one endemic species);
- 10 geckos (two endemic species); and,
- 12 skinks (five endemic species)

Of a total of 26 reptile species, nine are endemic (35%). The single endemic genus is the elapid snake – Fiji Burrowing Snake *Ogmodon vitianus.* The two species of iguana *Brachylophus* spp. are of special interest. Three of the skinks have been described within the last decade an indication that the reptile fauna is as yet incompletely known.

2.5.4 Amphibia

Fiji has two little-known endemic frogs (genus *Platymantis*) both of which are endemic. One introduced species the giant toad *Bufo marinus* is naturalised widely.

2.5.5 Freshwater Fish

Ryan (1980) provides a comprehensive list of Fijian freshwater and brackish fish containing 96 recorded species, three additional species have also been recorded from Taveuni (Ryan, 1981). Four of these (4%) are endemic, though Ryan (*loc.cit*.) considers that this figure is likely to be increased on more intensive work on islands other than Viti Levu. Ten introduced species are naturalised.

2.6 MARINE BIODIVERSITY

2.6.1 Summary

Fiji has an extensive and high diversity of marine habitats including estuaries, mangrove wetlands, seagrass, macroalgal assemblages, protected and exposed soft shores, lagoons, coral reefs and slopes. These support a rich biodiversity, and a major subsistence and moderate commercial fisheries. However, despite its subsistence, commercial and conservation value, Fiji's marine biodiversity is not well known.

This is surprising considering the biogeographically strategic position Fiji has in the South Western Pacific, and the relatively large numbers of collections made by visiting scientists to the University of the South Pacific. However, Fiji's marine biodiversity is much better known than most island groups in the region. Zann et al (1997) is the most recent review of Fiji's marine biodiversity.

Although knowledge of most taxa is very incomplete, it is evident that Fiji has a high species diversity. Affinities lie strongly with the west, the Philippine/Indonesia/New Guinea centre of Indo-Pacific marine species diversity, but with a reduction in species diversity (e.g. Veron, 1995). This is because of the prevailing westerly flowing Subequatorial Current and trade wind drift, and the moderate isolation of Fiji from western island archipelagos (600 nautical miles from Vanuatu in the west, 1200 nautical miles from Solomon Islands in the north wets). The high marine biodiversity in Fiji is also due to the large number of different habitats within the group. Many of these are less well developed in islands to the east.

The Fiji Group receives a small number of Central Pacific marine endemics and although a number of marine species are known only from Fiji, this reflects more the lack of collections in neighbouring groups than a real trend of endemism.

2.6.2 Marine Plants

Marine algae are important primary producers on coral reefs, and groups such as the crustose coralline algae play a very important role in calcification and cementation processes on coral reefs. Several species of algae are edible and part of the traditional Fijian diet while species such as *Ulva* and *Enteromorpha* are key indicator species in environmental impact assessments of pollution in coastal and estuarine regions. The most complete list of the Fijian algal flora to date is the revised checklist by N'Yeurt et al. (1996), listing 422 taxa.

Seagrass beds are found intertidally and in the shallow subtidal in the more protected and soft shores throughout Fiji. They have a very high biological productivity, are efficient recyclers of nutrients, and support a large biomass of consumers, especially those of fisheries importance. Four species of seagrasses are common in Fiji

The largest formations of mangrove in Fiji are found in deltas at the mouth of some of the large rivers in Ba, Rewa, Nadi, and Dreketi. Fiji has a considerable area of mangrove but the community is relatively simple by comparison with those of island and continental south-east Asia.

Fiji's mangrove flora is composed of eight mangrove species and a unique hybrid. It is dominated by *Bruguiera gymnorrhiza* ("dogo"), *Rhizophora stylosa* and *Rhizophora samoensis* (both "tiri") and a sterile hybrid *R. x selala* ("selala") which is a cross between *Rhizophora stylosa* and *Rhizophora samoensis*. The naturally occurring *hybrid Rhizophora x selala* is of great scientific interest because it is only found in Fiji, Tonga and New Caledonia with Fiji having the greatest area of the hybrid (Watling 1985).

In addition there are many important mangrove associates. Pillai (1985) identified 33 species including mangroves and important mangrove-associated species represented in Fiji's mangrove areas.

2.6.3 Coral

There are around one thousand coral reefs in Fiji (Zann, 1992). These are geologically recent structures (that is generally younger than 10,000 years old) forming a capping of biogenic limestone over previous reef formations. The major reef types are fringing reefs which surround almost all high islands, and barrier reefs which lie at the edges of island shelves. Platform reefs lie in shallow island shelves. Several atolls and near atolls are present in the east.

A collection of Fijian stony corals is housed in the University of the South Pacific reference collection. Although the collection is far from complete, Pichon (1980) identifies 230 forms, about 200 of which to the species level (Pichon, 1980).

2.6.4 Lower Invertebrates

The lower invertebrates of Fiji are not well studied.

The molluscs (snails, bivalves, octopus etc) are very well represented in Fiji. The larger and more common species are particularly important in the subsistence diet of Fijians. Each year over 1,000 mt of snails and bivalves are marketed but possibly 5-10 times that quantity are consumed at the subsistence level.

Because of their interest to shell collectors the Fiji molluscs have been very widely collected and are scientifically well described. The more spectacular cowries (Cypraeidae) ands cones (Conidae) have attracted the most attention but even the less conspicuous species are reasonably well known. The most comprehensive Fiji collection was compiled by K. Gilchrist over the past 40 years; 7,000 specimens including around 760 species of Fijian gastropods and bivalves from this collection are now held by the Smithsonian Institution and 1,000 fossil species are held by the Australian Museum.

2.6.5 Marine Vertebrates

Fiji's fish fauna is moderately well known. Although a number of species have been described from Fiji, subsequent collections outside the group have indicated that few, if any, are endemic. Fiji's fish have strong zoogeographical affinities with the Western Pacific (Australian Plate) but with fewer species present. Springer (1982) noted that about 163 families were found on the Great Barrier Reef, 125 in New Caledonia-Vanuatu, 118 in Fiji and 102 in Samoa. Springer (*loc.cit*.) proposed that the distribution of fish in the Pacific is related to the history of plate tectonics.

A preliminary listing of reef, pelagic and deepwater bottom fish by Baldwin and Seeto (1986, unpubl.) contains a total of 1,198 species from 162 families (including pelagic deepwater bottom fish species). This listing will be substantially increased, perhaps to 1,500 species when the Springer, and Emery and Winterbottom collections are fully identified (J. Seeto).

Two species of sea turtles nest in Fiji, the green turtle *Chelonia mydas* and the hawksbill turtle *Eretmochelys imbricata*. Loggerheads *Caretta caretta* are present but uncommon. Flatbacks *Chelonia depressa*, Ridleys *Lepidochelys olivacea* and leather backs *Dermochelys coriacea* are occasional to rare visitors to Fijian waters.

Three species of sea snake breed in the Fiji Group, of these two are the amphibian banded kraits *Laticauda colubrina, L. laticauda* which breed on land. *Hydrophus melanocephalus* gives birth to live young at sea. The oceanic bellied sea snake *Pelamis platuris* is an occasional visitor (Guinea, 1980).

The marine mammals of Fiji are very poorly known. Zann et al. (1997) indicate that about 13 species are likely to be found in Fiji, however, Jefferson et al. (1993) indicate that 16 whales and seven dolphins may be found in Fijian waters.

3 THE BENEFITS OF BIODIVERSITY CONSERVATION AND ECOLOGICALLY SUSTAINABLE DEVELOPMENT

3.1 INTRODUCTION

3.1.1 Contributing to Global Biodiversity

Much of Fiji's biodiversity is unique to Fiji, species found nowhere else in the world. Fifty per cent or more of Fiji's plants and birds, all 24 palms, 72 of the 76 species of *Psychotria*, both frogs, over 90% of some insect groups such as cicadas and marine insects, are all endemic.

The uniqueness of its biodiversity distinguishes Fiji from all other countries – it is a living treasure which forms a natural heritage which Fiji can be justly proud of. But it also places a heavy responsibility on Fiji for its continued existence – it cannot be conserved in nature anywhere else in the world.

3.1.2 Biological Wealth

Biological resources provide the basis for life on earth. The fundamental social, ethical, cultural and economic values of these resources have been recognised in religion, art and litereature from the earliest days of recorded history. Given these multiple values, it is not surprising that most cultures (and governments) have embraced the principles of conservation (McNeely et al. 1990).

As emphasised in Fiji's State of the Environment and National Environment Strategy reports, much of Fiji's economy is based on the use of natural resources and the benefits and services provided by natural, healthy ecosystems.

But in order to compete for the attention of government decision makers in today's-world, policies regarding biological diversity first need to demonstrate in economic terms the value of biological resources to a country's social and economic development.

Although the methods and credence of `biological accounting' is improving rapidly, there remain considerable problems in the economic analysis of biological resources. The standard models do not give sufficient weight to long-term benefits and there remain problems in assessing appropriate values for various ecological services.

3.2 VALUATION OF FIJI'S ECOSYSTEMS

A valuation of Fiji's Ecosystems has been carried out for the FBSAP by FBSAP TG5 (1998).

The four major ecosystems that form the basic components of Fiji's natural asset base, and for which an economic valuation will be carried out:

1) open sea;

2) coral reefs, lagoons and beaches;

3) mangrove forests and estuaries;

4) tropical moist forest.

The emphasis is on major **natural** ecosystems that are or may be threatened by over-harvesting, pollution, or conversion to alternative uses, and for which valuation is particularly important in order to guide development choices. The list is therefore not exhaustive. In particular freshwater resources (surface and underground), are not included, primarily for lack of data.

Eleven ecosystem services[1] are identified in Table 3.1; this list does not pretend to be exhaustive, but is nonetheless comprehensive enough for the purpose of the FBSAP. All

1 Ecosystem Services – these are the products of biological systems or natural processes which can be distinguished and to a greater or lesser degree quantified financially.

ecosystems provide several services simultaneously, and the same type of service may be provided by more than one ecosystem.

Table 3.1: Ecosystems and Ecosystem Services recognised for Fiji

ECOSYSTEMS	ECOSYSTEM SERVICES
Open sea	Climate regulation
Coral reefs, lagoons and beaches	Disturbance regulation
	Water regulation and supply
	Erosion control and soil formation
Mangrove forests and estuaries	Nutrient cycling
	Waste treatment
	Biodiversity preservation
Tropical moist forest (incl. Freshwater streams and lakes)	Food production
	Raw materials provision
	Recreational opportunities
	Cultural values

(Source: FBSAP TG5 1998)

3.2.1 Climate regulation

The regulation of temperature, precipitation and other biologically mediated climatic processes is provided by the major carbon dioxide absorbers (sinks): the open sea and tropical forests. Such a service is a global one, in that the benefits are shared by all nations, and cannot be captured exclusively by nations who own the ecosystems providing them. The value of this service may therefore appear quite elusive; this obviously complicates the implementation of conservation measures, even more so since most of the open seas are common property.

3.2.2 Disturbance regulation

Coral reefs reduce the impact of ocean waves on the coast; mangrove forests protect the shoreline from surging tides, and coastal agricultural land from the deleterious effect from salt spray; tropical forests absorb water, preventing destructive floods.

3.2.3 Water regulation and supply

Rainfall is stored by the tropical forest, and released gradually in the creek and river systems. This is particularly important in a wet tropical climate, with abundant and occasionally torrential rainfall; it is also valuable on the drier sides of the major islands, where deforestation has led to increased run-off and sedimentation with water scarcity in dry periods.

3.2.4 Erosion control and soil formation

Tropical forest cover protects soil from rain and wind, limiting sediment loads in rivers and creeks, and allows the accumulation of organic material to replace that soil which is lost naturally in runoff. Mangroves resist shoreline erosion (refer 3.2.2).

3.2.5 Nutrient cycling

Acquisition, storage and release of nutrients is accomplished by land-based and marine ecosystems. Of particular importance is the role of mangroves: located mostly in the estuaries of major rivers (Rewa, Ba, Nadi and Labasa), mangroves capture nutrients from

terrestrial sources, and release them gradually in the aquatic environment, serving as the beginning of the food chain, and hence the basis for subsistence and commercial fisheries. A large proportion (60%) of commercial fisheries in Fiji are believed to be directly dependent on mangroves in this way.

3.2.6 Waste treatment

Mangroves and lagoonal seagrass beds are efficient absorbers of excess nutrients from wastewater. This is particularly important, for example many of Fiji's sewage treatment plants release treated effluent to mangrove areas and the impact of wastewater released would be more severe if it was not for the action of nearby mangroves and seagrass beds.

3.2.7 Biodiversity preservation

The preservation of biodiversity is important for a variety of reasons.

Firstly, biodiversity promotes ecosystem stability. The more diverse a system, the greater its ability to withstand shocks and stresses. If biodiversity promotes ecosystem health and function, then biodiversity promotes **all the services** derived from ecosystems.

Second, plants and animal species have a value because they may be used to produce economic goods, such as food and raw materials; this will be discussed later. Species also have a value as a source of drugs. Approximately one-quarter of all prescription drugs have been derived from substances found in tropical plants with total sales of more than US$50 billion annually. For example, an important treatment for childhood leukemia was found in the rosy periwinkle of the Madagascar tropical rain forests. Traditional Chinese medicine utilises 5,000 of the 250,000 known plant species. Cambie and Ash (1994) list approximately 450 plant species which are used in Fiji for medicinal purposes.

It has been estimated that in an average developing country, US$200 worth of medicincal plants are used annually per household. If these were replaced by imported drugs, the cost would be approximately F$75 million annually in Fiji.

Third, the organisms' genes may be a source of genetic information, to be used for crossbreeding or genetic engineering, which allows direct transplanting of desirable genes from one species to another, creating species with new characteristics. Tropical forests have already contributed genetic material to increase disease resistance in cash crops such as coffee and cocoa. Given that nearly all the world's food supply depends on the cultivation of about 110 plant species, all of which may be subject to diseases and pests, genetic engineering may prove essential to humanity's survival in the future; for that, wild genetic material must be available. A wild tomato cultivar that was used to produce a wilt resistant cultivar provides benefits of more than US$ 5million annually. The total annual value of such genetic material is estimated at US$100 million annually.

Fourth, there is the "amenity value" of biodiversity: visitors value species-rich habitats (forests and coral reefs) for sightseeing and other outdoor recreational activities. Fiji's increasingly important tourism sector is heavily reliant of this value. Even for people who do not plan on visiting tropical forests or dive on coral reefs, the mere knowledge that these resources are being preserved may be of value; this is referred to as "existence value". There is also a cultural value associated with biodiversity; Thaman and Clarke (1987) identified more than 70 cultural/economic uses for trees found in the Pacific.

3.2.8 Food production

Food production is the most easily identifiable ecosystem service. People in Fiji obtain significant quantities of edible plants and animals from all ecosystems, for example finfish and shellfish (there are more than 70 different edible species of shellfish in Fiji), crabs, freshwater mussels, eels, seaweed, ferns, nuts, fruits or wild yams. These products are harvested both commercially and at the subsistence level. The open sea supports an industrial tuna fishery which represent a significant source of paid employment and foreign exchange.

3.2.9 Provision of raw materials

The provision of raw materials is also an easily recognisable ecosystem service. Forests yield commercial timber for both local and overseas markets; wood is also used at the subsistence level for construction purposes. Natural raw materials are essential for the production of handicrafts and many items of cultural or traditional significance.

3.2.10 Recreational opportunities

The beauty and diversity of Fiji's marine and terrestrial landscapes make it a major international attraction for tourists, and a vital source of paid employment and foreign exchange. Tacconi and Bennett (1995) report that ecotourism contributed between US$2.2 billion and US$12.1 billion to the economies of developing nations in 1988; the potential market is therefore large.

3.2.11 Cultural values

Traditional lifestyles depend on the availability of productive land-based and marine ecosystems. Even for those not involved in traditional lifestyles, the mere existence of such ecosystems and the survival of traditional lifestyles may be of great value.

Ecosystems thus provide a wide range of services, that may be either impossible to replace (for example, when a species becomes extinct following the destruction of its habitat), or expensive to substitute for, or do without (for example, when a sea wall must be built to protect a shoreline after a mangrove forest has been cleared). Moreover, these services are often interrelated; for example, deforestation of a catchment area will increase the sediment load in a river, and may lead to a decline in fish populations and commercial and subsistence harvests.

Ecosystem services cannot be taken for granted, as all ecosystems are potentially under threat from pollution, over-exploitation, or outright destruction. The valuation of ecosystem services may therefore prove useful to guide decisions affecting their provision.

3.3 SUMMARY VALUE OF FIJI'S ECOSYSTEMS

In 1994, the total value of Fiji's ecosystem services was F$ 973 million. This is a large amount, which represents over 42% of the 1994 Fiji GDP of F$2,312 million. Values for different ecosystems and ecosystem services are summarised in Table 3.2. For a global comparison, the economic value of ecosystem services for the entire biosphere averages US$ 33 trillion (10^{12}) per year, compared with the annual global gross national product of US$18 trillion (Costanza et al, 1997).

Table 3.2: Value of Fiji's Ecosystem Services, 1994. (Source FBSAP TG5 1998).

ECOSYSTEM	SERVICES VALUED	UNIT VALUE (per hectare/year)	TOTAL VALUE (per year)
Open sea	Climate regulation	F$56	F$24,253 M
	Food production	F$0.07	F$31.92 M
Coral reefs, lagoons and beaches	Recreation	n/a	F$336 M
	Disturbance regulation	n/a	F$307.2 M
	Food production	n/a	Included with mangroves

Mangroves and estuaries	Food production, Nutrient cycling, Habitat	F$2,402	F$100.88 M
	Disturbance regulation	F$2,500	F$105 M
Tropical moist forest	Climate regulation	F$328	F$246 M
	Water regulation and supply	F$20.6	F$15.45 M
	Raw materials provision	F$87.9	F$65.9 M
	Biodiversity preservation	F$14.70	F$11.03 M
TOTAL	***All except climate regulation***		**F$973.38 M**

3.4 ECOLOGICALLY SUSTAINABLE DEVELOPMENT

The high value of Fiji's biological resources in the form of ecosystem services underpins the need to recognise their intrinsic value and the ecological foundation which is the basis of continued functioning and stability. Any form of development which destroys or imbalances the ecological foundation of these ecosystems will disrupt, decrease or destroy the environmental services which the ecosystems produce.

For this reason Sustainable Development as a national policy needs to recognise and incorporate the key component of Ecologically Sustainable Development (ESD).

ESD is development that seeks to meet the needs of present generations while ensuring that ecological processes are maintained and the quality of life, both now and in the future, is improved. The core objectives of ESD are:

- To enhance individual and community well-being and welfare by following a path of economic development that safeguards the welfare of future generations;
- To provide for equity within and between generations; and,
- To protect biological diversity and maintain essential ecological processes and life-support systems

4 THE STRATEGY AND ACTION PLAN

THE GOAL AND GUIDING PRINCIPLES OF THE FIJI BIODIVERSITY STRATEGY AND ACTION PLAN

A Goal(s) and Guiding Principles are essential components of a Strategy - Action Plan, if it is to remain focused and implementable.

GOAL

To conserve and sustainably use Fiji's terrestrial, freshwater and marine biodiversity, and to maintain the ecological processes and systems which are the foundation of national and local development.

GUIDING PRINCIPLES

The Guiding Principles of the Fiji Biodiversity Strategy and Action Plan are intended to be explicit statements, there is no hierarchy, dominance or relative importance.

I. The conservation and sustainable use of Fiji's biodiversity is the foundation for all development and for ensuring inter-generational equity.

(the need to ensure that future generations of landowners and citizens, as well as today's youth and children, all have an equal opportunity to use and enjoy Fiji's biodiversity as the current generation)

II. Biodiversity conservation is central to sustainable use of biological resources.

III. Biodiversity conservation is a collective responsibility of all levels of government, the private sector, resource users and landowners.

IV. Biodiversity conservation in Fiji is greatly dependent on the manner in which landowners and local user communities choose to manage their landholdings and fishing rights ownership;

V. Control of local resources by traditional resource owners and users is critical to the success of biodiversity conservation.

VI. Biodiversity conservation initiatives ensure that local communities and both men and women have continued access to the resources required to meet subsistence needs.

VII. That although communal land ownership has played, and continues to play a positive role in biodiversity conservation, the increasing commercialisation of natural resource use is threatening this system and constitutes a major challenge to biodiversity conservation.

VIII. Biodiversity is best conserved in those places where it naturally occurs (*in situ*), however *ex-situ* conservation may be needed to assist in the conservation management of threatened species or forms.

(Ex-situ refers to conservation in zoos, botanical gardens etc. or in locations where the species does not normally occur)

IX. The establishment of a comprehensive and representative system of reserves and conservation areas at the national and local levels is critical to successful biodiversity conservation;

(A comprehensive and representative system is one that includes all those habitats and species which are found in Fiji and so represent Fiji's biodiversity).

X. The conservation and sustainable management of Fiji's natural forests is the single most important means of conserving the vast majority of Fiji's endemic fauna and flora;

(Fiji's endemic fauna and flora is almost exclusively terrestrial (there are many important but very few endemic marine species – refer Table 2.1) and almost all

the terrestrial endemic fauna and flora are forest species (refer Technical Group Reports 2,3).

XI. The conservation and sustainable management of Fiji's reefs, lagoons and mangroves as well as its freshwater habitats are critical significance to sustaining the traditional livelihoods of the majority of Fiji's rural communities;

XII. The control of invasive organisms is critical to the success of biodiversity conservation.

(This is because of the devastating impact of certain introduced plants and animals on indigenous island biodiversity which has been demonstrated not only in Fiji (eg rats, mongoose) but also in many other oceanic islands).

XIII. Improved scientific knowledge of biodiversity and enhanced ethnobiological understanding is required for improved conservation management and sustainable use.

(Ethnobiological understanding refers to the large store of traditional knowledge of indigenous and local communities).

XIV. Inadequate knowledge should not be used to defer or prevent biodiversity conservation.

(This reflects the precautionary principle which clearly applies to biodiversity conservation in Fiji where the knowledge base is very limited).

XV. Biodiversity conservation is a specialised discipline which requires advanced training, skills and international collaboration.

XVI. Education, public awareness and local knowledge are essential for enabling the conservation of biodiversity.

(Traditional knowledge, beliefs and skills are the inherent components of local knowledge)

XVII. The principle of polluter and/or user pays be adhered to when assessing responsibilities relating to the use and conservation of biodiversity.

(This reflects the need to ensure that those who use or destroy biodiversity must bear equable responsibility for conserving biodiversity – this may be in a variety of forms eg. appropriate management, financial contributions or conservation initiatives)

XVIII. Biodiversity conservation initiatives should be implemented in a way that local communities - men and women and youth are actively involved in their planning, implementation, monitoring and evaluation.

XIX. The intellectual property rights to biodiversity, genetic resources, bio-derivatives and knowledge about biodiversity be recognised and that appropriate mechanisms adopted to ensure, henceforth, fair remuneration, credit or other benefits are received by local communities, the discoverer or developer, and the nation.

FOCUS 1: COMMUNITY SUPPORT – AWARENESS, INVOLVEMENT AND OWNERSHIP

Community support will, be the key to the success of biodiversity conservation. Biodiversity conservation activities in Fiji will be located almost exclusively on communally owned land or in marine waters subject to traditional fishing rights ownership. However, there are also areas of freehold and state land which are of great biodiversity value.

Support from land-owning or fishing rights-owning communities can be achieved through providing them with the knowledge and education that biodiversity conservation is in their own interest and in the interest of their descendants. This support cannot be achieved simply by increasing levels of awareness, the communities will need to be involved in action and in remuneration and their position as land-owners or rights-owners will need to be respected.

Other communities in Fiji also need to be made aware of Fiji's unique natural heritage and the roles that they can play in assisting in its conservation. The current appreciation of the national and international significance of Fiji's natural heritage and the increasing threats it faces is poorly developed. Until it improves there will be little ground-swell support for conservation and sustainable resource management.

Objective 1.1 Promote community support for biodiversity conservation and ecologically sustainable development through improved understanding and awareness.

Actions:

1 Initiate a coordinated awareness, educational and training programme for landowning and Traditional Fishing Rights Owners (TFRO) communities emphasising the benefits of biodiversity conservation and its links with sustainable management of natural resources.

2 Encourage and assist landowning and TFRO communities to document their traditional knowledge of biodiversity and its uses and develop their own local strategies.

3 Through a wide process of consultation formally adopt national faunal and floral species.

4 Produce simple but comprehensive biodiversity manuals for use in the primary and secondary school system.

5 Produce informative guides translated into the vernacular for rural communities.

6 Produce an `Ecology of Fiji' for use at the secondary and tertiary education level;

7 Undertake a publicity campaign following enactment of the SDB99 or equivalent biodiversity protection and management legislation;

Objective 1.2 Ensure that the nation and, in particular, Fiji's natural resource-owning communities receive fair, just and economic remuneration from the use of genetic material and products.

Actions:

8 Develop and adopt guidelines or legislation for bioprospecting and economic use of genetic material and products which incorporate fair provision for traditional knowledge and ownership;

9 Encourage collaborative research and exploration for economic uses of genetic material and products;

10 Develop and adopt guidelines for all research activities which, amongst other requirements, ensure that the community owners have an understanding of and approve of the research;

11 Institute joint collaboration between the business community, government resource owners and researchers to establish economic values of the resources used by the business community.

Objective 1.3 Minimise the loss and fragmentation of community-owned native forests.

Actions:

12 Promote the sustainable management of indigenous forest including mangroves;

13 Enact regulations or codes of practice which ensure environmental impact assessments of new logging areas and plantation establishment sites;

14 Identify important forest corridors and develop mechanisms and implement forest conservation or forest restoration activities in these locations;

15 Encourage and support community-based natural forest restoration initiatives;

16 Establish hardwood plantations only in areas of low biodiversity value as determined by appropriate forest survey and mapping which specifically integrates biodiversity values with other plantation criteria;

17 Strengthen the legislative framework for Sustainable Forestry Management, through enactment of the Revised Sustainable Development Bill, specifically Part II Section 12;

18 Strengthen the capacity for strict enforcement of the National Code of Logging Practice and biodiversity conservation.

Objective 1.4 Minimise the loss of aquatic resources of importance to local communities.

Actions:

19 Document `tabu' and other traditional conservation and protection measures of marine resources;

20 Promote community awareness of the destructive influences on aquatic biodiversity of land-based activities and unsustainable harvesting practices;

21 Enact regulations to provide for consultation and majority agreement of traditional fishing rights communities prior to the issue of an IDA (Inside Demarcated Area) resource use licence;

22 Encourage and assist traditional fishing rights communities to actively manage their qoliqoli and to establish or reinforce protected areas, through appropriate traditional conservation measures.

Objective 1.5 Minimise the occurrence of wildfire.

Actions:

23 Undertake a multisectoral collaborative awareness campaign on the consequences of wildfire amongst farmers and land-owning communities;

24 Institute a system of community based control of wildfire activity;

25 Review existing or planned fire control legislation with a view to strengthening it;

26 Encourage any productive low-fire risk land uses in degraded grass-reedland and high fire-risk locations;

FOCUS 2: IMPROVING OUR KNOWLEDGE

Specialist knowledge relating to biodiversity in Fiji is highly sectoral. The primary holders of knowledge are either traditional communities with ethnobiological knowledge, or scientists and specialists.

Ethnobiological knowledge and traditional conservation practices have a valid role to play in biodiversity conservation if they can be shown to be or developed to be applicable to modern circumstances. Unfortunately, ethnobiological knowledge is fast being lost, indeed much has probably been lost already. Documentation and revival of this knowledge is very important.

Scientists and specialists have detailed knowledge about biodiversity but this is highly fragmented with important subjects either not known or lacking up to date knowledge. Many of the specialists holding the knowledge are either overseas or maintain only an academic interest. It is essential that knowledge available both nationally and internationally is collated and made available to management authorities and that the considerable gaps are rectified.

Currently, Government plays only a minor role in biodiversity knowledge improvement and needs to be more active in field-based data collection and monitoring programmes.

Objective 2.1 Implement a programme of ethnobiological and traditional conservation practices enquiry.

Actions:

27 Review current published ethnobiological knowledge and undertake a co-ordinated nationwide programme of collection of oral knowledge;

28 In a collaborative project with selected communities research traditional conservation practices with a view to clarifying their applicability and/or evolutionary potential in the modern context;

Objective 2.2 Clarify the causes of and the rehabilitation needs of community-owned degraded biological resources.

Actions:

29 Undertake a survey of current status of biological resources, specifically those of subsistence and economic importance and those that are threatened or in need of some form of protection.

30 Encourage and support initiatives to restore degraded ecosystems, in particular, those that are community-based.

Objective 2.3 Improve biodiversity studies in formal educational curricula

Actions:

31 Review the secondary school curricula and if necessary modify relevant learning areas incorporating current knowledge of Fijian biodiversity and the value of traditional ethnobiological knowledge.

32 Provide further professional development courses in biodiversity, enthnobiologcal knowledge and conservation for in-service teachers.

33 Document and publish ethnobiological knowledge in the vernacular and in a form(s) appropriate for formal educational curricula;

Objective 2.4 Achieve a detailed knowledge of the occurrence and status over time of Fiji's biodiversity resources, in particular the threatened, endemic forms.

Actions:

34 Undertake a comprehensive terrestrial and freshwater biodiversity resource inventory;

35 Undertake a comprehensive marine biodiversity resource inventory;

36 Draw up an appropriate framework and mechanism for monitoring the status of rare and endangered species;

37 Revive DOE's spatially-referenced biodiversity database as a working system with appropriate procedural protocols and with wide public and institutional access;

38 Commission the preparation of a bibliography-database of Fiji's insects.

Objective 2.5 Establish mechanisms which encourage and facilitate biodiversity research and enable Fiji to access relevant international findings and developments.

Actions:

39 Review Government's and USP's role in biodiversity research;

40 Encourage international and private sector collaborative research on Fiji's biodiversity;

41 Identify priority research requirements for biodiversity management and opportunities for developing national expertise;

42 Adopt a National Protocol drawing on the current USP Guidelines for Biodiversity Research and Bioprospecting regarding conduct and publication of research, and the export, buying and selling of biodiversity materials and findings;

43 Establish a central professionally administered facility to house and manage the various existing biodiversity collections and to actively encourage the collection and deposition of new materials;

Objective 2.6 Establish specific research programmes on Rotuma

Actions:

44 Undertake comprehensive terrestrial, freshwater and marine biodiversity resource surveys of Rotuma;

FOCUS 3: DEVELOPING PROTECTED AREAS

Fiji has a rudimentary system of protected areas, however, none of the areas have been selected on the basis of ecological knowledge or biodiversity values. Nonetheless, these sites in combination with other priority sites which have been identified for their biodiversity values, have the potential to provide the basis of a representative system of protected areas. The intention is for the representative system of protected areas to be augmented by a large number and variety of protected areas which are important at the provincial or local level.

Most of the priority sites have been identified for a long time but progress in the development of the proposals has been very slow. One of the major constraints is that at least five government departments or agencies are involved in protected area management. A priority clearly is to establish a practical institutional arrangement with clearly defined responsibilities. It is important that the landowners and/or TFRO's are directly involved in the management and development of these sites. The current interest in and expansion in the number of ecotourism developments has the potential to deliver such benefits directly to landowners and TFROs.

A Sites of National Significance Programme was recommended by the National Environment Strategy but has not been developed even though the Preliminary Register of Sites is in constant use. The programme has the advantage of integrating biodiversity with all other heritage requirements and in providing a framework for the conservation of the many small and less important sites which cannot be incorporated into a national or core protected area system.

Objective 3.1 Establish a comprehensive and representative core protected areas system

Actions:

45 Establish the Institutional and Legislative framework for a core protected areas system in both the terrestrial and marine environments;

46 Secure the priority/core sites through appropriate arrangements with the current landowners or TFRO's;

47 Establish secure arrangements for areas of high biodiversity conservation value outside the core protected areas system;

Objective 3.2 Institutionalise the Sites of National Significance Programme

Actions:

48 Establish a consensus on the administrative and institutional framework of the Sites of National Significance Programme

49 Establish the institutional and enact the legislative requirements of the Programme and Register the Sites.

(Note: The Preliminary Register of Sites of National Significance is appended as Attachment 5).

BOX 3.1 PRIORITY PROTECTED AREA LOCATIONS

(based on best available information)

LAND AREAS

	ISLAND	LOCATION
1	Viti Levu	Tomaniivi National Park (Tomaniivi N.R. + Wabu).
2		Sovi Basin
3		Monosavu-Nadrau Plateau
4		Koroyanitu
5	Vanua Levu	Tunuloa Silktail Reserve
6		Vunivia
7		Waisali
8	Taveuni	Taveuni Conservation Area. (Taveuni F.R. + Ravilevu N.R.+ Bouma-Lavena Forest Park)
	MARINE AREAS	
9	Kadavu	Great Astrolabe Lagoon
10	Nadi Bay	Tai I., Levuka I., Vomo I., Vomo Sewa I. – fringing and offshore reef areas
11	Namenalala	Fringing & Barrier Reefs
12	Yadua Taba	Fringing Reef and surrounding waters
13	Lau Group	To be determined
	MANGROVE AREAS	
14	Ba Delta	Nawaqarua - Natutu
15	Rewa Delta	Muanicake-Nasoata R.
16	Labasa Delta	Labasa R.; Labasa Delta Mouth

Objective 3.3 Effectively manage existing protected areas

Actions:

50 Establish institutional control and responsibility of existing protected areas under the Government designated institution;

51 Locate adequate financial and technical resources for management;

52 Prepare Management Plans for existing biodiversity protected areas Nature Reserves and community-based eco-tourism sites;

53 Encourage private, landowner or other as appropriate, participation or sole implementation of the management of biodiversity protected areas;

54 Ensure that adequate scientific knowledge is entered into strategies and plans;

Objective 3.4 Encourage establishment of protected or conservation areas in addition to the national or core protected area system.

Actions:

55 Promote linkages between sustainable natural resource use and conservation area establishment;

56 Encourage and assist landowners and TFRO's in the establishment of their own conservation areas irrespective of their national significance;

57 Promote linkages with the tourism sector in the establishment, management and marketing of protected areas.

Objective 3.5 Provide adequate funding for protected area management.

Actions:

58 Review and establish an appropriate Funding Mechanism(s) for the management of priority biodiversity protected areas;

59 Ensure meaningful participation and provide equitable incentives and remuneration to resource owners for protected area establishment and management;

FOCUS 4: SPECIES CONSERVATION

Individual species are the most readily recognisable and appreciated components of biodiversity and are often the focus of conservation initiatives. Fiji is known to have lost several species to extinction and many species threatened with extinction have been identified (refer Table 2.1). Many of these are endemic to Fiji and thus it is Fiji's responsibility alone to ensure their conservation.

The biology, ecology and evolutionary processes of Fiji's threatened species are inadequately or not at all known. Because of the limited data available, some species may actually be threatened but have not been identified as such. More research and conservation management is needed if Fiji is fulfil its obligations as a signatory of the Biodiversity Convention.

To date Fiji's management of threatened species has been limited to controls on hunting and trade, active wildlife management has not been undertaken and the government has very little capacity to effectively undertake any form of wildlife management. Yet as development pressures increase and natural habitats are increasingly disturbed the need for research, monitoring and active management becomes ever more important. The very complexity of ecosystems makes any form of management a daunting task. A key step is an understanding focused at the species level of the organisms which comprise the ecosystem – it is the species which are the key components for biodiversity managers..

Objective 4.1 Effectively manage threatened species.

Actions:

60 Review the status of threatened species and prioritise species for conservation initiatives;

61 Encourage conservation management-oriented research on threatened species to identify causes of decline;

62 Develop a threatened species database;

63 Prepare threatened species management plans, to include where appropriate linkages with best international expertise;

64 Establish captive breeding programmes for important species and forms for which *in situ* conservation is problematic, either in Fiji, or, if appropriate, abroad;

65 Drawing on Forestry Department's experience and capability establish an *ex situ* germ plasm collection or seed bank for threatened plant species and varieties for relocation or reintroduction as appropriate;

66 Enact legislation to provide effective protection for threatened species;

67 Advocate for the complete termination of the `Game Shooting Season'.

Objective 4.2 Effectively manage species of cultural significance

Actions:

68 **I**dentify species of cultural significance whose status is declining and prioritise species for active management.

69 Develop a database of culturally significant species;

70 Enable communities to take the lead in the conservation of culturally significant species.

FOCUS 5: MANAGEMENT OF INVASIVE SPECIES

Threats to biodiversity come in many forms, some, such as hunting and habitat destruction are conspicuous to all. Others are much less conspicuous but are nonetheless highly damaging to Fiji's biological resources, examples of these include such diverse factors as pollution; forest fragmentation; government policies such as hardwood plantation establishment, and the consequences of loss of ethnobiological knowledge and traditional conservation practices by rural communities.

One threat which requires constant vigilance and resolute action is the control of the effects of both intentional and unintentional introductions of non-indigenous (alien) species on the native fauna and flora. The control of introduced pests of economic crops, either insects or weeds, has always been very much better developed than any consideration of biodiversity. Dramatic evidence of the damage introduced species can do can be seen in Fiji in the form of the introduced mongoose which has devastated the reptile and ground nesting bird fauna of the islands on which it is introduced. Most people, including rural communities, are totally unaware of the effects of the introduction of the mongoose because they have never known a time when the mongoose-induced effects were not present. However, by observing the situation on islands free of the mongoose – conspicuous faunal differences are very evident. Not all damaging aliens are large and conspicuous, in Hawaii introduced mosquitoes spread avian malaria and other diseases which have devastated Hawaii's native birds in many lowland areas, while the dire consequences, to both native fauna and flora, of exotic ants has only recently been appreciated..

Harmful invasions by aliens are generally regarded to be the second-most serious threat to biodiversity after habitat loss, but for an oceanic island like Fiji, it may be the most harmful.

The problems of invasive species are likely to become even more severe in the future, with increasing global trade and international travel, changing global climate and changing land use patterns.

Travel within the Fiji group is increasing rapidly too and there is a need for measures to be introduced to prevent the spread of invasive species within Fiji's 300+ islands. Currently there is only very limited awareness of internal quarantine requirements and this is confined to species of agricultural or economic significance, biodiversity values are not included.

Biodiversity issues need to be very thoroughly evaluated in the licencing of introduced plants and in biocontrol programmes.

Objective 5.1 Reduce risks of the introduction of invasive species

Actions:

71 Strengthen relevant Quarantine legislation to include consultation/participation of the Dept. of Environment in the decision making processes on the introduction of organisms;

72 Improve regional collaboration between national quarantine services and relevant regional institutions/organisations to develop regional action plans and strategies for the prevention of introduction and spread of invasive species;

73 Adopt relevant quarantine regulations, standards and tools developed to assist in the decision making processes involved in the importation of exotic species;

74 Strengthen legislation and enforce heavy penalties on individuals and organisations illegally importing organisms;

75 Develop protocols which require an EIA – Risk Assessment by an independent body before the introduction of exotic species, in line with SDB99 EIA Provisions (Section 24) ;

76 Increase public awareness on the risks and impact of exotic invasive species on native ecosystems and the biodiversity of species contained therein;

77 Develop procedures or legislation to minimise the establishment of invasive species through ballast water exchange;

Objective 5.2 Effectively control invasive and potentially invasive species present in Fiji.

Actions:

78 Establish a database of invasive species present in Fiji

79 Review the biological effects of exotic species, in particular known invasive species and prioritise species for control;

80 Make contingency plans for the containment and eradication of invasive species not yet present in Fiji but which pose a significant threat;

81 Study the possibilities for the utilisation of invasive species;

82 Identify and develop acceptable means for the control for short, medium, and long term, in particular biological control;

83 Ensure, through legislation, that biodiversity values and considerations are strongly integrated into current biological control decision making and practices;

Objective 5.3 Develop inter-island quarantine awareness and enforcement for important biodiversity

84 Review inter-island distributional differences in invasive species of concern and prioritise species for management;

85 Establish administrative responsibilities and strengthen capacity;

86 Evaluate island eradication possibilities for the Mongoose

87 Provide public, especially community awareness on the threat posed by inter-island traffic in the spread of invasive species, in particular the mongoose, giving priority to the islands of Taveuni, Ovalau, Gau, Koro and Kadavu.

Objective 5.4 Ensure national and government awareness and participation in the current international Biosafety protocol discussions and debate.

Action:

88 Appoint a focal point to be responsible for coordinating advice to Government on Biosafety issues and ensuring Fiji's participation in the current debate.

Box 3.2

THE BIOSAFETY ISSUE

Biological diversity represents the very foundation on which biotechnology could thrive and flourish. Through biotechnology, important advances for the use of genetic and biological resources can be made for the economic development of nations and for human well-being, as well as for our understanding of the living world. Biotechnology may thus aid in assessing and monitoring the biological diversity upon which human life and existence depend.

Because of the potential for great benefits from biotechnology, its use is increasing rapidly and questions about its possible adverse impacts on human health and the environment have been raised. Of particular concern are the questions regarding the capacity of existing regulatory approaches and institutions to effectively address issues related to safety in biotechnological research, development and application, world-wide.

Capacity building for safety in biotechnology, particularly in developing countries, has thus been accorded high priority. It requires concerted and co-ordinated global efforts by all stakeholders at the national, subregional, regional and global levels.

(Source: *Capacity Building for Biosafety for Developing Countries*. Secretariat CBD, 1999)

FOCUS 6: CAPACITY BUILDING AND STRENGTHENING

The establishment of protected areas and development of protection for threatened species will be visible progress in biodiversity conservation, but they alone will do very little to prevent a continuing deterioration in biological resources and biodiversity values.

Government will need to develop sustainable management policies for all its natural resource based sectors and assist communities develop their own capabilities. The latter will be crucial as landowning communities are increasingly seeking short-term financial gains from their resources and thereby forestalling long term sustainable and community-wide benefits.

Government will need a cadre of qualified and dedicated specialists in the field of biodiversity and natural resource management, and, it will need to encourage and sustain such specialists in academic, research and other locations and incorporate them into its management network.

Central to the Government's signing of the Convention on Biological Diversity is the intention of Government to develop the capacity to identify and manage the threats and threatening processes. Currently Government has minimal capacity to actively address the needs and developing this capacity is crucial to a successful outcome of the Biodiversity Strategy and Action Plan and Government's commitments as a Contracting Party to the Convention.

The Sustainable Development Bill (SDB97) passed through a long period of consultation and Part XVII, in particular, provides for active and focused biodiversity conservation and management. Part XVII is not included in the Revised Sustainable Development Bill (SDB99) and so the detailed administrative framework for Biodiversity Conservation must be institutionalised (refer section 1.3.2). There remains, therefore the potential for further consultation on this matter and this is required to reduce the current diverse conservation and protected area initiatiaves and responsibilities, to a single institutional focus. The Revised Bill provides for the Department of the Environment through the National Council for Sustainable Development and the National Resource Management Plan as responsible for policy formulation in respect of sustainable resource management.

Objective 6.1 Enact legislation to establish an institutional framework and administrative capacity for ecologically sustainable development and protected area and biodiversity management.

Actions:

89 Adopt legislation to provide protected status for <u>all</u> native terrestrial birds, reptiles and amphibians with nominated exceptions[2];

90 Enact biodiversity conservation legislation based on the Sustainable Development Bill (1997 - Part XVII);

91 Develop legislation for the preservation and maintenance of traditional knowledge, innovation and practices;

92 Advocate that traditional knowledge be internationally recognised as a `Sui Generis' system for intellectual property rights;

93 Enact the sustainable resource management legislation of SDB (specifically Part II - 12. Sustainable development policy formulation, and advocate for legislation based on SDB97 - Parts XII, XIII, XIV, XV, XVI in future revisions;

2 Note that Schedule 16 – Protected Widlife of the Sustainable Development Bill provides protected status only for nominated species. This approach is to be avoided – all species should be protected with nominated exceptions which is in line with the current Birds and Game Act 1923.

94 Strengthen Fiji's capacity to implement CITES, the Convention on International Trade in Endangered Species;

Objective 6.2 Enhance biodiversity management skills and capabilities

Actions:

95 Undertake a national needs assessment for biodiversity and bioresource management in conjunction with a review of courses at tertiary institutions and implement the findings;

96 Integrate appropriate traditional knowledge and skills into training courses;

97 Ensure tertiary scholarships are awarded by Government and attachments and collaboration are encouraged, to develop national expertise in biodiversity and bioresource research and management;

Objective 6.3 Develop communities' capabilities to manage and utilise forest and marine resources in a sustainable manner

Actions:

98 Review and implement appropriate partnerships with communities to enable them to attain sustainable community level resource management;

99 Establish a funding mechanism to enable wide adoption of successful community-based sustainable resource-management initiatives.

100 Through appropriate training enhance the resource management capacities of land-owning and TFRO communities.

Objective 6.4 Promote biodiversity and bioresource considerations into Government's economic decision-making mechanism.

Actions:

101 Advocate the valuation and accounting of direct and indirect goods from biodiversity and bioresources.

Objective 6.5 Promote and apply ecologically sustainable management practices in the `natural resource' sectors - fisheries, forestry, agriculture, mining and tourism.

Actions:

102 Enact sustainable resource management legislation based on the Revised Sustainable Development Bill (Part II - 12. Sustainable development policy formulation) and advocate for Sustainable Development Bill (1997 - Parts XII,XIII,XIV,XV,XVI) in future revisions;

103 Collate, develop and promote information on the benefits of biodiversity conservation for the natural resource sectors;

104 Adopt internationally recognised Codes of Conduct or Eco-labelling Schemes for natural resource exploitation.

5 ACTION IMPLEMENTATION FRAMEWORK

5.1 ESTABLISHING A MANAGEMENT STRUCTURE FOR IMPLEMENTING THE STRATEGY.

5.1.1 Current Situation

The current administrative framework for biodiversity conservation in Fiji is poorly developed with ill-defined responsibilities, a lack of capacity and severe funding constraints.

Enactment of SDB99 will provide DOE with a co-ordinating role in natural resource conservation and management, however, this falls a long way short of the provisions in SDB97 Part XVI which provides for a clear administrative and institutional structure. The enactment of this section of SDB97 (or something based on it) is clearly an immediate priority.

5.1.2 Biodiversity Steering Committee

In the absence of an administrative structure, the current ill-defined responsibilities will prevail and it will be very difficult to provide effective leadership and co-ordination in the implementation of the Strategy. A temporary structure, therefore, needs to be established. It is recommended that the current Steering Committee should form the basis of a `Biodiversity Steering Committee' (BSC) which will continue to be chaired by the Dept. of the Environment.

It is recommended that the members of the BSC be as indicated in Box 5.1.

Box 5.1

RECOMMENDED MEMBERSHIP OF THE BIODIVERSITY STEERING COMMITTEE

Government Departments
1. Dept. of Environment (Chair)
2. Dept. of Forestry
3. Dept. of Agriculture
4. Dept. of Fisheries
5. Dept. of Lands
6. Dept. of National Planning
7. Dept. of Regional Development

Statutory Bodies
8. National Trust of Fiji
9. Fijian Affairs Board
10. Native Land Trust Board

Non-Government Organisations
11. Two representatives as elected by NGO Committee

University of the South Pacific
12. Two representatives
13. South Pacific Regional Herbarium

Others
14. One member of the Scientific Committee
15. Members as co-opted for limited periods by the Biodiversity Steering Committee

The BSC should function in the same manner as it does now, ie to bring together the key stakeholders to decide on all aspects of policy, priority and programming in respect of the FBSAP. The BSC will be purely executive in nature and will not have any managerial or administrative function. Existing Government Departments, NGOs and other agencies such as the National Trust for Fiji would retain or be allocated responsibility as lead agency for each action (refer summary below).

5.1.3 Scientific Advisory Committee

Implementation of the FBSAP requires the best available and factual scientific information, this is also required for undertaking Fiji's responsibilities to CITES now that it has signed the Convention. A Scientific Advisory Committee should be established to advise the Government and BSC to undertake this function – it can be considered the forerunner of the CITES Convention Scientific Authority as per the SDB97 (Para 267). Recommended members of the Scientific Advisory Committee following the Sustainable Development Bill are indicated in Box 5.2

Box 5.2

RECOMMENDED MEMBERSHIP OF THE SCIENTIFIC ADVISORY COMMITTEE

Dept. of Environment(Chair)
Dept. of Forestry
Dept. of Agriculture
Dept. of Fisheries
National Trust for Fiji
Scientists as recommended by the Chairman Scientific Advisory Committee and appointed by the Biodiversity Steering Committee

The principal functions of the Scientific Advisory Committee include:

1. To determine which species are to be listed as threatened;
2. To determine which populations and communities are to be listed as endangered and to advise on the identification of critical habitat;
3. To identify and list key threatening processes; and,
4. To review and make recommendations on behalf of the BSC/Department of the Environment on research proposals.

5.1.4 Provincial Authorities

Internationally there is growing recognition that local initiatives are the key to achieving sustainable development – of which biodiversity conservation is a core objective. In this respect the Provincial Authorities will be increasingly embracing new roles in environmental management, monitoring and reporting. This needs to be fostered by developing the roles already being undertaken by the Fijian Affairs Board and Native Land Trust Board. The Fijian Affairs Boad and its provincial network will clearly be the key organisation in community-based initiatives and will need to forge partnerships with appropriate expertise from NGOs, statutory bodies and the commercial sector.

5.1.5 Landowners and Fishing Rights Owners

The FBSAP specifically recognises the need to move away from the current `command and lead' approach of government's resource management structure, to enable landowners and

resource rights owners to participate directly in conservation management and where possible to take the lead in ownership and management of conservation initiatives. Real participation and ownership of conservation-resource management will require major upgrading of resource owners' technical and organisational abilities. This will be a major challenge both for government, the Fijian Affairs Board and all involved in conservation.

5.1.6 The Native Land Trust Board

Hitherto, the NLTB has been very active in conservation initiatives on behalf of the landowners, in line with its custodial role. Recent re-structuring in the NLTB may result in a reduction of their active operational role in conservation and eco-tourism, however, their involvement in the planning and monitoring activities will remain paramount.

5.1.7 The National Trust for Fiji

The National Trust for Fiji has a wide mandate for biodiversity conservation and protected area management. Limited financial and technical resources will need to be overcome if it is to fulfil its mandate. The Trust's amended legislation provides for the keeping of a National Heritage Register and with further amendment this could be developed for the Sites of National Significance (Objective 3.2).

5.1.8 Non-Government Organisations

Non-Government Organisations will need to play a major role in the implementation of the FBSAP. In order to ensure that all NGO's with an interest in biodiversity conservation-related issues are given equal opportunities to participate, it is recommended that they form their own committee or organisation and that two members are elected to serve on the Biodiversity Steering Committee. In this manner they can be assured of contributing directly to the administration of the implementation of the FBSAP and aware of the opportunities for the NGO sector.

5.1.9 The Business Sector

The business sector is a major stakeholder of the implementation of the FBSAP, as much of the resource development is driven by this sector.

5.2 FUNDING THE BIODIVERSITY STRATEGY AND ACTION PLAN

5.2.1 The Challenge

There is no greater challenge for the FBSAP than locating adequate funding for biodiversity management. Current funding for biodiversity conservation is from two principal sources:

1 Government's annual departmental vote; and,

2 Donor assistance

The FBSAP envisages a major `step-change' from the current predominantly passive approach based on resource management for extractive purposes with little inherent biodiversity management capacity, to an active, `hands on' management with adequate domestic technical capacity.

Experience with the National Environment Strategy has shown that although Government may endorse a Strategy, it is most unlikely to have funds available to initiate actions other than provide administrative frameworks. This situation is expected to continue for the FBSAP. The majority of the funding can, therefore, be expected to come initially from donor assistance with government providing a more active funding role in the medium term.

Significant problems which arise as a result of an undue reliance on donor assistance are:

- a lack of continuity in funding and an inability to provide for recurrent expenditure (ie lease-rental and/or management of protected areas; CITES implementation; threatened species management; invasive species management etc.);

- donors are inevitably selective in their choice of projects and their priorities may not coincide with those of the Government;
- undue reliance on expatriate technical specialists;
- a lack of flexibility or the ability to meet changing circumstances or emergency situations;
- Government neglecting its funding role because of availability of project funding, and,
- sustainability of donor funded projects.

In these circumstances, the FBSAP envisages the Government's main initial contribution will be:

- to endorse the FBSAP as Government's policy on biodiversity planning and management;
- put in place the required legislative and administrative framework;
- to develop a national capacity for biodiversity management with trained specialists; and,
- address the issues of a rapidly increasing requirement for recurrent funding for biodiversity management;

5.2.2 Trust Funds

Conservation Trust Funds are now well established internationally as a credible and effective method of funding biodiversity management, conservation and developing national conservation strategies. A recent evaluation of well established Conservation Trust Funds by the World Bank's GEF Secretariat (November 1998) concluded:

> *…….. that trust funds have made impressive accomplishments in the areas of (a) supporting protected areas, including enabling the creation of new national parks, expansion of existing areas, and providing a basic "resource security" for their operations; (b) generating and managing financial resources; (c) enabling the participation of civil society institutions in resource conservation; (d) increasing the level of scientific research applied to conservation issues; and (e) increasing public awareness of conservation issues.*

The evaluation also pointed out, however, that Trust Funds are more than simply financial mechanisms and that it is necessary to appreciate this if the Funds are to be fully accepted by Governments and achieve the objectives for which they are to be set up.

> *Trust funds are not simply financial mechanisms, but must be viewed as institutions that have several roles to play, in addition to channeling funds. These include roles as:*
>
> - *key actors in the development of national conservation strategies;*
> - *technical experts who can work with public and private agencies to develop agile and effective management approaches; and*
> - *in some countries, capacity-builders and nurturers of an emerging group of non-governmental organisations becoming involved in biodiversity conservation.*
>
> *To succeed, trust funds need more than financial management systems and skills. They need governance structures, staff, and technical support to enable them to proactively influence the environment in which they work, and to maintain transparency and support for participatory approaches to conservation and sustainable development.*

One significant advantage of trust funds is there ability to attract substantial additional funding for conservation. There is no `typical' trust fund. The fund's structure, scope of

activities and procedures may vary according to the purposes for which they were set up and the situation of the country they serve. It has been found useful to distinguish two distinctly different approaches of trust funds according to the types of activities they support. `Parks' funds support either national protected areas systems, or a specific protected area or group of protected areas. `Grants' funds channel resources to target groups (typically NGOs and community based organisations) for a broad range of conservation and sustainable development projects, not limited to protected areas. Both these approaches are clearly needed in Fiji. The manner in which these trust funds tend to operate is outlined in Box 5.3.

Whereas Fiji has no comparable Trust Fund, the concept is not new. The NTF has a `Heritage Fund' while the NLTB has proposed a trust fund for the sustainable management of the Sovi Basin. The Revised Sustainable Development Bill (SDB99) refers to an Environment Trust Fund.

SPREP is currently working on the concept of a regional trust fund, the Conservation and Environment Trust Fund. Fiji should consider participating in this initiative for regional activities but clearly requires a national Trust Fund.

5.2.3 Traditional Project Approach and Other Initiatives

While establishing a conservation trust fund may be a practical and advantageous manner of securing financial assistance for biodiversity management, it should not be seen as the only option. There are other financial mechanisms which have proved useful and these also need to be considered in the adoption of a funding strategy for conservation and biodiversity management.

The traditional project approach is one such mechanism and such an approach has specific advantages. Amongst other attributes, projects are generally considered to be of specific importance in initiating activities and also for building capacity. Table 5.1 outlines some of the advantages of projects as opposed to trust funds. Boxes shaded in Table 5.1 generally reflect the condition in Fiji at present. This demonstrates that a combination of projects and the establishment of a trust funds will be required.

BOX 5.3: CONSERVATION TRUST FUNDS – DISTINGUISHING `PARKS' AND `GRANTS' FUNDS.

"Parks" fund

- Protected area staff prepare annual operating plans and budgets, involving stakeholders in consultations.
- Trust fund determines eligible activities and allocates resources according to priorities for each protected areas (may be determined at design or by board in ongoing oversight).
- Disbursement schedule agreed; disbursements made according to schedule, with receipt/review of financial and technical reports generally required before each subsequent disbursement.

"Grants" fund

- Board determines funding priorities and amount available for current cycle. Call for proposals issued.
- Concept papers or full proposals reviewed by technical committee; recommendations made to board
- If concept papers were reviewed/approved, proposing organizations prepare full proposals, technical review and recommendations step repeated. Some funds provide technical or financial assistance to organizations preparing full proposals from approved concept papers.
- Board approves projects. Grant agreements or contracts prepared; funding disbursed according to schedule, with periodic review of financial and technical reports.

(Source: GEF Secretariat 1998)

Table 5.1: Factors Influencing the Choice between Trust Funds and Conventional Projects.

	TRUST FUND	PROJECT
Threat to biodiversity	Threat is long-term. Best addressed over 10-15 year period	Immediate and strong. Best addressed over a 3-5 year time frame.
Funding needs	Problem best addressed through modest amounts of funding provided over many years in periodic increments	Funding needs are large and/or lumpy. Level of activity can be sustained once project funding ends in 3-5 years.
Recipient absorptive capacity	Can only effectively manage modest amounts in periodic increments with gradual increase over time	Can efficiently manage and effectively spend major infusion of funds over 3-5 years.
Common vision	Critical mass of people with common vision for biodiversity objectives and willingness to participate in trust fund governance	Lack of common vision regarding trust fund. Collaborative management of biodiversity program less efficient than management by a less complex institution.
Program efficiency	Need to create more efficient funding and operational mechanisms in lieu of existing bureaucracy.	Bureaucracy functions efficiently and does not constrain achievement of biodiversity objectives
Enabling conditions	Legal basis and other conditions for trust fund operations (e.g. incentives for fund raising) exist or can be quickly established. Basic fabric of legal and financial practices allows for transparency.	Legal and other conditions for fund operation do not exist and are unlikely to be quickly established. More direct donor supervision of resources required to ensure appropriate use of funds.
Collaboration	Desirable to create a vehicle for government and non-government (NGO, private sector) collaboration.	Such opportunities for collaboration already exist or are not appropriate.
Demand for "grants" fund resources	NGOs and other user groups have capacity or can gradually build capacity to use annual funds generated from endowment.	1) Effective grant-funding mechanism exists 2) NGOs and other user groups have very limited capacity to manage even small amounts of funding. Project to build capacity may be prerequisite.
Demand for "parks" fund resources	Framework of national parks system established, some parks exist with reasonable degree of government support.	1) Nascent national parks system. 2) Recurrent costs assured by government or other sources. Parks need capital improvements.

Source: Modified from GEF Secretariat 1998

Financial mechanisms other than trust funds, projects and increased government allocation have also been used by certain countries. Examples of such alternative initiatives are given in Box 5.4. Some of these initiatives have been used to raise funds for a trust, others become part of Government revenue. Some or all of these initiatives may be appropriate in Fiji. Certainly for a country whose major foreign exchange earner is tourism, a sector which cannot exist in the absence of a clean, green and unspoilt environment, a tourist tax would

appear to be appropriate. Similarly, the growing dive industry may need to support a Dive Tax, part of which could be used to increase the participation of Traditional Fishing Rights Owners.

Developing the user pays principle, water and hydroelectricity users could well be expected to pay for the preservation of the catchments from whence they derive their source of water.

BOX 5.4: INNOVATIVE FUNDING MECHANISMS

- Belize raises US$500,000 per year for a Protected Area Conservation Trust through a $3.75 tax on tourists entering the country by plane or cruise ship;
- Ecuador is introducing a fee added to water bills which will be used in a fund to conserve the watershed that supplies the water;
- The Mgahinga-Bwindi Impenetrable Forest Trust of Uganda raised project funding from bilateral donors to support its operations and grant portfolio during its first seven years, so that income on the endowment capital provided by the GEF could be added to the endowment rather than spent. The initial GEF endowment capital has grown from $4.3 million to $5.6 million (expected to reach $7.5 million by the time the bilateral funding concludes).
- Palau has introduced a Dive Tax;
- The Foundation for Eastern Carpathian Biodiversity Conservation and the Foundation for the Philippine Environment raised funds from the US-based John D. and Catherine T. MacArthur Foundation to support operations during the start-up phase and to fund an early tranche of projects, which enabled them to have a more diverse portfolio and build a better track record early than they would have been able to accomplish living solely on earnings from endowment;

5.3 MONITORING THE IMPLEMENTATION AND AMENDMENTS TO THE FIJI BIODIVERSITY STRATEGY AND ACTION PLAN

5.3.1 Programming and Monitoring

Monitoring the implementation of the FBSAP will be the responsibility of the Department of the Environment through the Biodiversity Steering Committee. No formal monitoring methodology or programme is proposed, but the Department of the Environment will report the progress of the Plan, on annual basis, to the NCSD.

5.3.2 Amending the Fiji Biodiversity Strategy and Action Plan

Submissions to amend the Fiji Biodiversity Strategy and Action Plan will be made, as necessary, by the Minister for the Environment, on the recommendation of the Biodiversity Steering Committee with the approval of the NCSD.

5.4 RECOMMENDATIONS

1. Establishing a Biodiversity Conservation Trust Fund be a high priority.
2. Specialist advice is required in establishing a Trust Fund which is adapted to Fiji's current circumstances and the needs of the FBSAP. Consultancy assistance for this should be sought immediately.

5.5 SUMMARY OF ACTIONS AND IMPLEMENTATION FRAMEWORK

5.5.1 Background

The tables in this chapter provide a summary of the FBSAP actions together with the current status of those actions, prospective lead organisation and principal support organisations. The lead organisation is seen as the organisation with co-ordinating and facilitating responsibility, in many, indeed most cases, the lead organisation will not be the management agency. This is likely to be one or more of the support organisations. Lead responsibilities frequently lie with DOE as provided for by the Sustainable Development Bill (SDB99) PART II Section 13 (2)(g) `the co-ordination of natural resource conservation and management'. Links relate to related actions or external organisations.

Priority Actions are shaded.

Status: **E+** - Existing – being undertaken in some form or other; **R** - Existing Recommendation: **N** - New Project.

Key to Abbreviations of Organisations or Linkages:

AGO	Attorney General's Office	MOE	Ministry of Education & Technology
BSC	Biodiversity Steering Committee	MOF	Ministry of Finance
CITES	Convention on International Trade in Endangered Species	MOH	Ministry of Health
DOA	Department of Agriculture	MORD	Ministry of Rural Development
DCE	Department of Customs & Excise	MW	Ministry of Women, Culture & Social Welfare
DOE	Department of Environment	NT	National Trust
DFO	Department of Forestry	NLTB	Native Lands Trust Board
DFI	Department of Fisheries	NLC	Native Lands Commission
DMR	Department of Mineral Resources	NGO	Non Government Organisations
DOT	Department of Tourism	PRV	Private Sector
FM	Fiji Museum	RC	Rotuman Community
FLIS	Fiji Lands Information System	SDB97	Sustainable Development Bill (1997)
FP	Fiji Pine	SDB99	(Revised, Shortened) Sustainable Development Bill (1999)
FSC	Fiji Sugar Corporation	SPC	Secretariat of the Pacific Community. Commission (with GTZ)
FTIB	Fiji Trade & Investment Board	SPREP	South Pacific Regional Environment Programme
FAB	Fijian Affairs Board (incl. Provincial Offices)	PRH	Pacific Regional Herbarium
HC	Hardwood Corporation	SPRIG	South Pacific Regional Initiative on Forest Genetic Resources
MAAF	Ministry of Agriculture, Forestry and Fisheries	USP	University of the South Pacific
MD	Marine Department		

FOCUS 1: COMMUNITY SUPPORT – AWARENESS, INVOLVEMENT AND OWNERSHIP

OBJECTIVE 1.1 PROMOTE COMMUNITY SUPPORT FOR BIODIVERSITY CONSERVATION AND ECOLOGICALLY SUSTAINABLE DEVELOPMENT THROUGH IMPROVED UNDERSTANDING AND AWARENESS.

No	Action	Status	Lead Organisations	Supporting Organisations	Links
1	Initiate a coordinated awareness, educational and training programme for landowning and Traditional Fishing Rights Owners (TFRO) communities emphasising the benefits of biodiversity conservation and its links with sustainable management of natural resources.	E+	DOE	FAB,MAAF, NGO, NLTB, MW	2,15, 20,23, 50
2	Encourage and assist landowning and TFRO communities to document their traditional knowledge of biodiversity and its uses and develop their own local strategies.	E+	FAB	NGO, MAAF, USP	1, 27, 29,33, 70
3	Through a wide process of consultation formally adopt national faunal and floral species.	R	NT	FAB,USP,DOE	
4	Produce simple but comprehensive biodiversity manuals for use in the primary and secondary school system.	E+	MOE	USP,DOE, NGO	
5	Produce biodiversity and resource use guides translated into the vernacular for rural communities.	E+	DOE	NGO,FAB, MAFF	
6	Produce an `Ecology of Fiji' for use at the secondary and tertiary education level;	N	USP	DOE,MOE	
7	Undertake a publicity campaign following enactment of the 99 or equivalent biodiversity protection and management legislation;	N	DOE	FAB,NGO	

OBJECTIVE 1.2 ENSURE THAT THE NATION AND, IN PARTICULAR, FIJI'S NATURAL RESOURCE-OWNING COMMUNITIES RECEIVE FAIR, JUST AND ECONOMIC REMUNERATION FROM THE USE OF GENETIC MATERIAL AND PRODUCTS.

No	Action	Status	Lead Organisations	Supporting Organisations	Links
8	Develop and adopt guidelines or legislation for bioprospecting and economic use of genetic material and products which incorporate fair provision for traditional knowledge and ownership;	E+	DOE	USP,MAAF, NGO, AGO	59
9	Encourage collaborative research and exploration for economic uses of genetic material and products;	E+	USP	DOE,MAAF, NGO, FAB, MOE, MW	
10	Develop and adopt guidelines for all research activities which, amongst other requirements, ensure that the community owners have an understanding of and approve of the research;	E+	FAB	MAAF, FM, DOE, NGO, USP	
11	Institute joint collaboration between the business community, government, resource owners and researchers to establish economic values of the resources used by the business community.	E+	DOE	PRV,USP NGO, FAB	

OBJECTIVE 1.3 MINIMISE THE LOSS AND FRAGMENTATION OF COMMUNITY-OWNED NATIVE FORESTS.

No	Action	Status	Lead Organisations	Supporting Organisations	Links
12	Promote the sustainable management of indigenous forest and mangroves	E+	DFO	FAB, DOE, SPC, NLTB, NT	SDB99, 1,55
13	Enact regulations or codes of practice which ensure environmental impact assessments of new logging areas and plantation establishment sites;	E+	DFO	FAB, DOE, NLTB, SPC	SDB99, 16
14	Identify important forest corridors and develop mechanisms and implement forest conservation or forest restoration activities in these locations;	N	DFO	DOE, NT, NLTB, FP, HC, SPC FAB, NGO	15
15	Encourage and support community-based natural forest restoration initiatives;	E+	DFO	DOE, NGO, NLTB, SPC, FAB	1,14, 26, 30, 98,
16	Establish hardwood plantations only in areas of low biodiversity value as determined by appropriate forest survey and mapping which specifically integrates biodiversity values with other plantation criteria;	N	DFO	NLTB, DOE, USP, NGO, HC	13,16
17	Strengthen the legislative framework for Sustainable Forestry Management, through enactment of the Revised Sustainable Development Bill, specifically Part II Section 12;	E+	DOE	DFO/ AGO	
18	Strengthen the capacity for strict enforcement of the National Code of Logging Practice and biodiversity conservation.	E+	DFO	DOE, NLTB, HC	

OBJECTIVE 1.4 MINIMISE THE LOSS OF MARINE RESOURCES OF IMPORTANCE TO COASTAL COMMUNITIES

No	Action	Status	Lead Organisations	Supporting Organisations	Links
19	Document `tabu' and other traditional conservation and protection measures of marine resources;	E+	DFI	NGO, USP, FAB	
20	Promote community awareness of the destructive influences on aquatic biodiversity of land-based activities and unsustainable harvesting practices;	E+	DOE	FAB, DFI,NGO	1,
21	Enact regulations to provide for consultation and majority agreement of traditional fishing rights communities prior to the issue of an IDA (Inside Demarcated Area) resource use licence;	E+	DFI	DOE, FAB, AGO	22,
22	Encourage and assist traditional fishing rights communities to actively manage their qoliqoli and to establish or reinforce protected areas, through appropriate traditional conservation measures.	E+	DFI	FAB, NGO, DOE, MW	21

OBJECTIVE 1.5 MINIMISE THE OCCURRENCE OF WILDFIRE ON COMMUNALLY OWNED LAND

No	Action	Status	Lead Organisations	Supporting Organisations	Links
23	Undertake a multisectoral collaborative awareness campaign on the consequences of wildfire amongst farmers and land-owning communities;	N	DOE	DFO, NGO, FAB	23,
24	Institute a system of community based control of wildfire activity;	N	DOE	MAAF, NGO, FAB	
25	Review existing or planned fire control legislation with a view to strengthening it;	N	DOE	NGO,DOE,NLTB, FAB,AGO,PRV	
26	Encourage any productive low-fire risk land uses in degraded grass-reedland and high fire risk locations;	N	MAAF	NLTB, DOF,FAB, NGO	15,16, 30

FOCUS 2: IMPROVING OUR KNOWLEDGE

OBJECTIVE 2.1 IMPLEMENT A PROGRAMME OF ETHNOBIOLOGICAL AND TRADITIONAL CONSERVATION PRACTICES ENQUIRY.

No	Action	Status	Lead Organisations	Supporting Organisations	Links
27	Review current published ethnobiological knowledge and undertake a co-ordinated nationwide programme of collection of oral knowledge;	E+	FAB	DOE,MAAF,FM, USP,NGO	2,28
28	In a collaborative project with selected communities research traditional conservation practices with a view to clarifying their applicability and/or evolutionary potential in the modern context;	E+	FAB	MAAF,DOE,FM, USP,NGO	27

OBJECTIVE 2.2 CLARIFY THE CAUSES OF AND THE REHABILITATION NEEDS OF COMMUNITY-OWNED DEGRADED BIOLOGICAL RESOURCES.

No	Action	Status	Lead Organisations	Supporting Organisations	Links
29	Undertake a survey of current status of biological resources, specifically those of subsistence and economic importance and those that are threatened or in need of some form of protection.	E+	DOE	USP,FAB,MAAF, NGO, SPC	2
30	Encourage and support initiatives to restore degraded ecosystems, in particular, those that are community-based.	N	MAAF	DOE, FAB,NLTB, USP, SPC, NGO	26,15

OBJECTIVE 2.3 IMPROVE BIODIVERSITY STUDIES IN FORMAL EDUCATIONAL CURRICULA

No	Action	Status	Lead Organisations	Supporting Organisations	Links
31	Review the secondary school curricula and if necessary modify relevant learning areas incorporating current knowledge of Fijian biodiversity and the value of traditional ethnobiological knowledge.	N	MOE	DOE, FAB, MAAF, NGO, USP,PRV	
32	Provide further professional development courses in biodiversity, enthnobiologcal knowledge and conservation for in-service teachers.	N	MOE	DOE, NGO USP	
33	Document and publish ethnobiological knowledge in the vernacular and in a form(s) appropriate for formal educational curricula;	E+	MOE	NGO, FAB,USP	2

OBJECTIVE 2.4 ACHIEVE A DETAILED KNOWLEDGE OF THE OCCURRENCE AND STATUS OVER TIME OF FIJI'S BIODIVERSITY RESOURCES, IN PARTICULAR THE THREATENED, ENDEMIC FORMS.

No	Action	Status	Lead Organisations	Supporting Organisations	Links
34	Undertake a comprehensive terrestrial and freshwater biodiversity resource inventory;	E+	DOE	FAB, NT, NLTB, DOF, NGO, USP	SDB99, 35,60,62
35	Undertake a comprehensive marine biodiversity resource inventory;	E+	DOE	FAB, NT, DFI, NGO, USP	SDB99, 34,60, 62
36	Draw up an appropriate framework and mechanism for identifying and monitoring the status of rare and endangered species;	N	DOE	FAB, NT, NGO, DFO, DFI,USP, PRH	SDB
37	Revive DOE's spatially-referenced biodiversity database as a working system with appropriate procedural protocols and with wide public and institutional access;	E+	DOE	DFO, FLIS	
38	Commission the preparation of a bibliography-database of Fiji's insects. ;	N	USP	DOE, FAB, MAAF	

OBJECTIVE 2.5 ESTABLISH MECHANISMS WHICH ENCOURAGE AND FACILITATE BIODIVERSITY RESEARCH AND ENABLE FIJI TO ACCESS RELEVANT INTERNATIONAL FINDINGS AND DEVELOPMENTS

No	Action	Status	Lead Organisations	Supporting Organisations	Links
39	Review Government's and USP's role in biodiversity research;	N	DOE	MAAF, NT,USP, PRV, PRH	
40	Encourage international and private sector collaborative research on Fiji's biodiversity;	E+	DOE	MAAF, FAB, NT,USP, NGO, PRH	
41	Identify priority research requirements for biodiversity management and opportunities for developing national expertise;	E+	DOE	NT, NGO, USP, PRH	
42	Adopt a National Protocol drawing on the current USP Guidelines for Biodiversity Research and Bioprospecting regarding conduct and publication of research, and the export, buying and selling of biodiversity materials and findings;	E+	DOE	MAAF, NGO, NT,USP, PRV	
43	Establish a single professionally administered facility to house the various existing biodiversity collections;	N	USP	FM, PRH, DOA, NT, NGO, MAAF, DOE	

OBJECTIVE 2.6 ESTABLISH SPECIFIC RESEARCH PROGRAMMES ON ROTUMA

No	Action	Status	Lead Organisations	Supporting Organisations	Links
44	Undertake comprehensive terrestrial, freshwater and marine biodiversity resource surveys of Rotuma;	N	DOE	NT, NGO, RC,USP	

FOCUS 3: DEVELOPING PROTECTED AREAS

OBJECTIVE 3.1 ESTABLISH A COMPREHENSIVE AND REPRESENTATIVE CORE PROTECTED AREAS SYSTEM

No	Action	Status	Lead Organisations	Supporting Organisations	Links
45	Establish the Institutional and Legislative framework for a core protected areas system in both the terrestrial and marine environments;	E+	DOE	AGO, NLTB, FAB, DFO, NT	SDB99
46	Secure the priority/core sites through appropriate arrangements with the current landowners or Traditional Fishing Rights Owners;	E+	DOE	FAB,NLTB DFO, DFI, NT	59
47	Establish secure arrangements for areas of high biodiversity conservation value outside the core protected areas system;	N	DOE	NLTB, FAB, NGO, DFO, DFI, NT	59

OBJECTIVE 3.2 INSTITUTIONALISE THE SITES OF NATIONAL SIGNIFICANCE PROGRAMME

No	Action	Status	Lead Organisations	Supporting Organisations	Links
48	Establish a consensus on the administrative and institutional framework of the Sites of National Significance Programme	E+	DOE	NT, NLTB DTCP, FAB, RD, MAAF, NT	SDB99
49	Establish the institutional and enact the legislative requirements of the Programme and Register the Sites.	E+	DOE	NLTB, DTCP, FAB, RD, MAAF, NT	

OBJECTIVE 3.3 INITIATE AND EFFECTIVELY MANAGE EXISTING PROTECTED AREAS

No	Action	Status	Lead Organisations	Supporting Organisations	Links
50	Establish institutional control and responsibility of existing protected areas under the Government designated institution;	E+	DOE	NT,DFO, DFI, NGO	
51	Locate adequate financial and technical resources for management;	R	DOE	NT, DFO, DFI, NLTB, NGO, PRV	99
52	Prepare Management Plans for existing biodiversity protected areas, Nature Reserves and community-based Ecotourism sites;;	E+	DOE	NT, DOF,USP, NGO, DOT	
53	Encourage private, landowner or other as appropriate, participation or sole implementation of the management of biodiversity protected areas;	E+	DOE	FAB,NLTB,NT,NGO, DFO, DFI, PRV	
54	Ensure that adequate scientific knowledge is entered into strategies and plans;	E+	DOE	USP,DFO,DFI,NT, NGO	

OBJECTIVE 3.4 ENCOURAGE ESTABLISHMENT OF PROTECTED OR CONSERVATION AREAS IN ADDITION TO THE NATIONAL OR CORE PROTECTED AREA SYSTEM.

No	Action	Status	Lead Organisations	Supporting Organisations	Links
55	Promote linkages between sustainable natural resource use and conservation area establishment;	N	DOE	FAB,NLTB, DOF, NGO, NT, SPC	57,98
56	Encourage and assist landowners and TFRO's in the establishment of their own conservation areas irrespective of their national significance;	E	FAB	NLTB, DOE, NT,NGO	55,57
57	Promote linkages with the tourism sector in the establishment, management and marketing of protected areas.	E+	DOT	FAB, NGO,PRV, DOT	55,56

OBJECTIVE 3.5 PROVIDE ADEQUATE FUNDING FOR PROTECTED AREA MANAGEMENT.

No	Action	Status	Lead Organisations	Supporting Organisations	Links
58	Review and establish an appropriate Funding Mechanism(s) for the management of priority biodiversity protected areas;	N	DOE	BSC, NT,PRV	51,99
59	Ensure meaningful participation and provide equitable incentives and remuneration to resource owners for protected area establishment and management;	N	NLTB	FAB, DOE, DFO, DFI	8,46

FOCUS 4: SPECIES CONSERVATION

OBJECTIVE 4.1 EFFECTIVELY MANAGE THREATENED SPECIES.

No	Action	Status	Lead Organisations	Supporting Organisations	Links
60	Review the status of threatened species and prioritise species for conservation initiatives;	E+	DOE	MAAF, NT, NGO,USP, PRV	CITES 62,63,34
61	Encourage conservation management-oriented research on threatened species;	N	DOE	FAB, MAAF,USP	CITES
62	Develop a threatened species database;	E+	DOE	MAAF,USP, NT, NGO	CITES 60, 69,35
63	Prepare threatened species management plans, to include where appropriate linkages with best international expertise;	N	DOE	MAAF, NGO,USP,NT	CITES60
64	Establish captive breeding programmes for important species and forms which cannot be conserved *in situ,* either in Fiji, or, if appropriate, abroad;	E+	DOE	MAAF,PRV, NGO, USP, SPC	
65	Drawing on Forestrly Depts. Experience and capability establish an *ex situ* germ plasm collection or seed bank for threatened plant species and varieties for relocation or reintroduction as appropriate;	N	DOE	MAAF,PRV,DFO, USP, SPC	SPRIG
66	Enact legislation to provide effective protection for threatened species;	E+	DOE	BSC,AGO	SDB99, 89, 90
67	Advocate for the complete termination of the `Game Shooting Season'.	N	DOE	MAAF,NGO, NT	

OBJECTIVE 4.2 EFFECTIVELY MANAGE SPECIES OF CULTURAL SIGNIFICANCE

No	Action	Status	Lead Organisations	Supporting Organisations	Links
68	Identify species of cultural significance whose status is declining and prioritise species for active management.	N	FAB	USP, MAAF, DOE, NGO	
69	Develop a database of culturally significant species;	N	USP	FAB	62
70	Enable communities to take the lead in the conservation of culturally significant species.	E+	FAB	DOE, NT, NGO	2,56, 57

FOCUS 5: CONTROL OF INVASIVE SPECIES

OBJECTIVE 5.1 REDUCE RISKS OF THE INTRODUCTION OF INVASIVE SPECIES

No	Action	Status	Lead Organisations	Supporting Organisations	Links
71	Strengthen relevant Quarantine legislation to include consultation/participation of the Dept. of Environment in the decision making processes on the introduction of organisms;	E+	MAAF	DOE,AGO, SPC	73,74, 83
72	Improve regional collaboration between national quarantine services and relevant regional institutions/organisations to develop regional action plans and strategies for the prevention of introduction and spread of invasive species;	E+	MAAF/DOE	SPREP, SPC, DCE, NT	
73	Adopt relevant quarantine regulations, standards and tools developed to assist in the decision making processes involved in the importation of exotic species;	E+	MAAF	DOE, USP, NT	TRAF-FIC, 71
74	Strengthen legislation and enforce heavy penalties on individuals and organisations illegally importing organisms;	E+	MAAF	DOE, DCE, AGO, NT	71
75	Develop protocols which require an EIA – Risk Assessment by an independent body before the introduction of exotic species, in line with SDB99 EIA Provisions (Section 24);	N	MAAF	DOE, NT	
76	Increase public awareness on the risks and impact of exotic invasive species on native ecosystems and the biodiversity of species contained therein;	E+	MAAF	MAAF, USP, DOE, NGO	SDB99
77	Develop procedures or legislation to minimise the establishment of invasive species through ballast water exchange;	N	MAAF	AGO, DOE, PA	SPREP

OBJECTIVE 5.2 EFFECTIVELY CONTROL INVASIVE AND POTENTIALLY INVASIVE SPECIES PRESENT IN FIJI.

No	Action	Status	Lead Organisations	Supporting Organisations	Links
78	Establish a database of invasive species present in Fiji	N	MAAF	USP, NGO,DOE	SDB99
79	Review the biological effects of exotic species, in particular known invasive species and prioritise species for control;	N	MAAF	USP, NGO, PRV	SPREP
80	Make contingency plans for the containment and eradication of invasive species not yet present in Fiji but which pose a significant threat;	N	MAAF	DOE,	SPREP
81	Study the possibilities for the utilisation of invasive species;	E+	MAAF	USP, PRV	
82	Identify and develop acceptable means for the control invasive species for short, medium, and long term, in particular biological control;	E+	MAAF	DOE	
83	Ensure, through legislation, that biodiversity values and considerations are strongly integrated into current biological control decision making and practices;	N	MAAF	AGO, USP, NGO, DOE	71

OBJECTIVE 5.3 DEVELOP INTER-ISLAND QUARANTINE AWARENESS AND ENFORCEMENT FOR IMPORTANT BIODIVERSITY

No	Action	Status	Lead Organisations	Supporting Organisations	Links
84	Review inter-island distributional differences in invasive species of concern and prioritise species for management;	N	MAAF	USP, DOE, PRV, NT	
85	Establish administrative responsibilities and strengthen capacity;	N	MAAF	DOE, MD, PRV, NT	
86	Evaluate island eradication possibilities for the Mongoose	N	MAAF	DOE, PRV	
87	Provide public, especially community awareness on the threat posed by inter-island traffic in the spread of invasive species, in particular the mongoose, giving priority to the islands of Taveuni, Ovalau, Gau, Koro and Kadavu.	N	DOE	FAB, NGO, MAAF, MD, NT, PRV	

OBJECTIVE 5.4 ENSURE NATIONAL AND GOVERNMENT AWARENESS AND PARTICIPATION IN THE CURRENT INTERNATIONAL BIOSAFETY PROTOCOL DISCUSSIONS AND DEBATE.

No	Action	Status	Lead Organisations	Supporting Organisations	Links
88	Appoint a focal point to be responsible for coordinating advice to Government on Biosafety issues and ensuring Fiji's participation in the current debate.	N	DOE	MAAF	

FOCUS 6: CAPACITY BUILDING AND STRENGTHENING

OBJECTIVE 6.1 ENACT LEGISLATION TO ESTABLISH AN INSTITUTIONAL FRAMEWORK AND ADMINISTRATIVE CAPACITY FOR ECOLOGICALLY SUSTAINABLE DEVELOPMENT AND PROTECTED AREA AND BIODIVERSITY MANAGEMENT.

No	Action	Status	Lead Organisations	Supporting Organisations	Links
89	Adopt legislation to provide protected status for all native terrestrial birds, reptiles and amphibians with nominated exceptions;	R	DOE	MAAF, FAB, AGO	SDB99
90	Enact biodiversity conservation legislation based on the Sustainable Development Bill (1997 - Part XVII);	R	DOE	MAAF, NGO, AGO	SDB99
91	Develop legislation for the preservation and maintenance of traditional knowledge, innovation and practices;	N	FAB	NGO, AGO	
92	Advocate that traditional knowledge be internationally recognised as a `Sui Generis' system for intellectual property rights;	N	DOE	USP, NLTB, FAB, AGO	
93	Enact sustainable resource management legislation based on the Sustainable Development Bill (Parts XII,XIII,XIV,XV,XVI);	R	DOE	MAAF, AGO	SDB99
94	Strengthen Fiji's capacity to implement CITES, the Convention on International Trade in Endangered Species;	N	DOE	FAB, NGO, MAAF	

OBJECTIVE 6.2 ENHANCE BIODIVERSITY MANAGEMENT SKILLS AND CAPABILITIES

No	Action	Status	Lead Organisations	Supporting Organisations	Links
95	Undertake a national needs assessment for biodiversity and bioresource management in conjunction with a review of courses at tertiary institutions and implement the findings;	N	DOE	FAB, MAAF, NGO MOE, USP, PRV	
96	Integrate appropriate traditional knowledge and skills into training courses;	N	MOE	FAB, MAAF, NGO,USP	
97	Ensure tertiary scholarships are awarded by Government and attachments and collaboration are encouraged, to develop national expertise in biodiversity and bioresource research and management;	N	DOE	BSC	

OBJECTIVE 6.3 DEVELOP COMMUNITIES' CAPABILITIES TO MANAGE AND UTILISE FOREST AND MARINE RESOURCES IN A SUSTAINABLE MANNER

No	Action	Status	Lead Organisations	Supporting Organisations	Links
98	Review and implement appropriate partnerships with communities to enable them to attain sustainable community level resource management;	E+	FAB	DOE, MAAF, NGO	1,12, 15,55
99	Establish a funding mechanism to enable wide adoption of successful community-based sustainable resource-management initiatives.	N	DOE	BSC	51,58
100	Through appropriate training enhance the resource management capacities of land-owning and TFRO communities	N	MAFF	DOE, USP, FAB, SPC,SPREP	

OBJECTIVE 6.4 PROMOTE BIODIVERSITY AND BIORESOURCE CONSIDERATIONS INTO GOVERNMENT'S ECONOMIC DECISION MAKING MECHANISM.

No	Action	Status	Lead Organisations	Supporting Organisations	Links
101	Advocate the valuation and accounting of direct and indirect goods from biodiversity and bioresources.	R	DOE	BSC, USP, MAAF, MOF	

OBJECTIVE 6.5 PROMOTE AND APPLY ECOLOGICALLY SUSTAINABLE MANAGEMENT PRACTICES IN THE `NATURAL RESOURCE' SECTORS - FISHERIES, FORESTRY, AGRICULTURE, MINING AND TOURISM.

No	Action	Status	Lead Organisations	Supporting Organisations	Links
102	Enact sustainable resource management legislation based on the Sustainable Development Bill (1999 Part II - 12. Sustainable development policy formulation) and advocate for Sustainable Development Bill (1997 - Parts XII,XIII,XIV,XV,XVI) in future revisions;	R	DOE	AGO	SDB99
103	Collate, develop and promote information on the benefits of biodiversity conservation for the natural resource sectors	N	DOE	USP,MAAF,NGO, FAB	
104	Adopt internationally recognised Codes of Conduct or Eco-labelling Schemes for natural resource exploitation.	N	DOE	MAAF, DOF,DFI	

6 PROJECT PROFILES AND BRIEFS

Following are some profiles of on-going Biodiversity Conservation Projects in Fiji, followed by some Project Briefs submitted during the course of the preparation of the BSAP and discussions at the National and Regional Workshops

6.1 PROJECT PROFILES

Project Profile 1

'DRUGS FROM THE DEEP" : NATURAL PRODUCTS DEVELOPMENT AND CONSERVATION IN TIKINA VERATA, FIJI

The project was supported by the Biodiversity Conservation Network (BCN), a consortium of World Wildlife Fund, The Nature Conservancy and World Resources Institute with funding by the United States Agency for International Development.

The BCN was initiated to :

(a) support site-specific biodiversity conservation efforts in the Asia/Pacific Region

(b) evaluate an enterprise-based approach to community-based conservation.

The Fiji project involved the eight villages in Verata Tikina in the central east coast of Viti Levu. The main facets of the program were:

- creation of a bio-prospecting enterprise to provide income to the community to support conversation and development needs formerly met by the harvesting of marine resources
- formulation of an innovative and equitable bio-prospecting agreement
- development of a community-based marine resource management plan
- biological and socioeconomic monitoring of effects of the project (by local community members)
- research to add value to biological extracts before being licensed for study by pharmaceutical companies overseas

Accomplishments

The project succeeded in setting up a bio-prospecting venture with the Strathclyde Institute for Drug Research in Scotland after negotiations with SmithKline Beecham pharmaceutical firm were not fruitful (they closed down their natural products division). Licensing fees alone could bring F$100,000 to Verata and much more to the stakeholders should a commercial product be developed. Verata people living in Suva have been authorised by the Tikina Council to develop a Verata Conservation Trust Fund to administer these licensing fees. During the process both the Fiji Government and the University of the South Pacific developed a policy on bio-prospecting. The bio-prospecting contracts have been reviewed by international experts to help ensure equitable benefits to the people of Verata and Fiji.

The University of the South Pacific has enhanced its ability to determine the activity of extracts and to identify the compounds responsible for this activity. This could increase licensing fees by factors in the hundreds.

The people of Verata, led by their chief the Ratu mai Verata, have developed a marine resource management plan which includes:

- ban of taking turtles and coral extraction

- moratorium on granting commercial fishing licenses
- size limitation of gills nets
- declaration of no-take refugia to support an enhancement of marine populations

Concurrently a workshop was held in which 20 people of Verata were trained in biological monitoring techniques. They are currently monitoring changes in "kai koso" and "mana" populations, both in the no-take refugia and control areas. After eighteen months "kai koso" populations have increased by 600% in the "tabu" area and 200% in a similar area where harvesting has continued.

The turaga-ni-koros from the eight villages have also been trained to conduct socioeconomic surveys and have designed and carried out with the assistance of SPACHEE (a regional environment group) a baseline socioeconomic survey of their villages which should help them in their future decision making.

During the BCN analysis of the project almost all conservation objectives (12 of 13) were seen to be met, the highest of the 20 BCN projects. There were major successes in policy development in relation to access and benefit sharing from biological diversity. Perhaps most importantly the people of Verata feel that they have the knowledge and confidence to conserve and wisely utilise their resources for generations to come.

Project Profile 2

***ACMOPYLE SAHNIANA* FIJI'S RAREST TREE**

Acmopyle sahniana is a very rare tree endemic to Fiji. It is a gymnosperm (related to pines) in the family Podocarpaceae. In Fiji, the only known trees are found in Namosi Province. There is one small group of trees (ten trees in 1995) on Mt. Vakarogasiu, a spur on Mt. Nakorolo. There are three more small groups of trees in the Korobasabasaga Range – two groups together on one high ridge and one group in Waisoi on a lower ridge. Altogether there are 46 trees which are one meter or taller. The tallest *A. sahniana* tree is about 12 meters. There area 17 seedlings and saplings which area under one meter tall in 1996. *A. sahniana* is also known from Mt. Koroyanitu in the Ba province, but recent searches have failed to find it there, cyclones might have destroyed that group of trees.

A.sahniana trees are mostly small and thin and of no value for timber. They are not used by people for medicine or anything else, but the trees are very important for other reasons. They are important because they are part of the forest, part of the vanua. They are important because Acmopyle is a very old type of tree and how it grows now tells us something about how the climate and the land used to be millions of years ago. *Acmopyle sahniana* is most important and interesting to scientists because each small group of *A. sahniana* tree is very different from the other groups of *A. sahniana* trees. The trees look the same, but genetically they are more different than anyone would expect for such a small population. It is very, very unusual to have genetic information for an entire species. The genetic information on *A. sahniana* can give us information about all small groups of plants and animals, and maybe even about people too.

Research on A.sahiana in Namosi has been undertaken by scientists from the University of the South Pacific and currently the Pacific Regional Herbarium monitors the small remaining populations.

Project Profile 3

YADUATABA – HOME OF THE CRESTED IGUANA

The Crested Iguana, *Brachylophus vitiensis* is found in small numbers on certain islands in the Mamanuca and Yasawa Groups, but the largest population by far, over 5,000, is on the island of Yaduataba. The uninhabited island is a rainshadow island with less than 180cm of rain per year. The vegetation is comprised of a mixture of beach forest, introduced casaurina scrub, disused copra plantations, coastal scrub and grassland.

The late Dr. John Gibbons first brought worldwide attention to the Crested Iguana in 1979 and then described it as a new species in 1984. In 1980, the National Trust for Fiji secured a management agreement with the landowner to establish the island as a sanctuary and immediately began a programme to eradicate the island of goats.

The National Trust for Fiji while pursuing a formal lease over the island has developed MOU's with the New South Wales Zoological Parks Board and the Kula Eco Park which has seen the development of further research of the crested iguana. Recent research programs include :

- A research program to establish the genetic distance between crested populations in Yaduataba and Monuriki began in 1998 with collaboration between the Trust, Kula Eco Park and the Taronga Zoo.
- The first Crested Iguana population census was carried out in 1985. In April 1999, another census was carried providing a more accurate population of approximately the same number as in 1985.
- A captive-breeding programme for the iguana was established at the Kula Eco Park in 1997 and has proved very successful.

A programme between the National Trust and Greenforce a conservation organisation from the United Kingdom, was established in 1998 and this has resulted in a marine survey and monitoring programme of the biodiversity of reefs around the sanctuary. A Marine Park is an objective of the National Trust

The Trust intends to nominate the island sanctuary to the UNESCO World Heritage List when lease agreements are concluded.

Project Profile 4

SIGATOKA SAND DUNES, NADROGA

The Sigatoka sand dunes are situated at the mouth of the Sigatoka River and are a unique feature of the Fiji's natural heritage. Covering an area of 650 acres the dunes extend along the coastline westward from the mouth of the Sigatoka River and provide a landscape of great natural beauty. As one of Fiji's earliest recorded prehistoric sites, discoveries prove evidence of the link between the Melanesian and Polynesian people of the Pacific. The dune vegetation is a mixture of introduced and indigenous coastal species while fauna consists mainly migratory birds and coastal lizards.

The Fiji Government designated the Sigatoka Sand Dunes as Fiji's first National Park in July 1989 with management entrusted to the National Trust for Fiji.

To ensure the continued preservation of the area, and at the same time to give visitors the maximum benefits of the park, the Trust has developed aspects of the Park.

- An Information Center was built in 1997 as the central point for visitors to the Park. Managed by two Rangers who assist and provide visitors with information or guided tours through the park, the Centre also provides facilities for visitors and visiting scientists.
- Recreational facilities for visitors around the Park, such as shelters, BBQ areas, walking trails etc have also been built.

Current development plans include :

- Drawing up a new marketing plan
- Re-vegetation of the dunes to help in stabilisation
- Extension and improvement of the Visitor Information Centre.
- Provision of a station for the Tourist Train.

The National Park is one of Fiji's most important educational and recreational facilities.

Project Profile 5

KOROYANITU NATIONAL HERITAGE PARK

The Mt. Koroyanitu Range, known as Mt. Evans on most maps, is located inland between Nadi and Lautoka. Mt. Koroyanitu rises to 1,195m above sea level and is the 3rd highest peak in Fiji.

Scenically, the area is spectacular with waterfalls, towering cliffs of lava, and luxuriant forest growth. Within the range, the Sabeto, Teidamu, Varaciva and Vitogo Rivers gather their headwaters.

The Koroyanitu National Heritage Park area covers around 25,000 ha and belongs to 50 landowning units in 13 different villages. Ownership of the core area resides primarily with people from Abaca, Vakabuli, Nalotawa, and Navilawa villages..

The villagers still depend on the land for food, medicine and building resources. Currently the landowners are subject to pressure from loggers, plantation foresters, agricultural developers and mining companies to utilise their land. In the late 1980's the Native Land Trust Board initiated discussions with the landowners on a landowner-managed ecotourism project as an alternative form of income generation and this has developed today to the best developed ecotourism attraction in Fiji. The significance of the area which makes up the Koroyanitu National Heritage Park is derived from both its natural and cultural assets, specifically.

- some of Fiji's ast remaining old-growth stands of Fiji Kauri (*Agathis vitiensis*) which have a particularly high value for logging.
- unlogged tropical montane forest, the only remaining stand in western Vitilevu.
- a diverse variety of flora and fauna, twelve plant species are endemic to the mountain range;
- the primitive Gondwanaland gymnosperm species *Acmopyle sahniana*, has been recorded on Koroyanitu although not located recently
- many plant species of economic importance for building and construction, reed (Miscanthus floridulus) and bamboo stands, the only source of traditional thatching remaining in the Vuda District.
- outstanding scenic beauty.
- high importance of its watershed to the dry western Vitilevu.

Culturally the area has a high significance with a large number of archaeological sites and cultural landscapes throughout the area and strong cultural associations with the people who live there.

Today the landowner managed project offers a range of day and halfday walks; a trans mountain hike overnighting in a tradtional bure high on the mountain; trained local guides; waterfalls and swimming holes; spectacular scenic lookouts; village visits; village stays; lodge accommodation and camping facilities.

The project is a successful example of a viable rural income-generating project with long term prospects which also plays an important role in the conservation of a unique part of Fiji's Natural Heritage.

Significant assistance in developing the Koroyanitu National Park has been provided by the Native Land Trust Board, Fiji Pine Ltd., the South Pacific Regional Environment Programme and New Zealand Official Development Assistance.

PROJECT BRIEF 1. DEVELOPMENT OF SITES OF NATIONAL SIGNIFICANCE SYSTEM

Objective

Establishment of a registration protocol and administration for Sites of National Significance.

Rationale

Because of the gradual loss of sites both natural and cultural through development activities, a national register is urgently required together with a procedure to prevent accidental loss of such sites.

A Preliminary Register of Sites of National Significance was drawn up with the National Environment Strategy and is now frequently referred to and used, specifically by the Department of the Environment and Native Land Trust Board. However, no organisation has assumed responsibility, no registration procedure or protocol has been developed and they have no legislative support – in the absence of these prerequisites, the system has no merit being a mere paper exercise.

The NES advocated that a Department of Conservation within the Ministry of the Environment should be the location of the Register and have the legislative responsibility. This requires further discussion on the part of the Government, as other departments or agencies may perhaps be as appropriate.

Activities

1. Undertake the necessary fieldwork to register all sites of national significance and draw up an administrative and legal framework through which it can operate. Two components can be distinguished:

- registration of natural and post-European contact sites. A preliminary list has been drawn up but is by no means complete;
- registration of pre-European contact historic and cultural sites. Knowledge of these is probably more fragmentary and incomplete and currently lies mainly with the Fiji Museum and landowners.

2. Draw up the administrative and operational framework for the Register of Sites of National Significance.
3. Provide an appropriate data and information system.
4. Draft a single piece of legislation which covers protected areas, historic sites and the Register of Sites of National Significance (RSNS) in one piece of legislation.

Personnel

Initial consultancy:

- Conservation planner, international consultant to undertake project formulation, prepare TOR and programme (2 months)

Project personnel as per TOR to be developed above but probably:

Line position:

- Ecologist/conservation planner. Three year adviser, responsible for overseeing the RSNS project, provision of policy and technical advice, training of counterparts, evaluation of natural areas, upgrading unit to departmental status.
- Secretarial - 3 years

Short term consultants:

- Archaeologist. To train field survey teams and to advise on priorities for national sites, administration institutional needs, restoration and conservation management requirements. 12 month term.
- Historic building specialist. To advise on priorities for conservation of identified historic buildings, administration institutional needs, restoration and conservation management requirements. 4 months.

Co-ordination will be required with the Terrestrial and Marine Resource Assessments (Project Profiles 2,3) because new sites will located.

Government contribution:

GOF will need to decide on the location of administrative responsibility; provision of a counterpart to consultant head of RSNS; survey teams and provision of two scholarships archaeology, protected area management.

Duration

3 years

Indicative cost

US$30,000 for project formulation consultancy – major requirement to establish administrative arrangements with community liaison and inputs.

US$1.5 million

F$210,000 for training scholarships

PROJECT BRIEF 2. BIODIVERSITY CONSERVATION INITIATIVES IN FIJIAN VILLAGES

Objective

Increase awareness and implementation of biodiversity conservation in Fijian villages.

Rationale

In the Fiji tenure system more than 80% of the land and large expenses of the sea are under traditional ownership at the village level. This then becomes the key focus for biodiversity conservation in Fiji.

The traditional subsistence life style in villages necessitated respect for biodiversity as the basis for life. During the current period of rapid modernisation there is increasing pressures to unsustainably utilise land and marine resources belonging to the village.

The Fijian Affairs Board, the government apparatus for managing village policy, has recently embarked on a major initiative to increase awareness of the importance of biological diversity through a series of activities (interviews, workshops) at the village level. Out of these discussions will come important pilot projects (recording of traditional knowledge, rehabilitation of degraded areas, indigenous plant nurseries) for which support will be sought.

Activities

Village profiles – to undertake a study of all Fijian villages to ascertain their natural and cultural profiles through interviews and surveys.

Duavata workshop – in each tikina to conduct week-long workshops stressing the importance of environment protection, sustainable development and protection of intellectual property rights.

Traditional knowledge registers – to begin the process of documenting traditional knowledge for each village as a basis for a traditional knowledge rights system in Fiji.

Biodiversity conservation pilot projects – to conduct at the tikina level projects such as setting up nurseries of culturally important plants and rehabilitation of degraded areas.

Personnel

Short-term consultant is needed to train in an effective system of recording traditional knowledge.

Staff are needed to conduct workshops and manage biodiversity projects.

Government contribution

FAB staff will conduct activities 1 and 2 as part of their work program. They will also contribute infrastructure and staff to supervise and participate in projects under activities 3 and 4.

Duration

3 Years (to complete activities 1 and 2) and prepare traditional knowledge registers in 50 villages and set up a biodiversity conservation project in each of 14 provinces. It is expected that FAB staff would have sufficient skills and experience to continue work internally.

Indicative cost

US$250,000

PROJECT BRIEF 3. ESTABLISHMENT OF A BIODIVERSITY MANAGEMENT INFORMATION SYSTEM

Implementing Agency:

Department of the Environment

GEF Focal Area (s):

Biodiversity

Operational program/short-term measures:

This proposal would fall within several Operational Programs: Mountain ecosystem; Forest ecosystems; and Coastal, marine and freshwater ecosystems (including wetlands).

Project Rationale:

Fiji has a high rate of endemism amongst its taxa. While the species biodiversity of the higher flora and of terrestrial and marine vertebrates is relatively well known, many species of mosses, lichens, algae, and micro-organisms and invertebrate wildlife remain unknown. Both the State of the Environment Report (GOF1992) and this Biodiversity Strategy and Action Plan emphasize that the current level of understanding of Fiji's biological and ecological resources is poor and is insufficient to support a national resource management strategy. A comprehensive survey of these resources is urgently needed. It is a major task of a similar scale to the Natural Forest Inventory. Output will be of immense strategic value to a wide range of Government sectors and will provide critical information for such projects as the National Land Use Plan, Registration of Sites of National Significance and for Forest Management. The activities of these organism are of vital importance to the survival of the higher plants and animals, and thus to the processes that maintain the whole ecosystem. However, many of these organisms have yet to be collected and identified. Furthermore, the abundance and distribution in Fiji of not only these species but also of most of the higher plant and animal species is not known. Such knowledge is essential to identify the locations of priority areas in Fiji for the development of sustainable management for the conservation of the ecosystems to preserve the natural heritage.

Activities to achieve outcomes:

i. Implement and extensive survey of existing literature to develop a comprehensive bibliography of Fiji's biodiversity.

ii. Produce a check list of native species in Fiji , the extent of occurrence and area of occupancy.

iii. Implement field surveys to assess species abundance in areas thought to be of high biodiversity.

iv. Arrange for identification of specimens to species levels.

A pilot study will proved the design and operational structure for a wide-raging survey to be undertaken by multi-displinary teams of consultant ecologists with in-country trainee assistants who will feed data to a central GIS database and operations centre in Suva. All survey to be accompanied by land owners with traditional expertise.

Stakeholders involved in project:

Fiji Department of Environment, Landowners, Native Land Trust Board, Ministry of Fijian Affairs, National Trust of Fiji, USP, Ministry of Agriculture, Fisheries and Forest. NGO's.

Personnel

Line Position

Coordinator/ecologist – senior consultant scientist – 2.5 years;

Database and GIS – local consultant – 2.5 years;

Secretarial – 3 years.

Short-term positions

Specialist ecologists (varied displines – consultants) – 30 months

Field assistants – in country trainee ecologist – 6 at 6 months each;

Government contribution :

- Provision and maintenance of dedicated office and laboratory facilities in institutions.
- Effective liaison with sectors eg, Forestry, Agriculture, Fisheries to identify field and laboratory personnel for training purposes;
- Access to relevant sectoral resource data.

Duration

Three years primary survey; two years optional follow up.

Indicative Cost

US$ 600,000 project formulation – major requirement to establish administrative arrangements with community liaison and inputs.

US$ 1.6 million for primary survey.

PROJECT BRIEF 4. SAVING THE PLANTS THAT SAVE LIVES: TRADITIONAL MEDICINE PLANT CONSERVATION

Implementing Agency

WAINIMATE

GEF Focal Area:

Biodiversity

Project Rationale and Objectives:

The project will enable WAINIMATE to involve more people in its efforts to conserve and sustainably manage the medicinal plant resources found in Fiji, as well as their habitats. Special emphasis will be placed on plants that are endemic to Fiji, and those that are under threat of extinction due to overharvesting and/or habitat destruction. This will be done through in-situ conservation measures as well as cultivation around home, health centres and schools. Medicinal plants are essential to meeting the primary health care needs of people who live on remote islands as well as those who live in isolated areas of the larger islands, and the increasing urban poor population. Sustainable use of medicinal plants will be achieved through monitoring levels of harvesting and assessing the impact on wild populations in order to develop mechanisms for ex-situ propagation/conservation of threatened species.

Activities:

In-situ conservation efforts will be expanded through development and implementation of community monitoring systems which will be developed in consultation with landowners and healers to ensure that sustainable yields of harvesting medicinal plant resources are not exceeded. Four nurseries [one in each division] will be established to regenerate threatened indigenous medicinal plants species for replanting. Villagers will be encouraged to develop community-based enterprises to preserve traditional medicines for long term use, thereby reducing demand for fresh plant matter, and benefiting from their biological resources and indigenous knowledge. WAINIMATE will work with government agencies and others to develop appropriate policies to conserve medicinal plant species, and to incorporate the use of safe and effective traditional medicines into the health delivery system.

Operational Programm/Short-term measures:

The proposal would fall within the Forest Operational Progam. We anticipate that experience gained during the preparation and implementation phase of this project could assist those in other PICs to address the issues of conservation and sustainable use of medicinal plant resources.

Project Linkage to national priorities, action plans and programs:

Fiji is currently in the process of developing a National Biodiversity Strategy and Action plan through its Department of Environment. WAINIMATE would like to ensure that issues related to the conservation and sustainable use of medicinal plants are adequately dealt with in the strategy, including the recognition of indigenous knowledge and the equitable sharing of benefits from this knowledge. The National Environment

Management Strategy indentified the need to conserve Fiji's Forest resources, and the Ministry of Health is looking for ways to reduce health care costs.

Expected outcome:

A number of results will be achieved through this project as follows:

- Increased participation of traditional healers and their supporters in the conservation of medicinal plants and their habitats.
- Increased production of medicinal plants in community nurseries, health centres, schools and home gardens.
- Improved ability to conserve medicinal plants and their habitats.
- Development of community-based enterprises to process medicinal plants to reduce danger of overharvesting.
- Compilation of ethnobotanical information about the range of medicinal plants to their availability.
- Compilation of a Directory of Traditional Healers.
- Documentation of safe and effective traditional medicine treatments.
- Incorporation of safe, effective, and affordable traditional medicine treatments into national health delivery system.

Stakeholders involved in the project:

Traditional healers and their supporters have been involved in developing this project concept. Assistance from the GEF Project Preparation and Development Facility will enable us to identify more healers and to involve them in consultations to provide input for the GEF Project Proposal. Other stakeholders include Ministry of Health staff who we are continuing to encourage to take a more active stance on the promotion of traditional medicines, and the conservation of medicinal plants.

Line Position

Coordinator/plant scientist 2 years

Database & local consultant

Secretarial 2 years

Short-term position

Specialist (varied disciplines) 24 months

Field Assistants.

PROJECT BRIEF 5. CROP GERMPLASM, ECONOMIC PLANTS AND WEEDS COLLECTION

Objective

Establishment of crop germplasm (botanical description, dry collection), economic plants and weeds collection as reference materials in the Agricultural Herbarium with a duplicate collection lodged at the South Pacific Regional Herbarium at USP.

Rationale

Because of the growing importance of plant genetic resources, genetic research, intellectual property right's, and bioprospecting in the global arena it is important to keep systematic records of crop varieties (cultivars) in Fiji and other cultivated plants of economic and cultural importance. Of almost equal importance is the growing concern over the loss of the diversity of long established named cultivars (land races) that have been selected over hundreds of years to suit the variety of environmental and cultural demands of Fiji environment.

A working Agricultural Herbarium preserving the above would also provide reference materials for future research work and for students studying multispecies agricultural and agroforestry supplements. It would work in close conjunction with the South Pacific Regional Herbarium at the University of the South Pacific, wherein duplicate voucher specimens would be lodged.

Activities

Identify and describe, the diversity and morphology of the diversity of "named" crop varieties e.g. yams, taro, kava, coconuts, breadfruit, bananas and plantains, duruka (*Saccharum edule*), hibiscus spinach (bele) and other cultivated useful plants e.g. paper mulberry (masi) and pandanus (voivoi), on field resulting in the development of crop varieties descriptors.

Collect samples of crop varieties, economic plants, weeds, etc. for storage in the Herbarium as dry reference materials for future research work.

Develop a database on crop varieties, economic plants, weeds, etc. for record and reference for agricultural purposes.

Identify and list crop varieties, plant species of economic importance, etc. that are endangered towards becoming extinct.

Responsible for the maintenance and activities as required in the laboratory management of the Herbarium.

During collection Fijian, Indian and Rotuman communities are encouraged to develop on the farm germplasm, multi-cultivar plantings. Have them bulked for each sample at least 2 of important Agriculture Research Stations.

Facilities and Equipments

Agricultural Herbarium	-	$50,000
Drying / Curing / Preparation Room		
Incubator Drying Oven	-	$10,000
Fridge	-	$1,000
Mounting Room		
Mounting Paper	-	$500
Labels	-	$200
Voucher Files	-	$1,500
Stationery	-	$500

Specimen Collection

Laboratory Chemicals (formaldehyde, glycerol, alcohol, etc.)	-	$10,000
Sample Bottles	-	$2,000
Storage Cabinets	-	$3,000
Separators	-	$1,000
Envelopes	-	$300
Catalogue Cards	-	$200
Fridge	-	$1,000
Microscope with Lighting (1 x 2)	-	$15,000
Computer with Printer	-	$5,000
Vehicle		
Mitsubishi 4WD (Twin Cabin)	-	$38,000
Project Staff		
Research Assistant (1 year)	-	$14,000
TOTAL BUDGET	**-**	**$153,000**

PROJECT BRIEF 6. STUDY OF FIJI'S INVASIVE SPECIES AND THE DEVELOPMENT OF A DRAFT FIJI "ALIEN SPECIES ACTION PLAN

Objective

The objective of the proposed project is to; 1) identify and document those alien invasive species, that constitute major threats to Fiji's main natural and cultural ecosystems and biodiversity; and 2) to use this information to develop a draft national Alien Species Action Plan (ASAP) to prohibit the introduction of new invasive species and to eradicate or control existing species identified during stage 1 of the project.

Rationale

Island ecosystems and plants and animals have shown to be particularly susceptible to displacement and even extinction due to the introduction of more competitive alien species of plants, animals and disease organisms. The Draft BSAP clearly identifies the threats posed by alien plants and animals to Fiji's agricultural, silvicultural and natural ecosystems and the biodiversity that they contain. A number of serious weeds (e.g. the African tulip tree, giant sensitive grass, and the ground *cover Wedelia trilobata*) are considered to be significant threats to the biodiversity of Fiji's agricultural systems and to Fiji's rainforests, coastal forests and mangrove ecosystems. Similarly, there is also great concern over the potential for introduced marine organisms to have serious consequences for Fiji's marine biodiversity and the future of Fiji's fisheries. There is, thus, an urgent need to immediately identify those invasive species that have become naturalized and threaten Fiji's agricultural and natural biodiversity (ecosystems, plants and animals), to identify other potentially invasive species that should be prohibited in Fiji, and to use this information to develop a draft national ASAP.

Activities

Conduct a literature survey to gather information on those plants, animals and disease organisms considered to be serious threats to Fiji's biodiversity (weeds, pests, diseases, vertebrate and invertebrate animals, fish, invasive algae, etc.).

To conduct participatory surveys of representative communities in Fiji's main agricultural and natural ecosystems to identify those organisms that are seen to be most invasive, troublesome and have the greatest economic and environmental impact on the ecosystems and communities that depend on them, and to increase community awareness of the threat posed by invasive organism and the need for their control.

To carry out field surveys to observe the status and ecology of the invasive organisms identified in the literature and community surveys and to collect voucher specimens (in duplicate) to be lodged at both the Department of Agriculture Research Division and the South Pacific Regional Herbarium at the USP.

To use this information to development a draft Fiji National Alien Species Action Plan designed to prohibit the introduction of new invasive species, where possible, eradicate existing invasive species, and to control or minimize the damage cause by existing species that can not be eradicated.

Collaborating Agencies

The collaborating agencies are the Botany and Weed Science/Plant Protection Section of the Research Division of the Department of Agriculture (MAFF), the South Pacific Regional Herbarium of the University of the South Pacific (USP, and the Plant Protection Section of the Secretariat of the Pacific Community (SPC).

Provisional Budget

Staff costs will be borne by the collaborating agencies or are included in the estimated costs of the different activities, with the exception of one research assistant for one year duration)

1.	Cost of literature review	$1000
*2.	Participatory Community Surveys in 10 selected communities in representative agricultural and ecological zones @ an average of $500 per survey.	$5000
*3.	In-the field surveys and collection of herbarium specimens	$5000
4	Cost of preparation, preserving and identification of herbarium specimens	$1000
5.	Preparation and workshops to prepare draft ASAP	$5000
6.	Printing and distribution of draft ASAP	$1000
7.	Research Assistant/graduate (1 year)	$15000
8.	Contingencies	$1000
TOTAL		**$F34,000**

* Estimated costs include transport, per diem, costs of informants, traditional offerings to communities, etc.

PROJECT BRIEF 7. IMPACT OF INVASIVE SPECIES ON NATIVE TERRESTRIAL ECOSYSTEMS.

Objective:

Assessment of the current and potential impact of priority exotic invasive flora and fauna on native terrestrial ecosystems, and the development of guidelines to protect native habitats from such impact.

Rationale:

A major reason for the cause of extinction of endemic species is the widespread invasion of non-indigenous organisms around the world. When such species invade a new area they often leave their natural enemies that co-evolved with them in their native environment behind and enter an area where prey and host species lack specific defenses. Invading species that have escaped their natural enemies often have population explosions, while indigenous species encounter new enemies against which they have no evolved defenses often undergo population crashes.

Organisms on isolated islands are particularly susceptible to new invaders due to low levels of coevolutionary pressures in the past. Invasions of diseases, predators, and competitors all can have devastating effects on island biota. Worldwide, some 70% of documented extinctions of mammals, other vertebrates and invertebrates in the past 500 years have occurred on islands. All historical extinctions of terrestrial mollusks have occurred on islands. The depredations of non-indigenous species have been deemed responsible for a large portion of these extinctions. Biological invasion must therefore be recognised as a form of global environmental change which poses a tremendous threat to biodiversity.

This study proposes to study the impact of selected prominent invasive species or taxonomical groups on the endemic flora and fauna of Fiji.

Examples of invasive species that may be considered for this study are: Ants, freshwater prawns, Tilapia, black rat, Mynah, mongoose, cane toad, and African Tulip tree.

Activities:

1. Based on the review of invasive species (Alien Species Action Plan – refer Project Brief 4) select priority species to be studied.
2. Conduct literature search on these species.
3. Select similar habitats in areas where the selected invasive species are known to occur, and in areas where they are absent for comparative studies.
4. Undertake field work to study ecosystem biodiversity in these habitats
5. Record species and abundance of invasives, and take and preserve representative samples for collections and reference materials.
6. Identify native/endemic indicator species to monitor impact of invasives on ecosystem biodiversity
7. Develop guidelines for the prevention and control of invasive species.

Personnel and estimated budget (in USD):

Drafting of project:

1 consultant (1 month)	15,000

Project Implementation:

Project Manager & Ecologist/biologist (local) (6 months)	60,000
Research Staff (1 staff for each selected invasive species)	

(international & local) – total 12 months	est.	120,000
Field support staff (local)	est.	30,000
Short Term consultants: (3 m/m)		45,000
Travel (domestic & international)	est.	20,000
Identification services:	est.	10,000
Materials	est.	10,000
Administration etc.	est.	10,000
Estimated Total	**US$**	**320,000**

PROJECT BRIEF 8. BIBLIOGRAPHY AND CHECKLIST OF FIJIAN FLORA AND FAUNA

Objective:

To establish a database of all current and historical published information on Fijian species, and to develop checklists of their distribution and abundance, as the foundation for biodiversity research in Fiji.

Rationale:

The extensive research on Fijian plant and animal species in the last two centuries has resulted in a large amount of published information which is for a considerable part unknown, or difficult or not at all accessible to researchers in Fiji. The access to such information allows researchers to obtain details on the historical location of species, their abundance, and often their habitats and uses. In addition, such literature often provides indications on the collections where reference specimens are stored of species that have been collected in Fiji.

Modern research on biodiversity relies on published documentation to provide information that allows specialists to identify the location of specific species. A comprehensive database that contains such information facilitates the extraction of key data, and provides a starting point for surveys on the distribution and abundance of native and endemic species. The database will also assist in the identification of native and endemic species, and may provide information to assist in the protection and conservation of rare and endangered species.

There is an urgent need to develop such a database through extensive literature studies, and identification of national and international collections that contain of Fijian species.

Documentation on Fijian species will be acquired and lodged in a selected Fiji Government Library or USP to enable access to the general public.

Activities:

1. Conduct literature search of international databases on Fijian flora and fauna
2. Obtain documents that contain information on the taxonomy and ecology of Fijian species
3. Establish a database with detailed information, including a bibliography and checklists on Fijian species.

Personnel and estimated budget (US$):

Drafting of project:

1 consultant (2 weeks)		8,000

Project Implementation:

Project Manager & Ecologist/biologist (local) (4 months)		40,000
Researchers (3-6 national/int'l, 6 months total)		90,000
Identification services:	est.	20,000
Inter-library literature search	est.	15,000
Purchase documents (original/photocopies)	est.	15,000
Administration etc.	est.	10,000
Estimated Total	**US$**	**200,000**

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GLOSSARY

Biodiversity: the variety of life forms, the different plants, animals and microorganisms, the genes they contain and the ecosystems they form.

Biodiversity Prospecting: any activity undertaken that is undertaken to harvest or exploit:

(a) samples of genetic resources;

(b) samples of any derivatives of genetic resources;

(c) the knowledge, innovations, or customary practices of local communities,

for purposes of research, product development, conservation or industrial or commercial application, and includes investigative research or sampling, but does not include customary uses of genetic resources or derivatives;

Biotechnology: the industrial use of living micro-organisms to perform chemical processing.

Ecological community: an assemblage of species occupying a particular area.

Ecologically Sustainable Development: development that seeks to meet the needs of present generations while ensuring that ecological processes are maintained and the quality of life, both now and in the future, is improved. The core objectives of ESD are:

- To enhance individual and community well-being and welfare by following a path of economic development that safeguards the welfare of future generations;
- To provide for equity within and between generations; and,
- To protect biological diversity and maintain essential ecological processes and life-support systems

Ecosystem: communities of organisms and their physical environment interacting as a unit.

Ecosystem management: based on scientific knowledge of ecological relationships, ecosystem management is a process of decision-making operating within the social and economic framework of communities to achieve ecologically sustainable development.

Endemic (Fijian): originating in Fiji and confined to Fiji.

Estuarine: belonging to, or associated with, a partially enclosed river mouth or coastal area, characterised by a mix of fresh and saline waters.

Ethnobiology: study of the way plants, animals and micro-organisms are used by humans.

Ex-situ: outside of the natural location.

Extinct: species no longer in existence or not located in the wild during the past 50 years.

Fauna: the total animal population that inhabits an area.

Flora: the vegetation assemblage that inhabits an area.

Invasive: an exotic plant or animal establishing itself in native habitats, often abundantly and to the detriment of existing native species.

Habitat: the living space of a species or community, providing a particular set of environmental conditions.

In-situ: within the natural location.

Inter-generational equity: the need to ensure that future generations have an equal opportunity to use and enjoy Fiji's biodiversity. This need underpins sustainable use by the current generation.

Invertebrate: animal lacking a backbone (ea. insects and worms).

Population: a group of organisms, all of the same species, occupying a particular area.

Protected area: a geographically defined area which is designated or regulated and managed to achieve specific conservation objectives.

Sink: a biological or other process that removes a greenhouse gas from the atmosphere: for example, absorption of carbon dioxide by forests.

Species: a group of organisms which are biologically capable of breeding and producing fertile offspring with each other but not with members of other species.

Taxon (plural - taxa): The named classification unit to which individual organisms or sets of individuals are assigned, such as species, genus and order.

Taxonomy: the classification, identification and description of organisms based on similarities of biology, biochemistry, genetic composition and evolutionary history.

Terrestrial: belonging to or living on the land.

Threatened (species, populations and ecological communities): species considered on the best available evidence and analysis as either endangered, vulnerable, or presumed extinct.

Threatening Processes: Processes such as habitat disturbance or destruction or pollution that threaten the survival, abundance or evolutionary development of a species, population or ecological community.

Vertebrate: animal with a backbone.

Wildfire: uncontrolled fire

Wildlife: native fauna and flora.

ATTACHMENT 1

CONTENTS OF THE CONVENTION ON BIODIVERSITY TO BE ADDRESSED IN NATIONAL STRATEGIES AND ACTION PLANS

(from Miller, K. and S. Lanou 1995. National Biodiversity Planning – Guidelines Based on Early Experiences Around the World. IUCN, UNEP, INR.)

ATTACHMENT 2

REPORTS OF FIJI'S BIODIVERSITY STRATEGY AND ACTION PLAN

Preliminary Work

1. An Assessment of the Existing Information on Biodiversity in Fiji by Stefan Cabaniuk.

Technical Group 1 – Marine Biodiversity

2. Report of the Marine Biodiversity Technical Group. Edited by Cherie Whippy-Morris and Craig Pratt.

Technical Group 2 – Terrestrial Vertebrate and Invertebrate Biodiversity

3. Fijian land snails by Dr Alison Haynes
4. Freshwater Invertebrates of Fiji by Dr Alison Haynes
5. Results of Library Search of Computerised Scientific Abstract Database by Dr Jane Reinks (with Appendix).
6. Impact of Classical Biological Control Measures on the Flora and Fauna of Fiji by Wilco Liebregts
7. Provisional Bibliography and list of major Scientific Resources of relevance to the Insect Fauna of Fiji by Wilco Liebregts
8. Conservation Status of Fijian Birds by Dick Watling
9. Annotated List and Conservation Status of Fijian Terrestrial Reptiles and Amphibians by Dick Watling and Dr George Zug.

Technical Group 3 – Botanical Biodiversity

10. Report of the Botanical Biodiversity Technical Group. Edited by Marika Tuiwawa and Wilco Liebregts.

Technical Group 4 – Traditional Ethnobiological Knowledge, Resource Use and Conservation Practices.

11. Report of Traditional Ethnobiological Knowledge, Resource Use and Conservation Practices Technical Group. Compiler R.R.Thaman

Technical Group 5 – Economic Value of Fiji's Biodiversity

12. The Economic Value of Fiji's Ecosystems by Dr Nicholas P. Sisto

Technical Group 7 – Priority Locations for Biodiversity Conservation

13. The Location and Justification of Priority Sites for the Conservation of Fiji's Biodiversity in the Marine Environment by Edward R. Lovell, Milika Naqasima and Craig Pratt.
14. The Location and Justification of Priority Sites for the Conservation of Fiji's Botanical Biodiversity by Marika Tuiwawa
15. The Location of Biodiversity Hotspots in Fiji – an analysis of Tree Biodiversity by Joerg Kretzschmar.
16. Conservation Area Priorities for Fiji's Terrestrial Vertebrates by Dick Watling

Community Workshops

17. Report on the Nanuku Biodiversity Community Workshop, by the South Pacific Action Committee for Human Ecology and the Environment
18. Namatakula, Nadroga Workshop. Unpub. Report, by the Fijian Affairs Board and Wainimate

19. Naduri Community Workshop Report by the Sustainable Development Environment Action Network Programme of Fiji Council of Social Services
20. Report on the Vatulele Biodiversity Community Workshop, by the South Pacific Action Committee of Human Ecology and the Environment
21. Wise Use of Our Biodiversity. Report of the Mau Biodiversity Workshop by the Pacific Development Institute
22. Biodiversity Community Workshop Report held at Verevere, Nokorotaubu, Ra, by the Organisation for Industrial, Spiritual, Cultural and Advancement and, Christian Youth Development Association of Fiji.
23. A Summary Report of the FBSAP Community Biodiversity Workshops by Samasoni Sauni, Prof. Bill Aalbersberg, Manasa Sovaki and Etika Rupeni.
24. A study on household use of resources in Fiji. Samasoni Sauni & Patrina Dumaru, South Pacific Action Committee of Human Ecology and the Environment, Suva.
25. Report on the Lautoka Regional Biodiversity Workshop, 25th May 1999. Ronald Lucas, Foundation of the South Pacific, Lautoka.
26. Report on the Sigatoka Regional Biodiversity Workshop, 27th May 1999. Samasoni Sauni, Patrina Dumaru and Wana Sivoi, South Pacific Action Committee of Human Ecology and the Environment, Suva.
27. Report on the Nausori Regional Biodiversity Workshop, 28th May 1999. Pauliasi Sicinilawa, Organisation for Industrial, Spiritual, Cultural and Advancement and, Christian Youth Development Association of Fiji, Nausori.
28. Report on the Rakiraki Regional Biodiversity Workshop, 31st May 1999. Losena Salabula, Pacific Resources Concern Centre, Suva.
29. Report on the Navua Regional Biodiversity Workshop, 1st June 1999. Silina Masi, Wainimate, Suva.
30. Report on the Savusavu Regional Biodiversity Workshop, 9th June 1999. Samasoni Sauni and Alifereti Bogiva, South Pacific Action Committee of Human Ecology and the Environment – Fijian Affairs Board, Suva.
31. Report on the Taveuni Regional Biodiversity Workshop, 11th June 1999. Samasoni Sauni and Alifereti Bogiva, South Pacific Action Committee of Human Ecology and the Environment – Fijian Affairs Board, Suva.

FBSAP Finalisation

32. Finalising the Fiji Biodiversity Strategy and Action Plan, Report of the Facilitator. Robin Yarrow, Suva.

ATTACHMENT 3

AUTHORITIES AND SOURCES FOR TABLE 2.1: STATUS OF FIJI'S BIODIVERSITY.

AUTHORITIES, SOURCES AND REFERENCES FOR TABLE 2.1

1 Watling 1998 – terrestrial species (seabirds and migrants excluded with the exception of the Fiji Petrel). (Extinct bird species will probably rise – currently in the process of description – T. Worthy.
Mammals – Extinct mammal – a Giant Rat– currently in the Excludes feral domestic mammals process of description – T. Worthy););

2 Watling & Zug 1998 - Extinct Giant Frog – currently in the process of description – T. Worthy

3 Watling & Zug 1998 - Extinct Crocodile – currently in the process of description – T. Worthy

4 Robinson 1975

5 Duffels 1988

6 M. Kamath (Dept. of Forestry). 1998

7 Tillyard (1929)

8 FBSAP Technical Group 3 Report – modified from Watkins (1995).

9 Brownlie (1977)

10 Doyle and Fuller (1998); Fuller (1997).

11 Smith 1988 and FBSAP Technical Group 3 Report (Smith A.C. 1988. *Flora Vitiensis Nova. Vol.4.* Pacific Tropical Botanical Garden, Hawaii).

12 Haynes 1998

13 Number of true freshwater fish is unknown – but it will be very few (Ryan 1980, 1981)

14 Seeto, J. and W. Baldwin 1998

15 Seeto, J. 1998 (all marine invertebrates unless otherwise stated).

16 Cheng, L. 1978

17 The number in the extinct column refers to the number of bivalves known from the fossil record, however, some of these still survive and are not extinct

ATTACHMENT 4

SUMMARY REPORT ON THE REGIONAL COMMUNITY FBSAP WORKSHOPS.

A SUMMARY REPORT ON THE REGIONAL COMMUNITY BIODIVERSITY WORKSHOPS

MAY 25TH – JUNE 11TH 1999.

Prepared by: The Regional Biodiversity Workshop Sub-committee:
Robin Yarrow
Samasoni Sauni
Avisaki Ravuvu

JULY 1999

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Ms. Patrina Dumaru	SPACHEE
Mr. Ronald Lucas	FSP
Mr. Pauliasi Sicinilawa	CYDA/OISCA
Mr. Alifereti Bogiva & Mr. Jonati Torocake	FAB
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Mr. Samasoni Sauni	SPACHEE

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Prof. Bill Aalbersberg	IAS, BSAP member
Dr. Dick Watling	Consultant
Ms. Mereseini Nagatalevu	MAFF

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ACRONYMS

SPACHEE	The South Pacific Action Committee for Human Ecology And Environment
FSP	Foundation for the Peoples of the South Pacific
FAB	Fijian Affairs Board
CYDA	Christian Youth Development Association of Fiji
OISCA	Organisation for Industrial, Spiritual, Cultural and Advancement
PCRC	Pacific Concerns Resource Centre
USP	University of the South Pacific
NGO	Non Governmental Organisation
BSAP	Biodiversity Strategy Action Plan

INTRODUCTION

This document is a summary report of the major points raised by the participants of the seven biodiversity community workshops held from the 25th May to 11th June 1999. The report basically outlines some of the issues, concerns and key actions the people at the community level would like to see implemented as part of the National Biodiversity Action Plan.

The Community Workshops were organised and implemented by the NGO Network on the Environment. Five workshops were staged on Viti Levu, one on Vanua Levu and one on Taveuni. Details on the locations, dates and organisation of the community workshops are provided in Annex I

The main objective of the Community Workshops was to provide an opportunity for stakeholders representatives in rural areas to provide comments on the draft Action plan and in the process to assist with "ownership" of the plan. The workshops also built on the similar round of six consultations conducted in 1998 during which valuable input was obtained for the draft Action Plan.

The workshop sessions highlighted the following:

- The major types of land, freshwater and marine biodiversity that were important to local communities and the reasons for this.
- The categories of land, freshwater and marine biodiversity that are rare, endangered or difficult to obtain and the reasons for this.
- Some of the major actions that can, or needed to be carried out to protect and promote the sustainable use of Fiji's biodiversity.
- Some actions which the local community can practice to protect and ensure the sustainability of the biodiversity surrounding them.

The format of this summary document follows that of the draft Action Plan in that the major points raised are presented under the 6 focuses.

STRATEGIES AND RECOMMENDATIONS.

FOCUS 1: COMMUNITY SUPPORT.

The identification of this focus within the draft report underlines the key role community involvement plays in the protection of biodiversity. The following recommendations from participants highlights some actions they feel can be undertaken in the community to support conservation.

- Traditional leadership within the village should be educated on the benefits of maintaining and protecting biodiversity
- Organisation of an Environmental day at the “vanua” level with beneficial activities including "clean ups" and the replanting of indigenous plants and trees
- Support to be given by the concerned ministries and by the Fijian Affairs Board & Provincial Council with regard to the use and preservation of traditional practices
- Publication of a simplified and illustrated version of the BSAP in both the Fijian and Hindi languages as well as leaflets, posters and radio jingles.
- Churches could also play a role in biodiversity awareness
- Encourage the establishment of biodiversity conservation committees at the local level
- Appointment of Environmental Wardens to assist with the awareness process
- Establishment of income earning projects that are based on the sustainable use of natural resources
- Use of the traditional “tabu” process as a means of conservation for both river and marine resources
- Use of the Fijian court system to deal with local disputes on Biodiverstiy issues

Under this focus, a new objective has been suggested which should minimise the use of harmful chemicals, including the use of the poisonous plant "Duva". A possible key action to this would involve the education of farmers and fishermen on the harmful effects the chemicals cause and ways in which this can be reduced.

FOCUS 2: IMPROVING OUR KNOWLEDGE

The points listed below have been identified as a means of protecting biodiversity through the improvement of our knowledge. The actions suggested build on the current knowledge available.

- Research should be conducted on priority ecosystem and in specific locations
- Research work carried out by institutions like USP and the Agricultural Research Division should be supported and encouraged
- Coral harvesting should be studied to monitor the recovery process.
- Information on the harm and degradation that indiscriminate burning can cause should be disseminated. Research could be done overtime on the effect of burning in specific areas.
- Students to be encouraged to carry out research projects in biodiversity

Worth noting is the support given to the use of traditional "Tabu" periods in marine area as a means of conservation. This recommendation could be considered for the inclusion under objective 2.1 as a key action. Research could also be undertaken on the benefits to the marine ecosystem of periodic “tabu”. A similar research was set up in Verata with results showing an increase in the Kaikoso(shellfish) population after 18 months of “tabu”.

FOCUS 3: DEVELOPING PROTECTED AREAS.

The development of protected areas was strongly supported by the participants during the workshops. Although some areas have been highlighted in the draft summary report, the participants from the Savusavu workshop have recommended that the following additional areas also be considered for this development:

- Tobu ni Nuqa (Nawi island, Savusavu)
- Tobu ni Ura Buta - Red Prawns (Naweni)
- Tobu ni Kaboa (Naweni)
- Protection of some areas at Nasinu, Cakaudrove where the fish Gusurubu is found.

Two issues of concern that were raised with regard to the development of protected areas are land leases and general encroachment on some of the protected areas.

FOCUS 4: SPECIES CONSERVATION

Combined below is the list of species that the participants feel are being especially threatened or endangered.

Land

- **Plants -**Vono, Malawaci, ferns species, Bovo, Vesi, Mokosoi, Moli Kurukuru, Moli Kana, Tarawau, Dawa, Sandalwood tree, Dakua, Kaudamu, Yasi
- **Reeds -** Gasau
- **Birds -** Qala, Bici (Rail), Parrots, Black-silk tail, Kula, Teri, Kacau, Ganivatu(Falcon)
- **Reptiles –** Iguana, Snakes, Dreli(native tree frog)
- **Animals –** Wild Boar

Marine

- **Seaweed** – Vutia and Baka ni waitui
- **Shellfish** – conch shells, Qeqe, Giant Clams, Sici, Vula,
- **Sea cucumbers** – Sucuwalu, Dri, Beche-de-mer
- **Other Species** – Turtles, Mangroves

Freshwater

- **Reeds** – Kuta,Galo
- **Plants** – Ivi (Tahitian Chestnut), Colaiwai, Dogo ni veiwai, Ota loa & Ota levulevu(Edible ferns) Karisi, Via and Vuta wai
- **Others**– Fish, prawns, moci, ika droka, kai ,qari ni wai, and Vo.

In protecting these species the following strategies have been recommended

Land

- Establishment of reserves and protected areas
- Establishment of nurseries whereby indigenous plants and endemic species can be propagated and distributed
- Replanting of indigenous and endemic tree species
- Development of alternative logging models - this with regard to the excess logging of native hardwood trees like (Dakua, Kaudamu and Yasi)

- The appointment of Environmental Wardens to monitor and assist to reduce environmental threatening actions e.g. the outbreak of fires.
- More educational and awareness raising activities to be conducted in communities

Marine/Freshwater

- Establish marine protected areas.
- Protect endangered species e.g. Turtles
- Re-establishment of original areas of wetlands
- Document seasonal species and observe certain harvesting practices (sasalu ni yabaki)
- Control and monitor the haversting of certain species e.g. Corals, Beche-de-mer, Turtles, Wood pigeon. etc.
- Aquaculture should be carefully evaluated
- Enforcing the law against the use of poisonous plants

Discussion in the seas and resource section highlighted the fact that the giant clam is now extirpated from our waters. Other key statistics discussed included the remaining 38,000 hectares of mangroves. These figures bring to the fore the fact that loss of species will occur if we do not protect or use our natural resources in a sustainable manner.

In dealing with the resource of the seas one can not ignore the case of the untrained divers diving for beche-de-mer. In their quest to obtain and make a living out of this resource, human lives are being placed at risk as a result of negligence from the diver and unsafe practices.

Another issue discussed is the use of the reef as an anchorage for a countless number of small fishing boats. The act of throwing the anchor overboard and retrieving it puts a tremendous force on the coral reefs which can cause a lot of damage. Such actions should be actively discouraged and boat owners should be educated on the damages their actions can create.

6.2 FOCUS 5: CONTROL OF INVASIVE SPECIES

Though not discussed extensively in the workshops, the threat posed by introduced species was recognised. As an island the environment is isolated and far from the major continental land mass, the biodiversity is unique and special. Special in the sense that some of the species are endemic to the island in question and present nowhere else in the world. Having evolved in isolation without any form of high level predators except for humans, these organisms are easily lost through the introduction of foreign species or diseases. As caretakers of such unique forms it is our responsibility to safeguard and ensure their survival.

New species have been introduced either for a purpose or by accident. More often than not it is the species purposely introduced that becomes a pest later on. For example the African Tulip tree, mongoose, cane toad, grass-carp, and water hyacinth to name the few identified from the workshop. Queries were also raised about the introduction of the Mahogany tree.

In ensuring the survival of the indigenous biodiversity within the country the following actions were recommended from the workshop:

- Review of the current legislation dealing with the introduction of new species
- Heavy penalties to be levied on perpetrators.

- Extensive research should be undertaken before the introduction of any form of biological control into the country. For example Environment Impact Assessment.

FOCUS 6: CAPACITY BUILDING AND STRENGTHENING

Some of the actions that the participants recommended include:

General

- Formation of a national committee to monitor and also to raise awareness of the proper management of the country's biodiversity.
- Identification of key at risk "hot spots" in collaboration with government and non governmental agencies
- Training of personnel with regard to the protection of biodiversity
- More scientific research into habitat destruction and possible solutions
- The Ministry of Education to include biodiversity in the primary and secondary school curriculum.
- Encourage the communities to follow the traditional planting and harvesting seasons
- Fines and penalties to be paid by those who break environmental laws
- Government to more receptive to the complaints of the villagers
- Make provisions in the national budget for the protection of biodiversity.

Land

- Strong support for the implementation of the national code of logging practice
- Reactivation of national legislation to control burning

Marine/FreshwateR

- Enforce legislation against illegal fishing and harvesting of some marine resources
- Develop legislation preventing the use of poisonous plants and chemicals
- Control the indiscriminate clearing of the mangrove swamps through legislation
- Minimise the dredging of rivers
- Establish a collection centre for marine life within the country
- Encourage more local people to go into marine related fields or to undergo training in marine resource management

CONCLUSIONS

The community workshops were well attended and in several cases included traditional chiefs, a senator and District Officers. All participants expressed considerable interest in biodiversity conservation and many were very enthusiastic about the Action Plan initiative. Some participants felt that insufficient time was provided for discussion.

It was evident that a significant number of participants were very concerned about the state of the environment and in particular at the harmful effects some commercial practices and pollution are having on our natural resources. Many expressed fear that some marine species in particular may become extinct.

Strong support was expressed at each workshop for the draft BSAP. References were made in several workshops to the importance of the Sustainable Development Bill.

ANNEX 1.

REGIONAL BIODIVERSITY WORKSHOPS

The Program for most of the workshops began with a prayer followed by a welcoming speech. The official opening of the workshop by a selected guest was next, proceeded by an introduction to the concept of "Biodiversity" and the background on the National BSAP. Facilitators then presented on the importance, the problems, threats and the current status of the country's biodiversity. Working sessions for the participants based on the guideline questions prepared proceeded this. The end of each working sessions saw the participants presenting their findings followed in turn by tea and lunch. Program ended with signed declaration of the participants support towards the National BSAP. Vote of thanks and "i tatau" in some cases marked the formally closing of the workshops.

The Community workshops commenced towards the end of May and concluded in sthe econd week of June. These workshops were held in the following locations by the following organisations

LAUTOKA WORKSHOP.

Venue: Talanoa Room, Lautoka Hotel

Date: 25th of May 1999

Coordinating Agency: FSP- Ronald Lucas

Facilitators: SPACHEE – Samasoni Sauni, Avisaki Ravuvu

Number of Participants: 24

SIGATOKA WORKSHOP.

Venue: Provincial Conference Hall, Sigatoka

Date: 27th May, 1999

Coordinating Agency: SPACHEE – Samasoni Sauni, Patrina Dumaru, Wana Sivoi

Facilitators : FSP – Ronald Lucas; FAB - Alifereti Bogiva; Wainimate - Silina Masi

Number of Participants: 33

NAUSORI WORKSHOP

Venue: Tailevu Provincial Board Room

Date: 28th May 1999

Coordinating Agency: CYDA/OISCA – Pauliasi Sicinilawa

Facilitators : SPACHEE – Samasoni Sauni, Wana Sivoi; Wainimate - Silina Masi; Safety Net Care- Di Vu Vodo; USP – Liz Wilson (Marine Biology Dept.)

Number of Participants: 40

RAKIRAKI WORKSHOP

Venue: Rakiraki District School

Date: 31st May 1999

Coordinating Agency: PCRC – Mrs. Losena Salabula

Facilitators: FSP – Ronald Lucas; SPACHEE – Avisaki Ravuvu

Number of Participants : 60-70

NAVUA WORKSHOP

Venue: Sauveiuto Village

Date: 1ST of June 1999

Coordinating Agency: Wainimate – Silina Masi

Facilitators: SPACHEE –Samasoni Sauni; OISCA – Peni Delai; USP- Liz Wilson (Marine Biology Dept); FAB – Alifereti Bogiva

Number of Participants: 69

NORTHERN DIVISION

SAVUSAVU WORKSHOP

Venue :

Date: 9 th June 1999

Coordinating Agency : SPACHEE / FAB – Samasoni Sauni & Alifereti Bogiva

Facilitators : FAB – Alifereti Bogiva; Jonati Torocake; USP – Liz Wilson (Marine Biology Dept)

Number of Participants : 44

TAVEUNI WORKSHOP

Venue:

Date: 11th June 1999

Coordinating Agency: SPACHEE / FAB

Facilitators: FAB – Alifereti Bogiva, Jonati Torocake; USP – Liz Wilson (Marine Studies.)

Number of Participants: 34

ATTACHMENT 5

PRELIMINARY REGISTER OF THE SITES OF NATIONAL SIGNIFICANCE

A PRELIMINARY REGISTER OF SITES OF NATIONAL SIGNIFICANCE.

(INCLUDES ONLY SITES OF BIOLOGICAL,GEOLOGICAL, GEOMORPHOLOGICAL AND LANDSCAPE SIGNIFICANCE. SOURCE: GOF 1993 AND NLTB 1996).

SITES OF THE CENTRAL DIVISION

SITE	SITE NO.	SIGNIFICANCE	TENURE
WAILOTUA	C / 1	Limestone ecosystem and cave	Native (NLTB/Landowners)
NAQALI	C / 2	*Neovetchia storkii* palm habitat	
SAVURA CREEK	C / 3	Catchment protection, rainforest	Government (Forestry/Land Depts.)
SOVI GORGE	C / 4	River gorge of high scenic value	Native (NLTB/Landowners)
MT. KOROBABA	C /5	Rainforest, 5 endemic plant species, recreation	Government (Lands Dept.?)
NAULU LOKIA SWAMP	C / 6	White-browed rail habitat	Native (NLTB/Landowners)
NASINU CAVE	C / 7	Cave system	Native (NLTB/Landowners)
VATU-I-LAMI	C / 8	Sea bird nesting colony	Native (NLTB/Landowners)
MUBULAU	C / 9	Sea bird nesting colony	Government (Lands Dept.)
SUVA REEF	C / 10	Marine habitat and recreation area	Government (Lands Dept.)
BATIWAI FOREST	C / 11	*Gulubia microcarpa* palm habitat, forest reserve	Government (Forestry Dept.))
SOVI BASIN	C / 12	Rainforest, wilderness area, high scenic valley	Native (NLTB/Landowners)
SUVA POINT	C / 25	Feeding site for migratory waders	Government (Lands Dept.)

SITES OF THE NORTHERN DIVISION

SITE	SITE NO.	SIGNIFICANCE	TENURE
MATAGI ISLAND	N / 1	Beach Forest, flooded volcanic caldera	Private freehold?
WAISALI RESERVE	N / 2	Dakua rainforest, Amenity Reserve	Native (National Trust / NLTB / Landowners)
ROKOSALASE	N / 3	Buabua forest [Fragraea gracipilles]	Native (NLTB/Landowners)
KIOA ISLAND	N / 4	Island environment	Freehold (Tuvaluan Council)
NASELESELE FALLS	N / 5	Waterfall system	Native (NLTB/Landowners)
SALT LAKE	N / 6	Unique formation	Freehold
VUNIVIA CATCHMENT	N / 7	Lowland dry zone forest	Native (NLTB/Landowners)

SITE	SITE NO.	SIGNIFICANCE	TENURE
VUNIVIA MANGROVES	N / 8	Intact mangrove system	Government (Lands Dept.)
RAVILEVU NATURE RESERVE	N / 9	Wet rainforest habitat, mongoose free	Government (Forestry Dept.)
COBIA ISLAND	N / 10	Beach forest, geological formation	Native (NLTB/Landowners)
TAVEUNI ISLAND	N / 11	Potential World Heritage nomination	Native/Government/Freehold
QELELEVU ATOLL	N / 12	Atoll habitat	Native (NLTB/Landowners)
NAMENA BARRIER REEF	N / 13	Barrier reef, marine ecosystem	Government (Lands Dept.)
NAMENALALA ISLAND	N / 14	Sea bird nesting colony, Beach Forest	Native/Government (Lands Dept.)
GREAT SEA REEF	N / 15	Barrier reef, marine ecosystem	Government (Lands Dept.)
TUNULOA FOREST	N / 16	Rainforest, Vanua Levu silktail habitat	Native (NLTB/Landowners)
RAINBOW REEF	N /17	Patch reef, marine ecosystem	Government (Lands Dept.)
NASINUNAQEANDAE	N / 18	Geological site - marine notch	
URABUTA POINT	N / 19	Anchialine - red prawn pool	Native (NLTB/Landowners)
LAVENA	N / 20	Geological site - sea stack	Native (NLTB/Landowners)
SAVASI	N / 21	Geological site - rock type	Native (NLTB/Landowners)
BAKABAKA ISLAND	N / 22	Geological site - rock type	Native (NLTB/Landowners)
NANUCA	N / 23	Geological site - rock type	Native (NLTB/Landowners)
CIKOBIA	N / 24	Seabird nesting colony	Native (NLTB/Landowners)
VUNIMOLI NATURE RESERVE	N / 25	Rainforest, Forestry Reserve	Government (Forestry Dept.)
NUKUBASAGA	N / 26	Seabird nesting colony	Native (NLTB/Landowners)
NUKUSIMANU	N / 28	Seabird nesting colony	Native (NLTB/Landowners)
VETAUA	N / 29	Seabird nesting colony	Native (NLTB/Landowners)
NANUKU ISLAND	N / 30	Turtle nesting area	Native (NLTB/Landowners)
NUKUTOLU	N / 31	Turtle nesting area	Native (NLTB/Landowners)
ROTUMA	N / 32	Unique Island, geological feature	Rotuman Council
HOFLIUA ISLAND	N / 33	Seabird nesting colony	Rotuman Council
HATAWA ISLAND	N / 34	Seabird nesting colony	Rotuman Council
UEA ISLAND	N / 35	Geological features, beach forest	Rotuman Council
NANUKU ISLAND	N / 36	Turtle nesting area	Native (NLTB/Landowners)
YADUA TABA	N / 37	Crested Iguana Sanctuary	Native (NLTB/National Trust/Landowners)

SITES OF THE EASTERN DIVISION

SITE	SITE NO.	SIGNIFICANCE	TENURE
DUFF REEF	E / 1	Turtle nesting site	Government (Lands Dept.)
CAKAULEKALEKA REEF	E / 2	Marine ecosystem	Government (Lands Dept.)
YABU ISLAND	E / 3	Seabird nesting colony	Native (NLTB/Landowners)
FULAGA BAY OF ISLANDS	E / 4	Spectacular lagoon, *Pritchardia thurstoni* habitat	Native (NLTB/Landowners)
SOVU ISLAND	E / 5	Seabird nesting colony	Native (NLTB/Landowners)
OGEALEVU	E / 6	Makatea forest, Ogea flycatcher habitat	Native (NLTB/Landowners)
TUBOU CAVE	E / 7	Island cave system	Native (NLTB/Landowners)
GAU	E / 8	Endangered Fiji petrel nesting habitat	Native (NLTB/Landowners)
QILAQILA BAY OF ISLANDS	E / 9	Coastle formations, marine ecosystem	Native/Government (Lands Dept.)
MASIMO BAY	E / 10	Coastal environment	Native/Government (Lands Dept.)
WAILAGILALA ATOLL	E / 11	Atoll, seabird nesting colony, marine ecosystem	Native/Government (Lands Dept.)
TAQUA ISLAND	E / 12	Seabird nesting colony	Native (NLTB/Landowners)
Mt. BUKELEVU (WASHINGTON)	E / 13	Petrel breeding site, unique landscape	Native (NLTB/Landowners)
GREAT ASTROLABE REEF	E / 14	Marine lagoon ecosystem	Government (Lands Dept.)
N. ASTROLABE REEF	E / 15	Marine lagoon ecosystem	Government (Lands Dept.)
MAKOGAI ISLAND AND REEF	E / 16	Beach forest, cycad dominated, coastal / marine ecosystem	Government (Lands/Agriculture/Fisheries Depts.)
CAKAU MOMO REEF	E / 17	Marine ecosystem	Government (Lands Dept.)
WAKAYA ISLAND	E / 18	Coastal-marine ecosystem	Freehold
VUTUA	E / 19	Geological site - rock type	Native (NLTB/Landowners)
YAWICA ISLAND	E / 20	Geological site - rock type	Native (NLTB/Landowners)
NAIABO	E / 21	Seabird nesting colony	Native (NLTB/Landowners)
VANUAMASI	E / 22	Seabird nesting colony	Native (NLTB/Landowners)
REID REEF	E / 23	Seabird nesting colony	Government (Lands Dept.)
LATEVITI	E / 24	Seabird nesting colony	Native (NLTB/Landowners)
KIBOBO ISLAND	E / 25	Seabird nesting colony	Native (NLTB/Landowners)
YANUYA IS., ONO	E / 26	Habitat of endemic *Leilopistma alazon* skink	Natve (NLTB/Landowners)
NUKU CIKOBIA	E / 27	Turtle nesting area, seabird nesting area	Native (NLTB/Landowners)
SITE	**SITE NO.**	**SIGNIFICANCE**	**TENURE**

VEKAI ISLAND	E / 28	Seabird nesting colony	Native (NLTB/Landowners)
NUKUSOGE	E / 29	Seabird nesting colony,Turtle nesting area	Native (NLTB/Landowners)
YAGASA LEVU IS.	E / 30	Seabird nesting colony	Native (NLTB/Landowners)

SITES OF THE WESTERN DIVISION

SITE	SITE NO.	SIGNIFICANCE	TENURE
CUVU BEACH	W / 1	Coastal ecosystem, recreation	Government (Lands Dept.)
NATADOLA	W / 2	Coastal ecosystem, recreation	Government (Lands Dept.)/Freehold
SIGATOKA SAND DUNES	W / 3	National Park, sand dune ecosystem	National Trust/Freehold /Public Trustee//NLTB
SAUTABU CAVE	W / 4	Limestone cave	Native (NLTB/Landowners)
NAQALIMARE LIMESTONE	W / 5	Limestone ecosystem	Native (NLTB/Landowners)
TATUBA CAVE	W / 6	Limestone cave ecosystem	Native (NLTB/Landowners)
NAUSORI HIGHLANDS	W / 7	Dryzone mountain rainforest	Native (NLTB/Landowners)
CORAL COAST REEFS	W / 8	Marine ecosystem, recreation	Government (Lands Dept.)
WAINISAVULEVU FALLS	W / 9	Waterfall	Native (NLTB/Landowners)
RAIRAIMATUKU PLATEAU	W /10	Mountain Rainforest	Native (NLTB/Landowners)
MONASAVU	W / 11	Dam, hydro catchment protection, rainforest	Government (Lands Dept./)/NLTB
NAKOROTUBU VINE THICKET	W / 12	Unique tropical vine thicket community	Native (NLTB/Landowners)
NAKAUVADRA MOUNTAIN RANGE	W / 13	Dry zone rainforest	Native (NLTB/Landowners)
MALAMALA ISLAND	W / 14	Marine ecosystem	Native (NLTB/Landowners)
VATIA VINE THICKET	W / 15	Unique tropical vine thicket community	Native (NLTB/Landowners)
WABU CREEK	W / 16	Intact Fiji Dakua montane rainforest	Native (Forestry Dept. / NLTB)
DREKETI INLET	W / 17	Coastal environment, mangrove	Government (Lands Dept).
KOROYANITU [MT. EVANS] RANGE	W / 18	Intact dry zone montane rainforest	Native (NLTB/Landowners) /Government (Lands Dept.)
WHITE ROCK	W / 19	Seabird nesting colony	Native (NLTB/Landowners)
MACUATA ISLAND	W / 20	Crested Iquana habitat	Native (NLTB/Landowners)
SITE	**SITE NO.**	**SIGNIFICANCE**	**TENURE**
NADI BAY REEFS	W / 21	Reefs, recreation	Government (Lands Dept.)

VATURU DAM CATCHMENT	W / 22	Catchment protection, dry zone rain forest	Native (Government (Lands Dept.?) / NLTB
KADOMO ISLAND	W / 23	Shearwater nesting colony	Native (NLTB/Landowners)
MAMANUCA GROUP	W / 24	Coastal / marine ecosystem, recreation	Native (NLTB/Landowners)
VOMOSEWA	W / 25	Flying Fox camp, island vegetation	Native (NLTB/Landowners)
MONORIKI ISLAND	W / 26	Iquana habitat, seabird nesting colony, vegetation	Native (NLTB/Landowners)
MONASAVU SWAMP	W / 27	Rare montane swamp community	Native (NLTB/Landowners)
VATU -I - RA	W / 28	Seabird nesting colony	Native (NLTB/Landowners)
QARANIBULUTI NATURE RESERVE	W / 29	Rainforest, Forest Reserve	Government (Forestry Dept.)
NADARIVATU NATURE RESERVE	W / 30	Dakua dominated rainforest	Government (Forestry Dept.)
SAWENI SANDFLAT	W / 31	Feeding site for migratory wade	Native (NLTB/Landowners)
GUSUNIQARA POINT	W / 32	Geological site - marine notch	Native (NLTB/Landowners)
KOROKUNE	W / 35	*Veitchia johannis* palm forest	Native (NLTB/Landowners)
VANUALEVU IS.	W / 36	Geological site rock type	Native (NLTB/Landowners)
KUCUVE POINT	W / 37	Geological site rock type	Native (NLTB/Landowners)
MOTOKURO POINT	W / 38	Geological site rock type	Native (NLTB/Landowners)
KOROMASOLI POINT	W / 39	Geological site rock type	Native (NLTB/Landowners)
DIGIO ISLAND	W / 40	Geological site rock type	Native (NLTB/Landowners)
YADUA QUARRY	W / 45	Geological site rock type	Native (NLTB/Landowners?)
MARASIKO	W / 46	Geological site rock type	Native (NLTB/Landowners)
VIWA ISLAND	W / 47	Geological site-rock type	Native (NLTB/Landowners)
NANUYAIRA	W / 48	Seabird nesting colony	?
VUNIVADRA IS.	W / 49	Seabird nesting colony	Native (NLTB/Landowners)
TOMANIIVI NATURE RESERVE	W / 50	Rainforest, Forestry Reserve	Government (Forestry Department)
NAMATAYA BAY	W / 51	Geological site-rock type	Native (NLTB/Landowners)
VATULACA IS.	W / 52	Geological site-rock type	Native (NLTB/Landowners)
NAROSALIA IS.	W / 53	Geological site-rock type	Native (NLTB/Landowners)
YALEWA KALOU	W / 54	Geological site-rock type	Native (NLTB/Landowners)
VATULELE CAVE	W / 55	Limestone cave system	Native (NLTB/Landowners)
RED PRAWN POOL, VATULELE	W / 56	Anchialine habitat red prawn pool	Native (NLTB/Landowners)