

***“Chothowliy yu Waab”***



**Yap State  
Biodiversity Strategy and Action Plan**

September 2004

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***“Chothowliy yu Waab”  
Take care of Yap***

By  
The Yap State Environmental Stewardship  
Consortium

Coordinated by  
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Dr. Marjorie Falanruw, Yap Institute of Natural Science  
& U.S. Forest Service Institute of Pacific Islands Forestry  
Dr Kathy Chaston & Gabriella Wilhelm, Australian Volunteers

September, 2004

## FORWARD


The Yap State Biodiversity Strategy and Action Plan (YBSAP) is the product of the vision and hard work of the Yap State Environmental Stewardship Consortium (ESC) and many dedicated individuals and agencies. With the guidance of the FSM Biodiversity Unit under the Department of Economic Affairs and funding support from the Global Environment Facility, the YBSAP was completed in its current form in September 2004. The participatory involvement of the communities through their representatives on the ESC proved very valuable in ensuring a comprehensive statewide consultation process the inputs from which fed into the YBSAP.

This strategy and action plan will serve as the roadmap for future activities that must be carried out under our environmental stewardship and resource management programs. More importantly, it will serve to ensure that our resources are utilized sustainably for all generations of Yapese.

Yap State treasures its diversity and seeks a future in which its cultures and traditions remain the cornerstone of its development. We seek partnership with our neighbors and beyond to develop our local capacity to ensure the sustainable management of our resources. As we strive to achieve these goals, we must never lose sight of the fact that our cultures and traditions are interwoven into the very fabric of our natural environment.

For the reasons stated above, I hereby endorse the Yap State Biodiversity Strategy and Action Plan.

Endorsed this 15<sup>th</sup> day of Sept, 2004

  
Robert A. Ruecho  
Governor, State of Yap

## **Acknowledgments**

A great many people and agencies contributed to our Yap Biodiversity Strategy and Action Plan. The project was funded through a grant from the United Nations Development Programme Global Environment Facility (GEF) to the Department of Economic Affairs (DEA) of the FSM National Government for the Development of the National Biodiversity Strategy and Action Plan (NBSAP). The DEA subsequently provided support for the development of State BSAPs.

The Yap Biodiversity Strategy and Action Plan (YBSAP) was developed by the Yap State Environmental Stewardship Consortium (ESC) working in collaboration with a YBSAP task force created by the Governor and chaired by Michael Gaan. The process of holding community consultations and completing the YBSAP was subcontracted to Yap Community Action Program directed by Charles Chieng. Technical assistance was provided by Dr. Margie Cushing Falanruw of the U.S. Forest Service Institute of Pacific Islands Forestry and Yap Institute of Natural Science and Dr. Kathy Chaston and Gabriella Wilhelm, both Australian volunteers.

The ESC, chaired by Charles Chieng, is comprised of representatives from the Government agencies of Forestry, of the Division of Agriculture and Forestry (DAF); Marine Resources Management Division (MRMD), Commerce and Industry, Offices of Planning, Education and Tourism, Environment Protection Agency (EPA), and College of Micronesia (COM). NGOs include the Yap Community Action Program (YapCAP), Yap Institute of Natural Science (YINS) and Yap Women's Association (YWA). Communities are represented through municipal representatives designated by the Council of Pilung and Neighbor Island representatives are appointed by the Council of Tamol. This group is, in effect, the precursor of the Natural Resources Stewardship Council (NRSC) envisioned in this YBSAP.

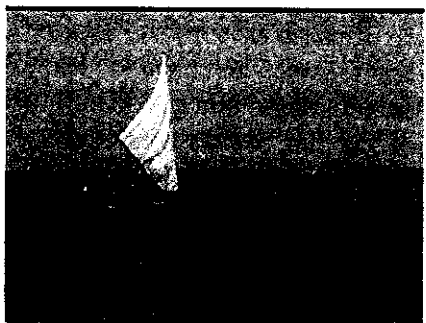
Some of the feature boxes incorporated into our YBSAP were taken from past issues of the Yap Almanac Calendar (1980-2004) and other sources cited in the reference section. We are grateful to Ed Petteys for help and instruction on formatting text and to Lonnie Fread for help and instruction on manipulation and formatting of digital images, including the cover image. The pictures of Ulithi and Fais were taken by Tim Rock, the rest of the photos by Margie. Samuel Falanruw contributed the opening statement of the Executive Summary and Introduction. Dr. Murukesson reviewed the document for style. The illustration of Yap's flag come to life and the betelnut basket is by the late Stanley Kenrad, the drawing of the "three nguchoi" is by Luke Holo. The composition of the "Earth with a lubuw" is by Lubuw Falanruw, all published in past issues of the Yap Almanac Calendar. Melinda Pinnifen and Kimberlynne Runpin helped with research and office tasks.

## Abbreviations

ABS	Areas of special biodiversity significance
AESYap	Agricultural Experiment Station, Yap
AG	Yap State Office of the Attorney General
Blueprint	The Blueprint for Conserving the Biodiversity of the FSM
BSAP	Biodiversity Strategy and Action Plan
CBD	Convention on Biological Diversity
COM	College of Micronesia
COP	Council of Pilung, Chiefs of mainland Yap
COP	Convention of Parties to the COB
COT	Council of Tamol, Neighbor island Chiefs
CPRP	Coordinated Project Review Process
DAF	Yap State Division of Agriculture and Forestry
DEA	FSM National government Department of Economic Affairs
DFA	FSM National government Department of Foreign Affairs
DOE	Department of Education
EPA	Yap State Environmental Protection Agency
ESC	Yap Environmental Stewardship Consortium
FSM	The Federated States of Micronesia
GEF	Global Environment Facility
HESA	FSM National government Department of Health, Education & Social Affairs (Includes National level EPA counterpart)
HPO	Yap State Office of Historic Preservation
ICS	Incident Command System
IPIF	Institute of Pacific Islands Forestry of the US Forest Service
IWP	International Waters Program
KDCO	Kaday Community Development Organization
MCT	Micronesian Conservation Trust
MRMD	Yap State Marine Resources Management Division
NBSAP	The FSM National Biodiversity Strategy and Action Plan
NRSC	Natural Resources Stewardship Council proposed in legislative bill
OPB	Yap State Office of Planning and Budget
OPB	Yap State Planning & Budget
QU	Queen's University
R&D	Yap State Department of Resourcesw & Development
ROM	Republic of the Marshalls
ROP	Republic of Palau
SDC	FSM President'S Council on Environmental Management & Sustainable Development
SOPAC	South Pacific Geodesic
SPC	South Pacific Commission
SPREP	South Pacific Regional Environment Program
TTPI	Trust Territory of the Pacific Islands
UNDP	United Nations Development Program
USCG	United States Coast Guard
USGS	United States Geological Survey
Yap CAP	Yap Community Action Agency
YINS	Yap Institute of Natural Science
YWA	Yap Women's Association

## Executive Summary

The voyage into a future of our own came to an end when O'Keefe's big ship technology brought an end to the thrill and adventure of voyaging on small canoes to bring back big stone money from Palau. Since that time, we have adopted the technologies of large continents, not realizing the impact that they have on our small island ecosystem. Now with economic uncertainties looming in the future, we are coming to realize that our most reliable allies are the islands of Yap themselves with their living wealth that supported Yapese people for over 4000 years. Before it is too late, we must learn to care for living Yap: for the sake of our children, their children and ourselves.



The Federated States of Micronesia signed the Convention on Biological Diversity at the Earth Summit in Rio de Janeiro on World Environment Day, 5 June 1992. The Convention was ratified by the FSM on 12 June and came into force on 29 December 1993. A FSM National Biodiversity Strategy and Action Plan (NBSAP) was prepared in March 2002, in order to fulfill the FSM's obligations to the Convention, focusing on the implementation of Article 6 of the Convention; General Measures for Conservation and Sustainable Use. The first draft of the Yap Biodiversity Strategy and Action Plan (YBSAP) was prepared as part of the process of developing the national plan.

The FSM National BSAP addresses a broad and comprehensive range of issues organized into 11 themes and calling for some 198 actions. It places responsibility for the implementation and monitoring of the NBSAP with the States. Accordingly, after the FSM NBSAP was presented to the world, States were asked to prepare State BSAPs. This resulted in the finalization of our YBSAP.

The development and especially the implementation of the YBSAP is challenging because there are only about 14 government and semi-government employees available to address biodiversity issues in addition to their other tasks. It would be difficult for these few employees to implement the 198 actions proposed in the NBSAP. Therefore, if we are to truly care for Yap, we must transform the care of Yap's biodiversity from the work of a few government employees into a community concern. This process actually began in 1999 when, following a meeting of Traditional Leadership from throughout Micronesia, the Council of Pilung mandated an Environmental Stewardship Consortium (ESC) to work cooperatively with Yap State Government to develop an environmental stewardship program for Yap State.

The process of developing the Yap State Biodiversity Strategy and Action Plan builds upon the efforts of the ESC. It represents the first time that community consultations relating to the sustainable stewardship of natural resources have been held and formalized into a plan representing a partnership between communities and their traditional leaders, the private sector including NGOs and the State and National government.

A major objective of the YBSAP is to build local capacity to manage natural resources wisely. To make this process easier to grasp, we have condensed the 11 themes of the NBSAP into a logical sequence of 7 themes and focused on an initial set of high priority and relevant actions. By prioritizing and organizing actions into a logical order, our YBSAP will enable us to more clearly see our course and take the first steps of our journey into a sustainable future. Additional actions can always be undertaken under the umbrella of the NBSAP.

‘Chothowli yu Waab’ or ‘Take care of Yap State’ is the overall goal of the Yap Biodiversity Strategy and Action Plan. The 7 action areas included in our YBSAP are:

1. Institutional Arrangements (“Getting our act together”)
2. Secure and enhance traditional knowledge (Secure and build on what we already know)
3. Inventory and Monitoring (“Counting our blessings and identifying problems”)
4. Biosecurity (Addressing invasive species, wildfires and climate change)
5. Addressing Pollution (Earthmoving activities, solid waste and hazardous materials)
6. Environmental awareness, research and capacity building
7. Developing stewardship programs and ecologically sustainable industries (making a living without killing Yap)

Projects are described under each action area and summarized in a table that gives key actors and partners and a timeline for the next 5 years. In order to evaluate the success of the YBSAP and ensure continued commitment, a YBSAP Secretariat will meet biannually to review progress. The annual review will be forwarded to the Governor for inclusion in the “State of the State” address and forwarded to the President’s Council on Environmental Management and Sustainable Development (SDC). This review will assist the National Government to channel resources to support the YBSAP program.

Every four years, in advance of the meeting of the International Convention of Parties (COP) to the Convention on Biodiversity, the program will be evaluated in terms of its effectiveness in reducing threats to biodiversity, and to review any improvements needed. The results of this review will be forwarded to the National Government for inclusion in the National report to the COP.

As we achieve our objectives, we will share our experience with the world. Inasmuch as islands represent condensed ecosystems at a human scale where it is possible to develop models of sustainability, we will repay the investment of developed countries in our BSAP through the fulfillment of our role in the world community of being in the vanguard of environmental sustainability.

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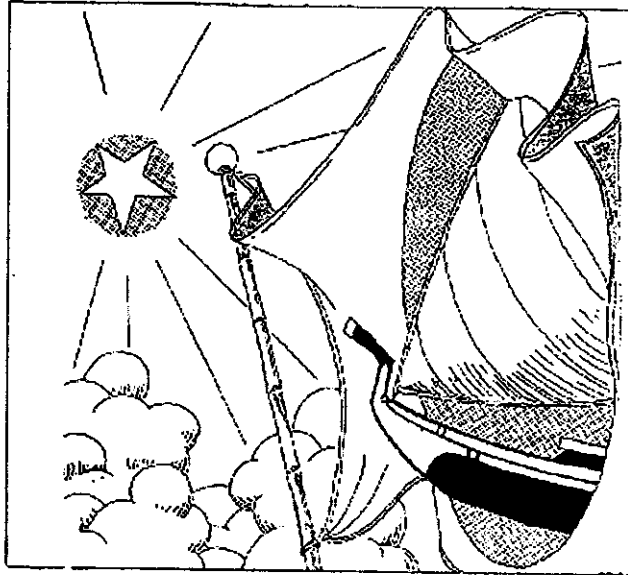
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## YAP'S FLAG



*The official flag of Yap is a white star encircled by the silhouettes of an outrigger canoe under full sail, enclosed by a white circle set in a field of blue. The blue represents the ocean, the white peace and brotherhood. The small circle represents the people, unified within the big circle representing stone money, a symbol of tradition and custom. The canoe represents the means and ways of accomplishment, and the star represents guidance and the determination and goals of Yap State.*



*Yap's flag comes to life as our canoe emerges en route to it's goals*

## 1. Introduction

The voyage into a future of our own came to an end when O’Keefe’s big ship technology brought an end to the thrill and adventure of voyaging on small canoes to bring back big stone money from Palau. Since that time, we have adopted the technologies of large continents: not realizing the impact that they have on our small island ecosystem.

Now with economic uncertainties looming in the future, we are coming to realize that our most reliable allies are the islands of Yap themselves with their living wealth that supported Yapese people for over 4000 years. Before it is too late, we must learn to care for living Yap and chart an island referenced course of our own: for the sake of our children, their children and ourselves.

“Biological diversity” refers to the variability among living organisms and the ecological communities of which they are part; this includes diversity within species, between species and of natural communities and ecosystems. Conservation of biodiversity is crucial to the preservation of Yapese culture which depends largely on its natural resources.

For thousands of years Yapese have utilized the State’s natural resources through traditional practices that were culturally controlled. The fading of these controls and the use of new technologies have increased pressures on the natural environment. At the same time Yap’s natural resources are beginning to be valuable in new ways such as attractions for revenue-generating eco-tourism. Yap’s reefs, especially its resident manta rays, Yap’s famous stone money, stone paths through agroforests and Yap’s nature-integrated culture also attract visitors. The potential for economic gain through sustainable use of Yap’s living natural resources is now greater than that to be derived from the export of dead exploited resources. Sustainable use also means that we can pass these resources on to our children. Today’s situation brings new opportunities as well as threats that must be addressed.

### 1.1 The Convention on Biological Diversity

The Federated States of Micronesia signed the Convention on Biological Diversity (CBD) at the Rio Earth Summit in Rio de Janeiro on World Environment Day, 5 June 1992. The convention was ratified by FSM on 12 June and came into force on 29 December 1993. The FSM NBSAP was prepared in order to fulfill FSM’s obligations to the Convention, specifically Article 26 which states that:

‘Each Contracting Party shall, at intervals to be determined by the Conference of the Parties, present to the Conference of the Parties, reports on measures which it has taken for the implementation of the provisions of this Convention and their effectiveness in meeting the objectives of this Convention.’

The Convention on Biological Diversity was inspired by the world community’s growing commitment to sustainable development. The overall objectives of the Convention are:

- 1) the conservation of biological diversity, 2) the sustainable use of its components, and
- 3) the fair and equitable sharing of the benefits arising out of the utilization of genetic resources.

### **1.2 The NBSAP, Blueprint and Environment Matrix**

The Federated States of Micronesia developed a National Biodiversity Strategy and Action Plan (NBSAP) through a series of multi sectorial meetings and discussion throughout the nation over a period of 14 months. In addition to introductory sections on Biodiversity, Threats and Constraints, Vision, Principles and Strategy, the NBSAP contains 11 themes and numerous objectives and a great many proposed actions. The NBSAP was completed and endorsed by the President of the FSM on March 13th, 2002 and subsequently presented to the Conference of Parties of the Convention on Biological Diversity. It presents an umbrella document for biodiversity activities in the FSM.

The Blueprint for Conserving the Biodiversity of the FSM (TNC 2002)(hereafter called "Blueprint") was developed alongside the NBSAP as a complement. It defines conservation targets, threats, strategies and some 130 areas of special biodiversity significance (ABS) throughout the FSM. The Matrix for the Environment Sector of the new Compact ("Environment Matrix") provides broader long term strategic goals, outcomes, activities and outputs for the next 20 years.

### **1.3 The Yap Biodiversity Strategy and Action Plan (YBSAP)**

A draft YBSAP was developed in November 2001 as part of the preparation for developing the NBSAP. Upon the completion of the NBSAP, the draft plan has been updated to implement priority actions outlined in the above documents. Our YBSAP endorses the NBSAP, Blueprint and Environment Matrix and consists of a subset of high priority, locally relevant activities consistent with all of these documents. The selection of a subset of the issues covered in those documents does not preclude our undertaking other actions covered in those plans, however, given the long journey into a new paradigm of development that lies ahead, the prioritization and organization of a limited number of actions into a logical order, can help us more clearly establish our direction.

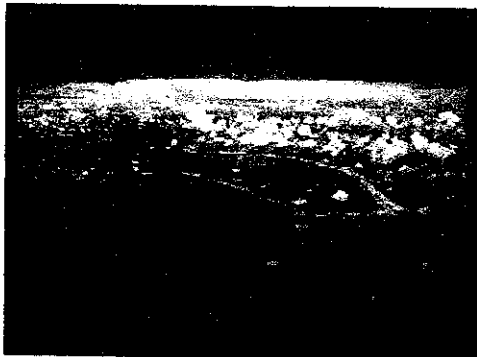
The YBSAP is a rolling plan with a long term vision, and an integrated action program for the next 5 years. The action plan includes specific projects and a monitoring program. As these projects are completed the rolling plan will be updated through a process of adaptive planning, to further address the longer term objectives and vision.

The YBSAP was developed by the Yap State Environmental Stewardship Consortium (ESC) working in collaboration with a YBSAP taskforce created by the Governor. The ESC is comprised of representatives from the Government agencies of Forestry, of the Division of Agriculture and Forestry (DAF); Marine Resources Management Division (MRMD), Commerce and Industry, Offices of Planning, Education and Tourism, Environment Protection Agency (EPA), and College of Micronesia (COM). NGOs include the Yap Community Action Program (YapCAP), Yap Institute of Natural Science (YINS) and Yap Women's Association (YWA). Communities are represented through municipal representatives designated by the Council of Pilung and Council of Tamol. The Council of Pilung consists of Chiefs from Yap Proper (Wa'ab), and Council of Tamol consists of chiefs from the Neighbor Islands of Yap state. Meetings of the ESC are open to all interested parties.

## 2. Background

### 2.1 Geography

Yap State is one of the four States that comprise the Federated States of Micronesia (FSM). It is located within the Western Caroline Islands between latitudes 7 to 10 degrees north, longitudes 137 to 148 degrees east. Yap consists of four closely associated islands: Maraba'-Numagil, Tamil-Gagil, Maap, and Rumung, collectively called 'Yap Proper' or Wa'ab, together with 134 low coralline islands and atolls (with 22 populated islands) collectively referred to as the "Outer" or "Neighboring" islands or "Remathau". The islands of Yap span over 100,000 square miles of ocean, with Wa'ab comprising 38.7 square miles of the State's total land area of just 49.7 square miles. The total population of the State according to the 2000 census was 11,241.



*Ulithi atoll, a fragile ecosystem suspended between atmosphere and sea*

Yap is unique in the FSM in having metamorphic rock derived from tectonic activity and associated soils similar to continental areas, as well as old volcanic soils. Islands and atolls of eastern Yap are younger and made of limestone. The climate is tropical, and temperature is relatively uniform, averaging 82 degrees Fahrenheit in spring and summer and 90 degrees Fahrenheit in fall and winter. Average humidity ranges from 65 – 85% throughout the day. Rainfall is high, averaging 120 inches per year, with a pronounced wet season from June to October. About 50% of past years have had a dry season between November and May. Typhoons occasionally hit Yap (previously about a 1 in 20 year occurrence). Between November 2003 and April 2004, 4 typhoons affected Yap State including Typhoon Sudal which struck Waab on April 9<sup>th</sup> 2004 causing widespread damage.

### 2.2 Biodiversity

Located at the western end of Micronesia, closer to the Asian continent, Yap is also the most biologically diverse island in the FSM. This is indicated by the gradient in basic species of mangrove trees numbering 10 in the eastern islands of Kosrae and Pohnpei and 15 in Yap<sup>1</sup>. The number of tree and other plant species is highest on Yap although the proportion of endemic species is not as high as the more isolated islands to the East. The State has a diverse range of terrestrial communities from beach strand, atoll forest, limestone forest, mangroves, swamp forest, marshlands, agroforest, secondary forest, species diverse savanna lands, and upland forests. Examples of endemic plants that grow on Yap and nowhere else in the world include the majestic *Serianthes kanehirae* variety *yapensis* tree, "gumor", the curious prop rooted *Garcinia rumiyo*, *Drypetes yapensis*, *Buchanania engleriana*, the lavender flowered *Hedyotis falanruwae* and the fern-like *Selaginella volkensis*. Among Yap's animals, a giant Micronesian gecko

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Note: the number of mangrove species considered here are the basic mangrove trees and do not include species that are not confined to mangroves but are common enough in mangroves to be included on expanded lists of mangrove species.

*Perochirus scutellatus* has been found only on Ulithi and Kapingamarangi. There are two endemic birds: The crisp black and white Yap Monarch and the Yap Greater white-eye, with two other species likely to be raised to full endemic species status. Two endemic fruit bats occur in Yap State, *Pteropus mariannensis yapensis* and *P.m. ulithiensis* (Falanruw 1988).



*Gigiy, the Yap Monarch is found only on Yap*

The islands of Mainland Yap lie within an area experiencing a monsoon climate and many years are marked by a wet/ dry season. This climatic pattern is reflected in the islands vegetation, and Western Yap State lies in a different ecoregion from the rest of the FSM. Yap has the greatest extent of open savanna lands in the FSM.

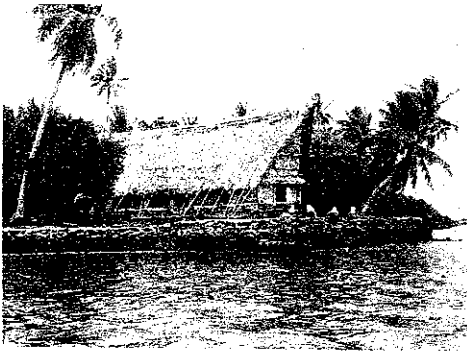
Some of these areas are simply degraded lands while others support a distinctive association of savanna specialized species not found in Eastern FSM. Prior to Typhoon Lupit, Fais island supported the largest expanse of limestone forest in the FSM. Limestone forests contain a specialized community of native and endemic species growing from pockets of soil in hard limestone rock. Lacking extensive and deep soils, the forest is dependant on the rain of leaves from its own canopy to sustain the shallow soil. Once the canopy of this kind of forest is destroyed, the source of soil is also destroyed, and the forest is unlikely to recover within anyone's lifetime.

Four species of marine turtles are known from Yap: the green turtle, Hawksbill turtle, Ridley turtle and the large leatherback turtle, with the last 2 species being rare. All are considered to be species in peril under U.S. and International Conventions . Studies of marine mammals in Yap have not been carried out , but it is known that there are a number of species of whales and dolphins within Yap and a dugong *Dugong dugong* was killed in Yap about a generation ago. The endangered species act of the Trust Territory of the Pacific Islands that has been carried over to the FSM lists the Dugong, Blue whale (*Balaenoptera musculus*) and Sperm whale (*Physeter catodon*) as endangered species.

Thirty-two Areas of Special Biodiversity Significance (ABS) have been named throughout Yap State (Blueprint). Four areas within this set of ABS have recently been proposed as protected areas: The Dalipebinau School Forest ABS, and 4 potential marine protected areas (MPAs) currently involved in the International Waters Project.

### 2.3 Culture and Environment

Yap still has a traditional culture that emphasizes respect and traditional relationships.



Stone money, stone pathways and traditional meeting houses can still be seen in the villages. Much of the land and even near shore areas have been modified through landscape architecture for food production purposes. The island once supported a very dense population that greatly influenced the landscape and cultural patterns. The traditional agricultural system of Yap is the most diverse in the FSM and incorporates ditching and landscape architecture to manage water flow through both shifting and site-stable systems. The species and variety rich tree garden/ taro patch agroforests of Yap represent a well-

developed system of permaculture. The management of water flow extends from land into near shore waters, where the use of marine resources was also highly developed and diversified.

Yap was occupied by Spanish in the 1500s, Germans from the end of the 1800's to the beginning of World War I, Japanese until World War II and has been under American Administration since World War II. In spite of the succession of foreign administrators, Yapese have not been alienated from their lands and waters. Most all land and marine areas on Yap are held under a complex system of customary ownership. Resource use was subject to a complex system of allocation that saved Yap from the 'tragedy of the commons' where resources available to all are used up or destroyed. Today the traditional system is fading or being modified in response to the availability of new technologies and opportunities for commercial exploitation of natural resources. The traditional system nonetheless sets a cultural precedent for the management of people's use of resources. It is imperative for today's generation to build upon this heritage of the past and develop a resource management system that is viable in today's context. This effort can be assisted by modern science if links can be made. Unfortunately few Yapese pursue education and careers in the natural sciences. One reason for this is the lack of local jobs in this profession. Most scientific work in Micronesia is done by, non-resident experts, and there is little support for local scientists. This situation must be reversed if we are to gain local capacity to manage natural resources on a sustainable basis within today's context. It is contrary to Yapese culture to have to depend on others for life needs especially in Wa'ab. This makes this YBSAP especially important as natural resources are the source of traditional exchanges, activities, food, and are the foundation of Yapese culture.

## 2.4 Economy

While Yap is best known for its stone money, the natural resource and food production systems that supported such a flamboyant cultural expression are equally impressive. Yap's nature-integrated subsistence economy still plays a role, however the volume of imports of food, fuel, manufactured goods, machinery, and vehicles is increasing. The United States is the principal trading partner although exports are less than 10% of the total import value. The economy of Yap depends largely on U.S. aid through a recently updated Compact of Free Association that has, for the first time recognized environment as a focal sector.



Tourism and fisheries appear to have the most potential for near-term income. Several small hotels and diving operations cater to the expanding 'eco-tourism' industry and Yap has become established as an international dive destination. Licensing fees paid by foreign vessels for tuna fishing in FSM's Exclusive Economic Zone provides a source of revenue. Agricultural production in Yap is primarily for subsistence use with some semi-commercial activity. The island's biggest export is betel nut, a village-based industry having a combined annual sales of approximately \$3 million.

## 2.5 Government

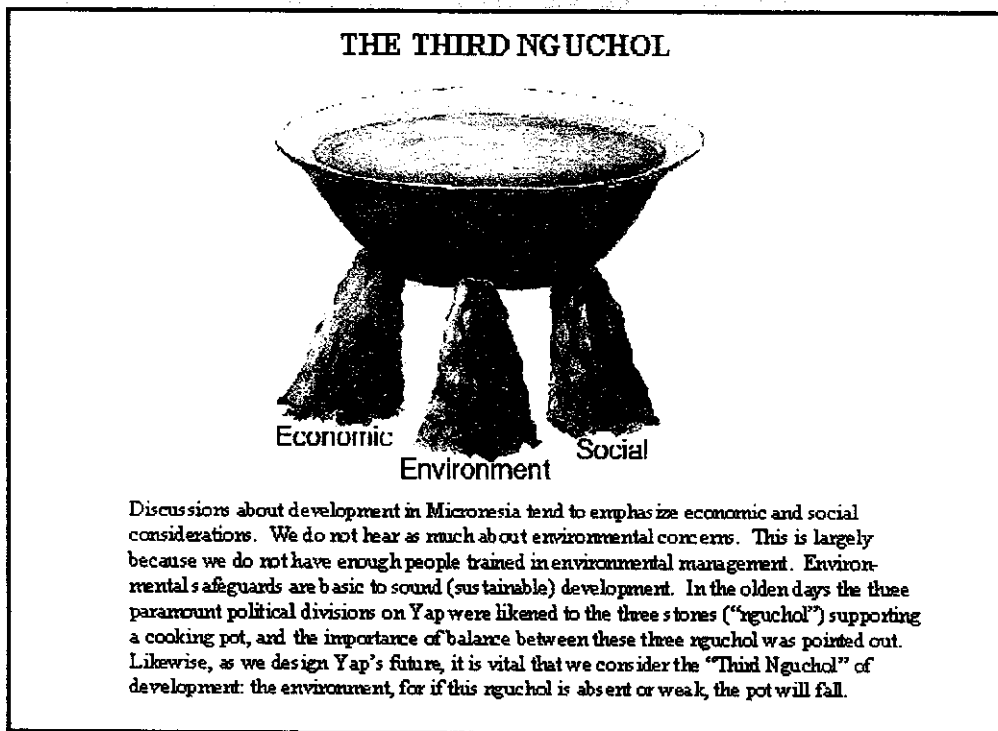
Yap State government has four branches: executive, legislative, judicial and traditional (Councils of Chiefs). The State is represented by 2 senators in the 14 member Congress; one for the 4-year seat and the other for the 2-year seat. An outline of existing governmental legislation relating to the environment and conservation of biodiversity is provided in the Appendix. Development objectives outlined in the Yap State Summit of 1996 include the goal of strengthening environmental planning and community participation in environmental protection and management in order to secure a sustainable future through a self-sustaining economy and society.

## 2.6 Threats, Constraints and Opportunities

The CBD States that parties are required to identify processes and categories of activities that have or are likely to have significant adverse impacts on biodiversity and its sustainable use. The NBSAP lists 5 categories of threats and a series of constraints to biodiversity conservation. Two threats, "biosecurity" and waste management require fairly direct actions in which the government must take the lead. Three other threats: the conversion and degradation of habitat and ecosystems; over-exploitation and unsustainable harvesting methods and practices, and impacts of climate change are multifaceted problems that will require more complex approaches by both government and the public.

The constraints listed in the NBSAP of: rapidly increasing population and more consumptive lifestyles, inadequate scientific base line information on the status of biodiversity, insufficient biodiversity legislation and lack of enforcement, insufficient skilled/trained human resources, insufficient coastal planning and zoning, inadequate awareness of links between conservation and sustainable economic development and insufficient funding for conservation activities are

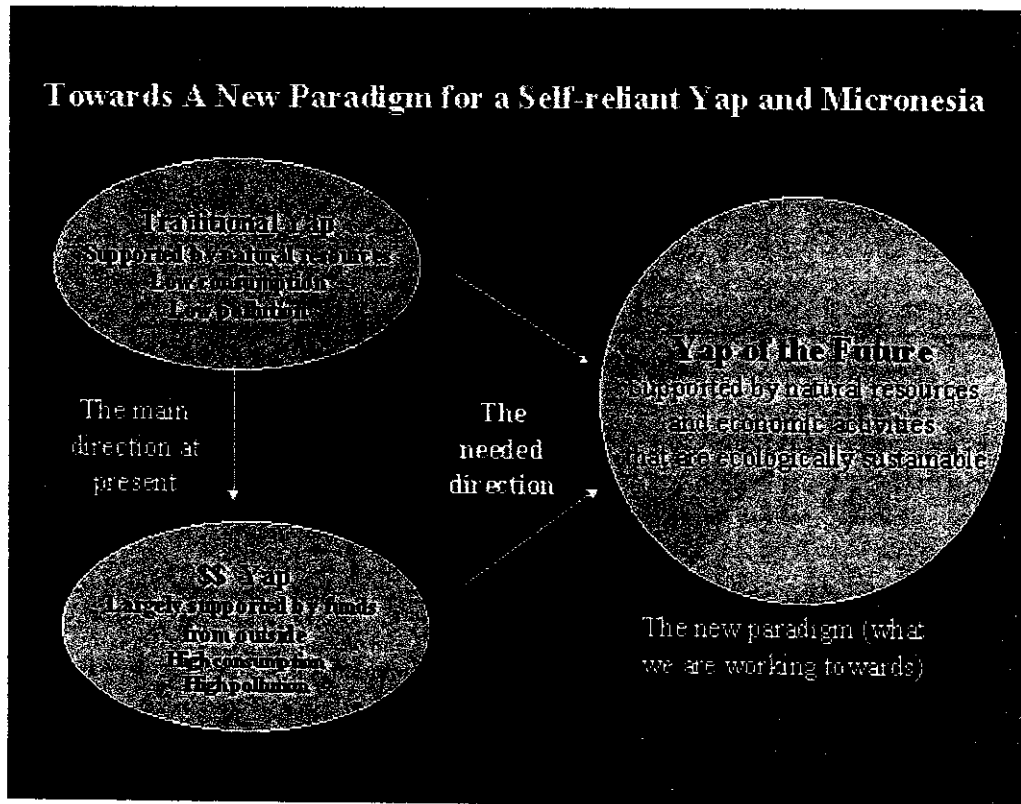
partially the legacy of a now out-of-date development paradigm. The current government structure and direction is largely a legacy of the Trust Territory of the Pacific Islands (TTPI) which developed at a time of more focus on infrastructure development and political change than on environmental sustainability. There was, for example, but one conservation officer for the whole TTPI, which at that time included what is now the Republic of the Marshall Islands (ROM), FSM, Commonwealth of the Northern Marianas Islands (CNMI) and the Republic of Palau (ROP). Since that time, the world has come to realize the vital importance of maintaining ecosystem health, however, the government structure is only beginning to adjust to address this need.



The NBSAP proposes some 198 actions organized within 11 themes and indicates that the responsibility for the implementation and monitoring programs of the NBSAP lie with the States. This poses some challenges because in Yap, there are only about 14 Yap State government and semi-government staff employed to work full time on biodiversity as well as other issues. At the same time, a new paradigm of development is emerging. The specter of climate change and sea level rise is bringing about recognition of the vital importance of the ecological sustainability of development. It would be suicidal to emulate the high consumption development pattern of overdeveloped nations that is now threatening the stability of world climate and increasing the threat of sea level rise and more frequent storms to small islands. Grave problems tend to give rise to new approaches, and Pacific islands are beginning to rise to



their role as "canaries of civilization" (Falanruw 2004). The new paradigm for an ecologically responsible Yap is illustrated below.



If we are to truly care for Yap, and be responsible citizens of the world, we must transform the care of Yap's biodiversity from the work of a few government employees into a widespread community concern. This process began in 1999, when, following a meeting of Traditional Leadership from throughout Micronesia, it was declared that *"We are mindful that our environment and our natural resources are all important, for they are the foundation of our economies, our cultures, and our identities as Pacific Islanders."* On returning from the meeting, the Council of Pilung mandated an Environmental Stewardship Task Force to work cooperatively with Yap State Government to develop an environmental stewardship program for Yap State. This gave rise to the Yap Environmental Stewardship Consortium (ESC).

The process of developing the Yap State Biodiversity Strategy and Action Plan builds upon these efforts. It represents the first time that community consultations relating to the sustainable stewardship of natural resources have been held and formalized into a plan representing a partnership between communities and their traditional leaders, the private sector including NGOs and the State and National government.

### **3. Strategy**

#### **3.1 Guiding Principles and Vision**

*Let us decide on our own fate and the future direction of all the things that we have control over.*  
(Governor Figir, Yap Summit 1996)

We, the people of Yap State are mindful that our culture, economy and very lives are dependant on our biodiversity. Our islands are small and dear, and there are limits to how much they can be exploited. There are, however, no limitations to making Yap better and better. We aspire to understand, and protect our biodiversity and to continue to improve conditions for life on Yap.

We seek to maintain a partnership and balance with Yap's biodiversity. We do not want to become obligatorily dependant on the world's economic system for our lives, but desire to retain the option to live according to our own values and to be able to subsist on our own natural resources should we chose to do so. In order to maintain this basic freedom for Yapese people, it is necessary to maintain the integrity of Yap's living ecosystem.

As we become better stewards of our biodiversity, we will develop ways to sustainably use our natural resources to enable us to participate in the world's economic system. As we achieve economic development that is ecologically sustainable, we will become one of the most modern nations of the world of the future when the way a country cares for its biodiversity is the highest art.

We wish to retain the wisdom and enhance the skills of our island culture heritage, to live with respect for one another and with a reverence for life on our islands amid clean flowing waters, green healthy lands and a productive marine system that contributes to the health of the world environment.

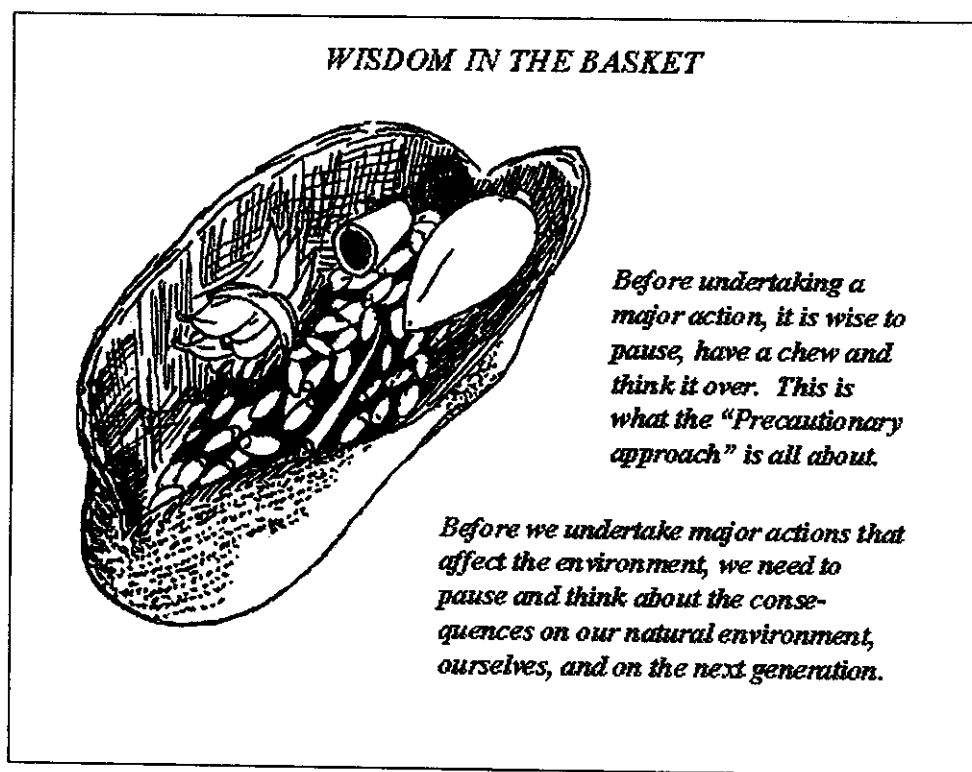
#### **3.2 Goal**

The overall goal of the YBSAP is to "Take Care of Yap" in keeping with the mandate of Traditional Leadership at the Yap State Summit (1996).

#### **3.3 Strategy**

This goal will be achieved through:

- a) Integration of biodiversity conservation and sustainable development,
- b) Securing traditional empirical knowledge and technologies and enhancing it with modern science into a neo-traditional system of natural resource management suitable for today's context,
- c) Development of local capacity to manage natural resources on a sustainable basis.
- d) Community-based approaches
- e) Taking a precautionary approach (maintaining the "wisdom in the basket")



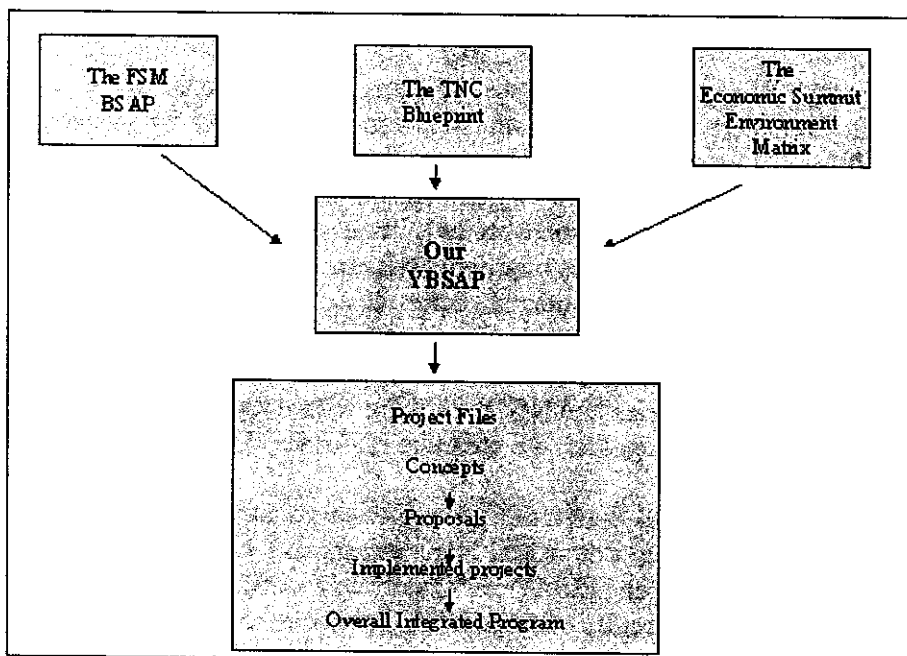
### 3.4 Specific Objectives

- a) Record (inventory), monitor and maintain indigenous species biodiversity.
- b) Maintain critical natural resource areas, species and systems including at least 20% of critical marine areas and all remaining areas of well developed native forest.
- c) Secure a traditional empirical knowledge base and technologies and enhance the traditional system with modern science where appropriate.
- d) Enable adequate education of environment and biodiversity professionals in parallel with the development of the means to employ them.
- e) Devise a process to assure that development is ecologically sustainable.
- f) Assist resource owners to manage their natural resources on a sustainable basis.
- g) Develop economic alternatives for using biodiversity on a sustainable basis.

#### 4. Action Plan

A major objective of the NBSAP and YBSAP is to build local capacity to manage natural resources on a sustainable basis. To make this process easier to grasp the 11 themes of the NBSAP have been condensed into a logical sequence of 7 priority and relevant action areas. This does not mean that other actions proposed in the NBSAP may not be taken. Our YBSAP endorses the NBSAP, Blueprint and Environmental Sector; defines overarching themes, needs and actions; and describes an initial set of integrated activities to get our program running with the resources we now have, or hope to obtain soon.

The Figure below diagrams the long-term process in which the three documents provide a reservoir of needed actions, a subset of which are organized in our YBSAP which includes a set of progressive files of project concepts, that may be developed into proposals for funding and implementation as we gain experience and support. By prioritizing and organizing a limited number of initial actions into a logical order, our YBSAP will enable us to more clearly see our course and take the first steps of our journey into a sustainable future.



#### 4.1 Institutional Arrangements (“Getting our act together”)



*Everybody doing their part.*

In keeping with priorities of the TTPI, most focus has been on economic and social change. Today we are coming to realize that the environment is equally important for balanced development, but this is not yet reflected in governmental structure. The NBSAP proposes some 198 actions and places responsibility for the implementation and monitoring of the NBSAP with the States. This poses challenges because there are only about 14 government and semi-government employees available to address biodiversity issues. This is not enough. We need to develop “the third nguchol” of the environmental sector. If we are to truly “take care of Yap”, we must transform our efforts from part-time tasks of a few government employees into a widespread government and community effort. The ESC, mandated by the Council of Pilung is designed to bring government agencies and NGOs working with environmental issues together with communities so that working together, we are more effective. Three initial actions are:

- 4.1.1 Support the Environmental Stewardship Consortium to work as the Yap State counterpart to the President's Environmental Management and Sustainable Development Council (SDC) as indicated in the NBSAP. ESC staff will work with the Consortium to:
- i) Develop and monitor indicators of sustainable development
  - ii) Manage a GIS system
  - iii) Coordinate efforts carried out under the Convention on Biodiversity, Convention on Climate Change, and other related Conventions
  - iv) Coordinate a program of sustainable development

These actions would address NBSAP Theme 8: Objectives 1,2 &3; Theme 9: Objectives 1 &2; Theme10: Objectives 1,2,3 & 4 and Theme 11: Objectives 1,2,3 & 4.

4.1.2 Pass pending legislation to establish a Coordinated Project Review Process (CPRP) and Natural Resources Stewardship Council (NRSC) in order to provide a clear and orderly process for community involvement and environmental review of proposed projects including bioprospecting and research projects.

This action would address the NBSAP Themes and objectives: Theme 3: Objective 1; Theme 5: Objective 1,2 &3; Theme 6: Objective 1, & 2; Theme 7: Objective 3; Theme 8:1 & 3; Theme 10: Objective 5.

4.1.3 Define the roles and responsibilities of government agencies whose work relates to biodiversity: Agriculture, Forestry, Yap Fishing Authority and Marine Resources Management Division.

#### **4.2 Secure and Enhance Traditional Knowledge ( Build on What We Already Know)**

Much empirical knowledge about Yap's biodiversity will continue to be lost if conscious efforts are not made to learn and use traditional knowledge and technologies. This important work can be undertaken by individuals, families and communities on Yap. An ongoing project will result in an overview of traditional use of the land and sea on Yap that will provide a context for local projects as appropriate to individuals, families and communities. An evaluation of traditional ways to manage erosion and sedimentation, and ways of integrating traditional controls on resource exploitation with modern management practices is needed. Where appropriate, results of projects can feed back into the program and be linked with scientific principles so that they may be further enhanced to provide viable and locally relevant alternatives for the future.

#### **4.3 Inventory and Monitoring ("Counting Our Blessings" and Identifying Problems): NBSAP Themes 1, 2 & 4 combined**

The Convention states that parties are required to identify and monitor components of biological diversity important to its conservation and sustainable use. On Yap this activity will include:

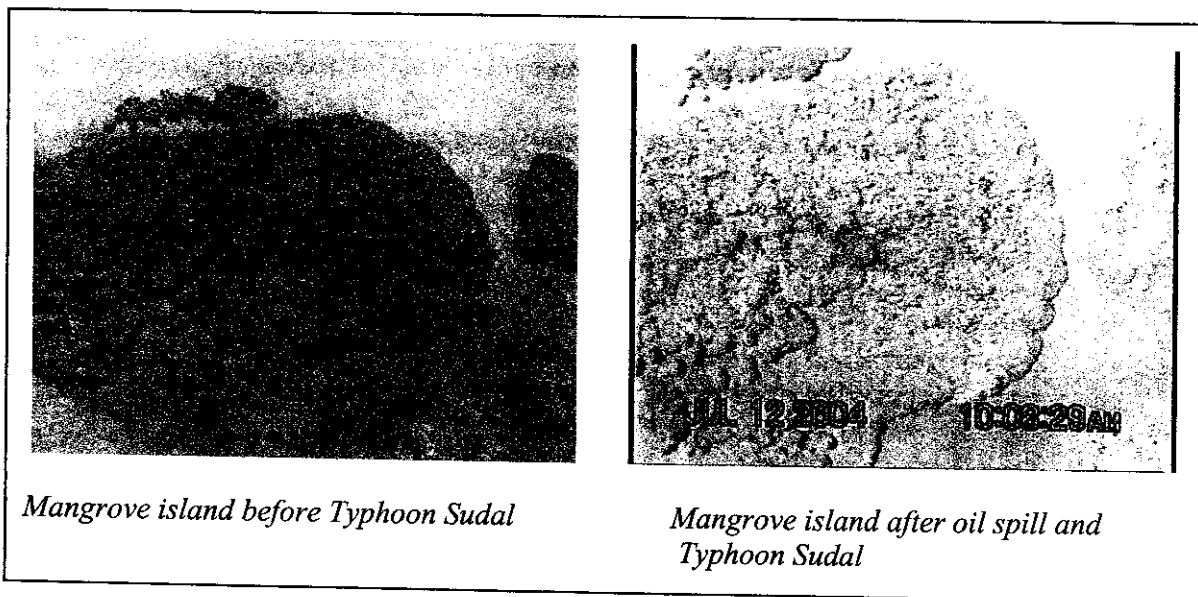
- i) Survey and mapping of terrestrial and marine communities
- ii) Map current patterns within Yap's lagoon
- iii) Inventorying species within natural communities
- iv) Incorporating this information into a GIS system
- v) Updating maps and information on species incidence
- vi) Analysis of data to determine trends
- vii) Establishment of a State biodiversity database
- viii) Identification of rare species

Terrestrial community surveys should include but not be limited to: updating vegetation map for comparison with vegetation map based on 1976 aerial photos, with more intensive surveys of remaining areas of native forest and ABS described in the Blueprint for Conserving the Biodiversity of the FSM. Terrestrial species surveys inventories should include: micro-organisms, plants, varieties and cultivars of traditional crops (agrobiodiversity); insects, arthropods and other invertebrates; freshwater fish, reptiles, birds, fruit bats and introduced species, especially those that are invasive or potentially invasive.

Based on local interest or outside interest and support, the following surveys are anticipated within the next 2 years: Survey of mangroves and terrestrial forests damaged by Typhoon Sudal, Forest Inventory Assessment (FIA) survey (by 2007), survey of Dalipebinau School forest reserve (when time and resources permit). Work on the flora and on the ethnobiology of Yap is ongoing (YINS 1976-present).

Comprehensive mapping of marine communities will require a set of aerial photographs as currently available satellite imagery (Landsat, and Ikonos) do not appear to be high enough resolution for more than very general mapping. Inventories of marine flora and fauna should include but not be limited to: phytoplankton, micro and macroalgae, and sea grass; invertebrates, molluscs, coral, fish, sea turtles and marine mammals. A regular program to monitor marine communities, corals, turtle rookeries, fish spawning aggregation sites and fishery stocks is needed. It is anticipated that there will be surveys of the 4 potential marine protected areas involved in the International Waters Program (IWP) within the next 2 years. Other priority sites include the areas of special biodiversity significance described in the Blueprint.

The inventory and monitoring program will identify change. The nature and cause of this change will be evaluated and projects and programs developed to address threats to biodiversity or adapt to change. It is anticipated that threats will relate to "biosecurity" and the need to manage pollution.



*Monitoring can detect changes.*

#### 4.4 Biosecurity - Addressing invasive species and other threats to biodiversity

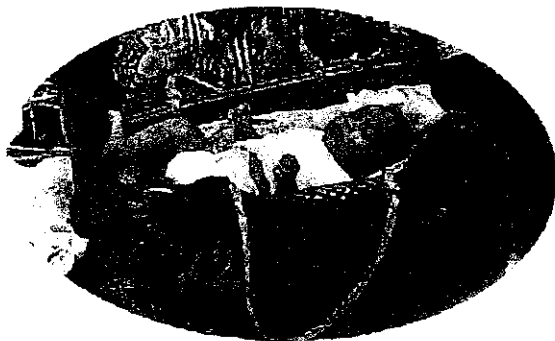
The Convention states that parties are required to identify processes and categories of activities that have or are likely to have significant adverse impacts on biodiversity and its sustainable use. Some of the threats listed in the NBSAP that require the development of governmental programs are described below.

##### 4.4.1 Invasive species

Invasive species are a threat to Yap's natural communities, economy and way of life. Our Invasive species program will include the following series of activities: establishment of an invasive species subcommittee of the ESC. A Public awareness program will be conducted to acquaint people with "categories of species" including endemic, native, introduced, cultivated, weedy and invasive species. The dangers of invasive species and the need for a good quarantine program will be explained. Lists of invasive species threats to Yap such as those listed in Space and Falanruw (1999) and the NBSAP will be prioritized and a program developed to address them. A program to eradicate Yap's 2 worst invasive species and to monitor results via GIS and Public participation will be carried out in the first 5-year period of this YBSAP. An invasive species 'swat team' will be organized for emergency response. A strategy for combating an explosion of invasive vines following typhoon Sudal will be developed. A rat control program will be developed. Assistance will be requested from the SPC, and links established with Palau's visiting veterinarian program to obtain the services of a veterinarian for a neutering and spaying program to manage the population of cats and dogs. Surveys of other pests and diseases as well as marine invasives will be conducted, and an invasive species coordinator will take part in an international invasive species and pest and disease network.

##### 4.4.2 Unsustainable Exploitation of Natural Resources

The use of natural resources was, in the past, culturally regulated. Today it is not. New technologies and commercial exploitation are placing greater pressure on natural resources to the extent that, if protective measures are not soon implemented, the next generation will be deprived of those resources, and Yap will lose its cultural self-reliance and become obligatorily dependant on others. Careful evaluations are needed before resources are commercially exported as the Yap ecosystem is nutrient-poor and cannot produce a great surplus. Any proposed export should be subject to the "precautionary principle" (e.g. wisdom in the basket) and disallowed until it is shown to be sustainable.



*Taking a precautionary approach means sharing resources with the next generation.*

In general, the development of land and marine stewardship programs will alleviate over exploitation of natural resources. This will take time however, and a number of protective measures are needed in the interim. Action is needed to implement the ban on commercial



export of in-shore/ near shore marine resources called for by the First Yap State Economic and Social Summit (1966). Protection is also needed for forest resources. Yap has the most limited upland forest resources in the FSM. A survey of timber resources of Yap (MacLean et al. 1988) indicates that there are not enough timber resources for commercial exploitation. In the wake of Typhoon Sudal, Yap's meager forest resources may be threatened by logging for house posts as communities begin rebuilding traditional structures destroyed by the typhoon. It is important to salvage old posts and already downed trees and to find other alternatives for house posts, rather than cutting down the limited number of large living trees left in our damaged forests. Large trees provide ecological services that are more valuable than their use as dead posts or lumber.

#### 4.4.3 Wildfires

Wildfires destroy forests, wildlife habitat, degrades land and threatens homesteads and reforestation efforts. About 22% of Yap consists of open "savanna" lands. A good deal of this land could be restored to a more valuable condition if wildfires could be controlled. The YBSAP wildfire program will include the establishment of a wildfire subcommittee of the ESC and development of a 2nd 5-year wildfire plan. This plan will develop a strategy for wildfire management, building on 4 years of data on wildfires and a wildfire vulnerability map, and include the development of a Public awareness program featuring "Smokey Fruit Bat" and his "Cousin Ngobchey Smokey Bear." Also associated with the wildfire abatement program will be one or more



workshops on the Incident Command System (ICS) that can be used to address emergencies such as large wildfires, oil spills, and typhoons.

#### 4.4.5 Climate Change

A comprehensive program on "climate proofing" will be developed under the Convention on Climate Change, however some aspects of the issue might be addressed under the YBSAP. These include projects to secure taro patches from impacts of sea level rise, and the development of appropriate strategies for mitigating coastal erosion, including obtaining advice from SOPAC and evaluating the experience of Kiribati in planting mangroves for coastal protection on atolls.

Most scientific models predict that climate change will result in an increase in storms. On April 9, 2004, Yap experienced a severe typhoon (Sudal) and at the writing of this YBSAP, recovery of anthropogenic (people's) infrastructure has been funded and is underway. The typhoon also severely impacted natural resources, especially forests. An agriculture and forestry recovery strategy was developed and a research program on the ecological impacts of Typhoon Sudal will be conducted and the results reported to Yap's Public.

## **4.5 Managing Pollution**

### **4.5.1 Earthmoving activities**

Existing earthmoving regulations will be enforced and adherence assured through the Coordinated Project Review Process (CPRP). A project will be undertaken to map all known sites of large earthmoving activities, including dredging activities and incorporation of this information into a GIS database, along with surveys of ongoing and past dredge sites, to consider the impact of these operations as well as impacts from altering river and other natural flow patterns on the watershed and surrounding marine areas. The results of these surveys will be shared with the Public. Alternatives to dredging will be investigated. A storm water management systems will be developed. Whereas traditional Yapese practices managed water flow, modern public works projects often do not adequately address problems of erosion and siltation resulting from the use of heavy equipment. Since the advent of centralized water system, building practices do not generally manage water runoff from roofs. A program to provide designs and recommend standard materials for roof catchment systems will be developed. It will mitigate erosion and siltation as well as the need to import drinking water after natural disasters such as Typhoon Sudal.

### **4.5.2 Solid waste management**

The process of segregating biodegradable wastes and tires from other wastes that was established in the aftermath of Typhoon Sudal will be continued, as will the prohibition of burning at the Public dump site. A solid waste management strategy will be developed and a landfill improvement project undertaken. A community hygiene project will be undertaken and at least one community will undertake a waste management program. A composting workshop will be held.

### **4.5.3 Hazardous materials management**

A persistent organic pollution (POPs) and a hazardous chemicals and materials program will be carried out. A workshop will be held to certify pesticide applicators. The site of the old Loran station dump will be surveyed for the presence of hazardous materials.

Appropriate action will be taken to prevent oil spills and other damage from the stranding of ships on Elato and West Fayu, an important sea turtle rookery; and on other islands and reefs. An oil spill contingency plan will be developed and shared with participants in an upcoming Incident Command System (ICS) workshop.

## **4.6 Environmental Awareness, Research and Capacity Building**

A sustainable future for Yap is dependent on Yap's citizens developing the understanding, will and capacity to manage natural resources on a sustainable basis. This requires an integrated and multifaceted approach that includes 1) providing information to the Public, 2) formal education in schools, 3) community projects, 4) a Yap State research program and opportunities to learn through employment with research projects and 5) the development and employment of local professionals.

#### 4.6.1 Informing the Public

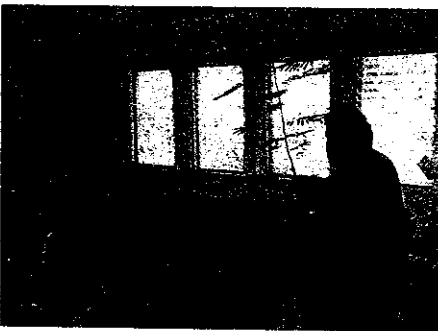
Information will be provided to the Public in a timely manner on such topics such as: The potential and danger of the introduction of brown tree snakes from Guam, upcoming drought and fire hazards, the importance of sea turtles, manta rays and other life, the threat of invasive species such as the “mile a minute vine,” threats to coral reefs from over fishing, chemicals, oil, erosion and siltation and through special campaigns.

Phase II of the RARE campaign to build Public understanding of the balance between population and resources will be implemented as planned by MRMD. Public information will be provided on the Marine Resources and Coastal Management Program when it is completed and ready for implementation. Similar awareness raising programs will be conducted on the completion of other stewardship plans and programs.

An annual cycle of “eco-events” will be held throughout the year such as: March’s Yap Day biodiversity project awards, April’s Earth Day observance, June’s World Environment Day, August’s summer youth biodiversity projects, and the November rising of the Mgirgir ushering in “Yap’s New Year.”

#### 4.6.2 Formal Education

Environmental subjects will be included in the head start and elementary curricula. At the secondary level students will be introduced to the YBSAP and biodiversity subjects will be linked with sustainable development.



#### 4.6.3 Community Awareness

A Natural Resource Stewardship Council (NRSC) consisting of community representatives appointed by the Councils of Pilung and Tomol (COP & COT) will be created and made part of the ESC. Members will be provided with information on community project opportunities, opportunities for

on-the-job learning, apprenticeships, study tours and other training to enable them to work with their peers and to provide advice to their respective communities.

#### 4.6.4 Learning from Research

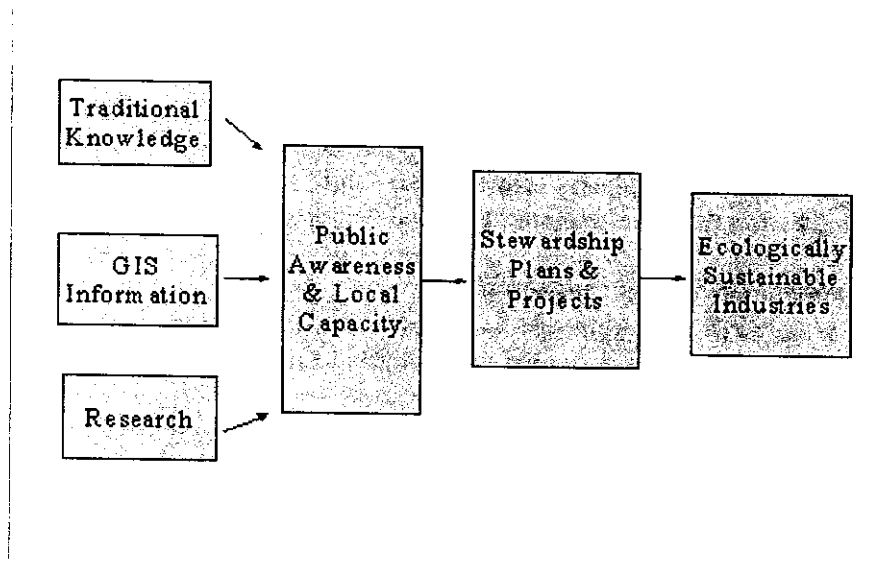
Yap State will define research needs and integrate these with the coordinated project review process. In order to enable researchers utilizing Yap for their field studies to contribute to ecologically sustainable development, a biodiversity research permit and tracking system will be established and made part of the Coordinated Project Review Process. A system for providing opportunities for members of the NRSC and other Yapese citizens to be employed as apprentices and associates to visiting scientists will be developed in order to help develop local capacity and inform Yap’s Public of the nature of research and its relevance to life on Yap.

#### 4.6.5 Development of Local Capacity

Students interested in natural resource fields will be identified and assisted in obtaining scholarships, tracked, provided opportunities for internships on Yap during their studies, and assisted in finding employment upon completion of their education. There will be an ongoing program of on-the-job training for those involved in natural resource management.

#### 4.7 Stewardship Programs and Environmentally Sustainable Industries

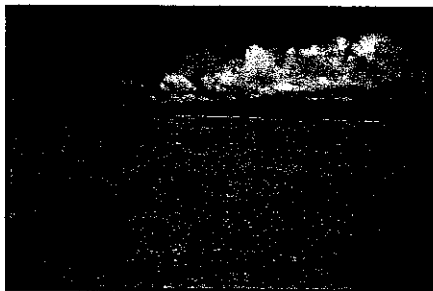
The actions described in preceding sections, including the information compiled in the GIS system and gathered through inventory surveys, research and the revitalization of traditional knowledge, will be brought together into a Natural Resource Stewardship program as diagrammed below. Being able to "see" this progression will help motivate us to all do our part.



An example of such a progression might be: combining traditional knowledge and modern science into a set of guidelines for restoration of savanna lands. Individual land owners could utilize the guidelines to help them manage their own lands for their own use. If enough members of a community decide to restore adjacent plots, small mechanized tools such as ditch and hole diggers and mulching machines that were provided as part of the typhoon Sudal agriculture and forestry recovery strategy, could be shared to make it easier to restore larger units of land in an integrated program that alternates shifting gardens "melie" with enhanced fallows that serve to restore soil fertility while at the same time serving as green belt firebreaks, and producing products such as "gal" Hibiscus fiber for a "grass" skirt industry. After a time the green belts would be replaced by other green belts and could be converted into gardens to produce another series of harvests. Surplus production from these gardens could be sold to hotels or processed into products such as jams, chips, spices, etc. At the same time, such areas could be used as an attraction for ecotourists and students interested in sustainable agroforestry systems.

#### 4.7.1 Marine Stewardship

The Marine Resources and Coastal Management Plan (MRCMP) developed in 1994 and updated through the RARE program in 1999 will be completed and implementation begun within the period of this first YBSAP, and the second phase of the RARE program extended to neighboring islands by MRMD.



The establishment of fisheries stewardship programs in order to conserve fisheries resources was given high priority during The First Yap State Economic and Social Summit (1996), and in community consultations for the International Waters Program (IWP) and the YBSAP. Programs that regulate fishing seasons, designate fishing zones and protected areas, especially to protect routes of spawning aggregations and sites of spawning, to set species specific lower and upper size restrictions and to minimize the use of small nets, will be established. Catch and export data needs to be collected and legislation passed to control the export of in-shore and near-shore marine resources. The precautionary approach, in which a commercial industry is not initiated until it has been shown to be sustainable, will be taken in the development of marine resource industries.

#### 4.7.2 The Yap International Waters Program (IWP)

The International Waters Program addresses sustainable resource management and conservation in the coastal zone. It is funded by the Global Environment Facility (GEF), Implemented by the United Nations Development Programme (UNDP) and executed by the South Pacific Environment Programme (SPREP). Fourteen Pacific countries, including the FSM are participating in the program. Yap was chosen as the venue for the FSM IWP program. Thus the Yap IWP Program represents all of the FSM. The Yap project is designed to promote sustainable fisheries via a system of marine protected areas established and maintained through a collaboration of traditional resource owners, government and non-government organizations, and other stakeholders in one management framework. The approach of “co-management” in which management responsibility is shared between traditional, government and non-government groups, was presented and recommended at the Coastal Fisheries Consortium held in Pohnpei, December 12-14, 2000 (FSM 2000). A similar system of linkage between the FSM National Government, State Governments and Municipal Governments and Communities is envisioned in section 11.0 of the NBSAP and section 4.1 of our YBSAP. The FSM pilot IWP project on Yap will identify and address root causes of the degradation of marine resources in coastal waters in 4 community-managed marine protected areas (MPAs). Since this is a pilot project, the lessons learned from Yap’s IWP project, and from IWP projects undertaken elsewhere will be used to develop larger projects in improved integrated coastal management.

#### 4.7.2 Land Stewardship Program

The connectivity of land and marine areas will be incorporated into stewardship programs. Because most land in Yap is privately owned, this program will be implemented through the development of sustainable land stewardship guidelines which may be used by individuals and communities in managing their resources. The land resource stewardship program will define the best uses for different categories of land on Yap and establish a program to assist land owners to utilize their lands in the best way. Support would not be given for projects that use land resources in unsustainable ways. Earthmoving regulations will be adhered to and projects would go through the coordinated project review process (CPRP).

Yap's watersheds will be mapped and their boundaries incorporated into a GIS system. Guidelines will be developed for good stewardship of watersheds and Public awareness programs will enable individuals to understand the relationship of their actions to the surrounding watershed from land to sea. Locally relevant guidelines for agriculture, agroforestry, recommended species for planting, including fruit tree species; tree farming and management of native forests will be developed and provided for the use of individuals and communities. These guidelines along with resource maps from the GIS system will be available to assist communities in developing village and municipal plans. The completion of such plans will make villages and communities eligible for assistance in carrying out their plans.

#### 4.7.3 Critical Areas for Protection

In order to protect the uniqueness, integrity and functioning of Yap's ecosystem; species, communities, processes and systems that are unique or critical will be defined and protected. Special efforts will be made to protect relatively intact natural systems that connect a series of natural communities from ridge to reef. A variety of management techniques will be employed to maintain the integrity of these systems, including protected areas, enhanced traditional practices and alternative uses of natural areas (for example, some resources may be more valuable as tourist attractions than as resources to be exploited for export). Key ecological targets and areas of special biodiversity significance (ABS) are described in the Blueprint for Conservation of Biodiversity in the FSM. At least one terrestrial ABS and 4 marine ABS will be surveyed and have stewardship plans developed within the first 5 years of this YBSAP.

#### 4.7.4 Stewardship Programs and Environmentally Sustainable Industries

A technical assistance and incentive program will be developed to assist individuals, groups, and communities to undertake projects that simultaneously improve living conditions for people and other biodiversity. These projects will serve as parables that contribute to the concept of sustainable development. Examples of potential projects include: nature trails with guided tours, research on traditional technologies or medicinals, sustainable agriculture projects such as utilizing traditional yam trellises (rather than killing large trees for trellises), enhanced ditch-bed *melie* systems, alternating deliberately planted trees with *melie* systems, alternative energy projects, community water systems, living machines such as composting toilets, community centers and homes that serve as living systems incorporating alternative energy, water systems and gardens into their design; increasing the

abundance and diversity of fruit trees, “ecotourism” in its general form as well as “eco-education” and “eco-research” industries; sustainable wood handicraft and other value added operations, and renewable energy enterprises such as solar and hydro-cell technology.

## **5. Areas of Responsibility, Linkage, Timetable**

Table 1. in the Appendix lists an initial set of projects that have been proposed for our YBSAP with the primary responsible agencies or groups and key partners in the State and National government; and a time line for proposed projects over the next 5 years, with the first year divided into quarters.

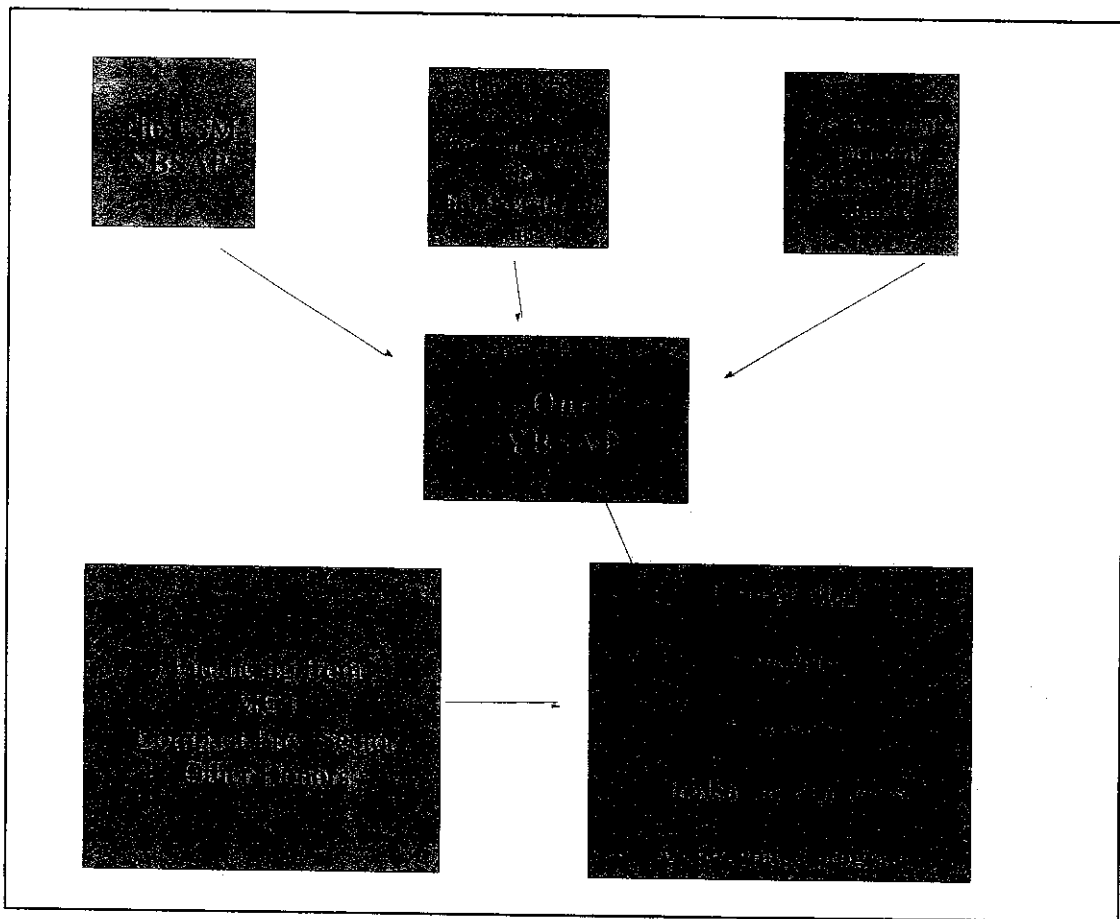
## **6. Financing**

Funding for local biodiversity work has been very limited and most work has been done by outside researchers. Since the completion of the NBSAP and Blueprint, however, a Micronesian Conservation Trust (MCT) has been developed to serve as a financial mechanism for funding work in ABS and on other conservation projects. The MCT also has the capability of receiving and distributing funds earmarked for specific purposes. The updated Compact will provide funding for an environmental sector, and we are hopeful that developed nations will contribute to the implementation of our BSAP and the development of local capacity through scholarships and training opportunities, other grant programs, the inclusion of support for local capacity building in research grant proposals, and in other ways. In addition, as we become better able to define our own needs and develop plans and programs such as our YBSAP, it will not be necessary for regional agencies to conduct needs surveys, freeing up funding for local projects. Likewise, as the capacity development work of regional organizations is achieved, they may be downsized so that their overhead costs will become available to support more direct local efforts to conserve biodiversity.

## **7. Monitoring and Evaluation**

The YBSAP program will be housed with the ESC as the YBSAP Secretariat, with a set of basic materials distributed to YBSAP Task Force and ESC membership. The initial set of basic materials shall include:

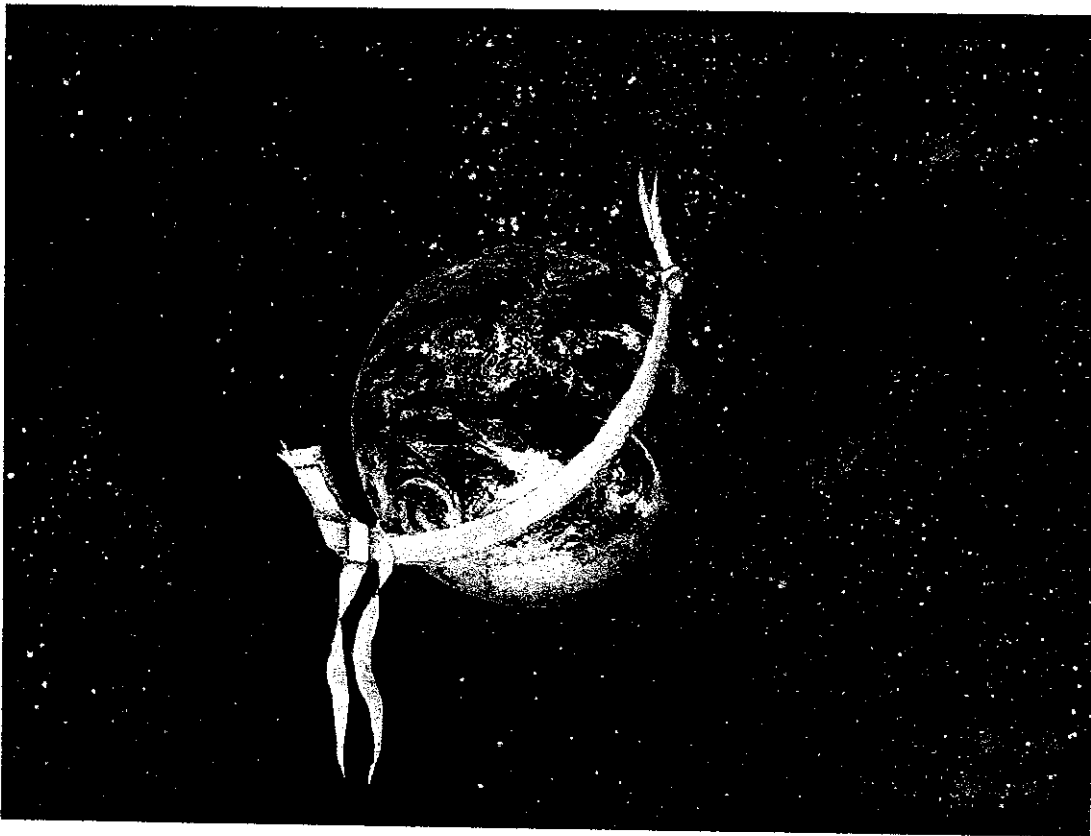
1. The YBSAP
2. The NBSAP
3. The TNC Blueprint for Conserving the Biodiversity of the FSM
4. The Environmental Sector paper of the 2004 FSM Economic Summit



The YBSAP Secretariat will maintain a file of project concepts, proposals, ongoing programs implemented projects as shown above. Each project or program undertaken will include a monitoring and reporting component which will be included in the project file. In order to evaluate the success in addressing the objectives outlined in the YBSAP and ensure continued commitment to them, a review of projects and programs will be conducted every 4 years prior to the meetings of the Council of Parties of the COB. The review will celebrate accomplishments, evaluate threat reduction and identify continued threats to biodiversity as well as highlight areas for improvement. Project and program progress will be reported to the general Public via a "green page" in the local newspaper and via meetings of the ESC whose community representatives will share progress with their respective communities. Special campaigns will also be carried out through the annual cycle of eco-events, culminating in the presentation of environmental awards at the annual Yap Day Observance. Major results will also be submitted to the Governor's office for inclusion in the annual "State of the State" address. Results of the local review will be forwarded to the Presidents SDC for inclusion in the FSM national report to the international Council of Parties to the Convention of Biological Diversity.



As we achieve our objectives, we will share our experience with the world. Inasmuch as islands represent condensed ecosystems at a human scale where it is possible to understand how natural systems work and to develop models of sustainability, we will repay the investment of developed countries in our BSAP through the fulfillment of our role in the world community of being in the vanguard of sustainable development.



*If we wish to save the Earth, the best place to begin is where we are, which in our case is Yap. We envision Yap as the center of an Earth surrounded by a "lubuw" the traditional Yapese dance adornment made from a young coconut leaflet and meant to protect and bring good fortune.*

## 8. References

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## 9. Appendices

- 9.1 Yap State Biodiversity Strategy and Action Plan Priority Actions and Timetable
- 9.2 Yap State Environmental Legislation
- 9.2.1 Public awareness page on natural resource legislation illustrated in 1998 Yap Almanac Calendar
- 9.2.2 Yap State Environmental Legislation compiled by Teresa Filepin in 1997 as part of her summer internship project

APPENDIX: YAP STATE BSAP PRIORITY ACTIONS AND TIMETABLE

Priority Area	Primary Party	2 Key Partners in State	National Government Counterpart & Outside Agencies*1	Timetable				
				2005(Qtrs)	2006	2007	2008	2009
<b>1. Institutional Arrangements</b>								
Support ESC to oversee YBSAP and Climate Change activities and to coordinate a program to mainstream ecologically sustainable development	ESC core group	R&D, Legislature NRSC, OPB	Pres. Council Env. Mgmt. & Sust.Dev. (SDC)	X	X	X	X	X
Establish Natural Resources Advisory Council (NRAC)	COP/ COT	Legislature						
Develop Project Review Process	ESC	Legislature, R&D						
Define roles of government agencies whose work relates to natural resources	R&D	Legislature						
Develop Yap State GIS system	ESC	DAF, Public Safety Fire; COM, OPB	DEA/SOPAC	X	X	X	X	X
Initiate Integrated Program of Sustainable Development	ESC	Planning, R&D	(SDC)	X	X	X	X	X
Develop disaster plan	OPB, DCO	Pub. Wks. Safety	DEA,SOPAC					
<b>2. Secure &amp; Enhance Traditional Knowledge</b>								
Develop legislation to address biopiracy and the protection of traditional knowledge			National Government?					
Pass coordinated project review process which includes review of research proposals	Legislature	ESC, R&D						
Inventory and promote the planting of full range of taro varieties as part of typhoon Sidal recovery effort	YWVA, Rull	DAF, ESC YINS,	DEA, Agriculture	X	X	X	X	X
Evaluate traditional ways of managing erosion & sedimentation	Communities	YINS, DAF, ESC						
Produce book on Traditional use of Natural Resources	YINS	N/A	N/A	X	X	X	X	X
Publish results of funded Yam research	COM-AES, YINS		FSM COM	X				





Obtain services of a veterinarian	DAF			DEA/COM-Land Grant														
Pest and Disease survey	DAF			SPC Plant protection office?														
Research program on ecological impacts of typhoon Sudal	IPIF,	DAF, communities			X				?									
Enforce earthmoving regulations	EPA	AG, Public Works		DEA/HESA/SOPAC	X	X	X	X	X	X				X				X
Map all known sites of large earthmoving and dredging activities and incorporate into GIS	ESC/QU	EPA		SOPAC/DEA/HESA		X	X											
Surveys of past and current dredge sites	EPA					X	X											
Explore alternatives to dredging	Public works	EPA																
Develop solid waste management strategy	EPA	Public works, planning		HESA/SOPA C/SPREP			X	X										
Landfill improvement project	EPA	Public Works					X	X										X
Continue segregating biodegradable wastes at dump site and maintain prohibition of burning	Public works	EPA			X	X	X	X	X	X				X				X
Hold composting workshop	DAF							X										
Develop a program for stormwater management & control of erosion & siltation	Public works, EPA	landowners, planning, MRM/D, DAF		SOPAC				X		X				X				
Community hygiene project	Environmental Health			HESA	X	X	X	X	X	X				X				X
Install composting toilets in outer islands to prevent contamination of water lens	Yap CAP	Public Health, COT		HESA				X		X				X				X
Community waste management projects	Communities (Kaday - KCDO)			SPREP/SOPAC/HESA-FSM														
Persistent organic pollution (POPs) program	EPA	USCG		HESA/SPREP	X	X	X	X	X	X				X				X
Pesticide and hazardous chemicals program	EPA			DEA/SPREP/HESA	X	X	X	X	X	X				X				X

Certification of pesticide applicators	EPA	COM, DAF	DEA				X	X											
Groundwater quality assessment	EPA	COM-FSM	SOPAC/ HESA/WERI	X	X	X	X												
Develop local water quality standards and thresholds and incorporate these into water quality protection regulations	EPA, Rull, AES-Yap	Yap CAP, QU	HESA/DEAS/ OPAC	A	A	R	X	X	X		X		X						X
Waterwatch program	EPA	Yap CAP, schools, communities, Kanifay			X	X	X	X											
Maap Community well development project & Gagil Tomil & Map water project (omnibus Infrastructure development project)	EPA	communities (Maap, Kaday, Fanif)	DOTD&I&A DB			X	X	X											
Outer island water lens assessment	EPA	USCG??	SOPAC/DEA				X	X	X		X		X						
Waste oil removal project	EPA		HESA/PACP OL/SPREP/ TC&I				X		X		X		X						X
Develop oil spill contingency plan and legislation	EPA	MRMD, AG, DCO- OPB	HESA/PACP OL/SPREP	X	X	X	X												
Development of a practical disaster preparedness & recovery plan	OPB	Communities, BSAP group	National DCO/DEAS/ OPAC /UNDP																
Testing of former LORAN station and Ulihi for possible contaminants	OPB/PD&T		DFA/US Embassy	?															
<b>5. Environmental Awareness, Research and Capacity Building</b>																			
Improve process for researcher permit and monitoring process through the Coordinated Project Review process; establish program through which research done by visitors to Yap contributes to capacity building and public awareness	Legislature, ESC	HPO, R&D	National HPO office																
Develop state relevant research needs program	ESC	R&D, Planning																	
Establish Yap Networker newspaper "green page"	ESC	DAF, EPA, MRMD				X	X	X	X		X		X						X
Carry out annual cycle of ecoevents	DAF	ESC		X	X	X	X	X			X		X						X
Watershed awareness program	ESC	DAF, MRMD																	
Public education and pollution awareness program	EPA			X	X	X	X	X		X		X		X					X

School excursions to observe environmental programs	DOE	Upward Bound program																	
Elementary environmental education guest speaker	AES - Yap																		
Student science aquarium project	DOE																		
Extend phase II RARE program to Neighbor islands	MRMD																		
Inform Public of MRCMP when it is completed	MRMD																		
Provide information to NRAC	ESC	DAF, MRMD, Planning, others																	
Identify students interested in natural resource fields, assist them in obtaining scholarships, track students in these fields, provide for their employment	DOE, Rull	R&D, Planning, others								R	X	X	X	X	X				
Ongoing program of on-the-job training for natural resource employees	R&D																		

**6. Stewardship plans and ecological sustainability initiatives**

Update MAREPAC plan and implement program	ESC	MRMD, IWP	?																
Complete MRCMP and begin implementation	MRMD	R&D	DEA																
Develop land stewardship guidelines and begin land stewardship program	DAF	ESC									X	X	X	X	X				
Develop mangrove stewardship guidelines	DAF	ESC, MRMD										X	X	X	X				
Develop watershed stewardship guidelines	ESC	DAF, MRMD										X	X	X	X				
Monitor incidence of invasive species	DAF	ESC	DEA/SPREP	X	X	X	X	X	X	X	X	X	X	X	X				
Initiate Community Visioning and Municipal Plans making use of GIS system and stewardship guidelines	ESC	DAF																	
Initiate program to abate impact of global warming and sea level rise	Planning, Yap CAP	ESC	DEA-Climata change																
Develop pilot interpretive trail/ stone path	DB, Rull Community	YINS, DAF								X	X	X	X	X					
Establish at least 1 savanna restoration trial	DAF	ESC, Communities, USFS?	DEA																
School and COM Biodiversity nature study/ trails/ areas	DB Community school,	COM Yap, YINS, USFS								X	X	X	X	X					





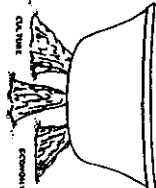
Community forest reserve stewardship program	DB community								X				
Community tree planting programs emphasizing native and useful species, including weaving Pandanus	DB, Uliithi, COT	DAF			X	X	X	X	X				X
Develop 'Pacific Alternative' Educational / ecodevelopment program	YNNS								X	X			X
Sea Turtle programs	COT				X	X	X	X	X		X		X

\*1 National and Outside Agency partners listed in italics were contributed by Mr. Francis Irimai of Office of Planning & Budget

AES-Yap = Agricultural Experiment Station, Yap  
AG = Yap State Office of the Attorney General  
COM = College of Micronesia  
COP = Council of Piling, Chiefs of mainland Yap  
COT = Council of Tanol, Neighbor island Chiefs  
DAF = Yap State Division of Agriculture and Forestry  
DEA = FSM National government Department of Economic Affairs  
DFA = FSM National government Department of Foreign Affairs  
DOE = Department of Education  
ESC = Yap Environmental Stewardship Consortium  
HESA = FSM National government Department of Health, Education & Social Affairs (Includes National level EPA counterpart)  
HPO = Yap State Office of Historic Preservation  
IPIF = Institute of Pacific Islands Forestry of the USFS  
IWP = International Waters Program  
KDCCO = Kaday Community Development Organization  
MRMD = Yap State Marine Resources Management Division  
NRSC = Natural Resources Stewardship Council proposed in legislative bill  
OPB = Yap State Office of Planning and Budget  
OPB = Yap State Planning & Budget  
QU = Queen's University  
R&D = Yap State Department of Resources & Development  
SDC = FSM President's Council on Environmental Management & Sustainable Development  
SOPAC = South Pacific Geodesic  
SPC = South Pacific Commission  
SPREP = South Pacific Regional Environment Program  
USCG = United States Coast Guard  
USFS, PSW = United States Forest Service  
USGS = United States Geological Survey  
Yap CAP = Yap Community Action Agency  
YNNS = Yap Institute of Natural Science

# SOME LAWS TO PROTECT RESOURCES

As levels of outside aid decline, there is danger that the traditional ethic of "Take only what you need" may be replaced with "Sell all you can" or that the use of big machinery on a small island will irretrievably damage resources. People have asked if there is anything they can do about environmental problems. In response to these concerns we briefly summarize some laws designed to protect Yap's environment. For more information contact EPA, Public Safety or the Office of the Attorney General. If you feel these laws are being broken, you may report the offender to the Police or Environmental Protection Agency.



The Environmental Quality Protection act states that: "The Yap State Government, recognizing the profound impact of man's activity on the interrelations of all components of the natural environment, particularly the profound influences of population growth and redistribution, cultural change, resource exploitation, and technological advances, and recognizing further the critical importance of restoring and maintaining environmental quality to the overall welfare and development of man, declares that it is the continuing policy of the State of Yap, in cooperation with the FSM National Government, municipal governments, and other concerned public and private organizations, to use all practical means and measures, including financial and technical assistance, to foster and promote the general welfare, to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations."

There is a 5-member Environmental Protection Board with the power to control and prohibit pollution of air, land and water, that meets quarterly to consider environmental impact assessments and other matters, and to establish record keeping, monitoring and reporting requirements. Meetings of the EPB are announced and are open to the Public.

All development proposals must include an environmental impact assessment. Approved projects must be issued a permit prior to any actions significantly affecting the quality of the environment.



Earthmoving activities require a permit, and earthmoving and dredging operations require sedimentation control measures, and that the disturbed area be stabilized and restored.



It is unlawful to spill oil or other petroleum products into the lagoon or on shore below the high water mark, or in an area where it may flow into the lagoon, or within the waters of the State Fishery zone.



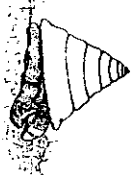
It is unlawful to damage any coral reef or any part of the natural environment that is important to the maintenance of a coral reef, including but not limited to, seagrass areas and mangroves. This includes damage resulting from shipwrecks.



Fruit bats are protected under Yap State and International law. Under Yap State law, the taking, hunting, or intentional disturbance of fruit bats is prohibited except for traditional use by a few villages using traditional methods, and when an open season, not over 30 days per year is opened. The export, selling or purchase of fruit bats is prohibited at any time, even during an open season. CITES prohibits the importation of fruit bats into signatory countries.

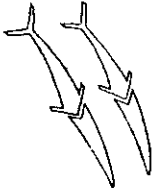


Coconut crabs (ayuy) may not be taken between June 1 and September 30, and those with a shell less than 3 inches may not be taken at any time. Coconut crabs may not be sold commercially at any time.



Trocus may not be harvested out of season. The Public will be notified when there is a season and the places where Trocus may be taken.

The Governor may declare a harvesting season and set a size limit for harvesting clams. Clam meat shall not be sold commercially at any time. Black-lip mother of pearl shells (yar) may not be taken August 1-December 31, and no yar below 6 inches may be taken at any time.



No marine mammals (such as porpoises (guchig), whales (rai), and dugongs) may be taken or killed by a commercial fishing party.



It is illegal to start a fire without a burning permit. You can apply for a permit at the Division of Public Safety and Fire. The application describes fire management.

The FSM has an endangered species law to foster the well-being of threatened and endangered species to prevent the extinction of any species or subspecies from our islands or surrounding waters. Since exotic plants and animals not already established in the FSM can cause ecological upsets, compete with, prey upon, and introduce serious or devastating diseases which could further endanger our indigenous plants and animals or drive them to extinction, it is prohibited to import such exotic plants and animals without a permit.



Fishing with explosives, poisons or chemicals such as Chlorox is illegal, and it is illegal to possess or sell fish caught in this way.

The Governor may declare a temporary moratorium on the taking of a species of marine life in danger of dropping below a minimum desirable maintenance level.



Sea turtles are protected under FSM and International law. Under FSM law, no sea turtles shall be taken on shore, nor shall their eggs be taken. No sea turtles of any size may be taken June 1- August 31, or December 1 - January 31. Under the CITES, no sea turtles or sea turtle parts (such as turtle shell jewelry) may be imported into any of the signatory countries.

Appendix 2.1 Public awareness page on natural resource legislation illustrated in 1998 Yap Almanac Calendar

- 1) 18 YSC, "Environmental Protection"
- 2) 18 YSC, "Environmental Impact Studies"
- 3) 18 YSC, "Right of Entry"
- 4) 3 YSC, "Departments and Offices"
- 5) 11YSC, "Offenses Against Property Rights"

## ENVIRONMENTAL PROTECTION AGENCY REGULATIONS:

- 1) X Adopted Regulations, "Earthmoving Activities"
- 2) X Adopted Regulations, "Earthmoving and Sedimentation Control"
- 3) 63 EPA Adopted Regulations, "Public Health, Safety and Welfare"
- 4) 63 EPA Adopted Regulations, "Air, Land and Water"