

The Hawaii State Plan



CONSERVATION LANDS

***STATE FUNCTIONAL PLAN
1991***

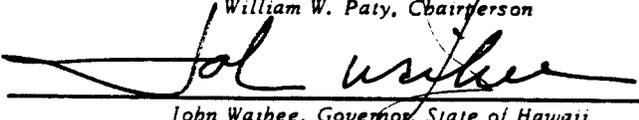
The Hawaii State Plan



CONSERVATION LANDS

*Preparation of this Functional Plan was coordinated by the
DEPARTMENT OF LAND AND NATURAL RESOURCES
in accordance with Chapter 226, Hawaii Revised Statutes.*

Submitted by  Date FEB - 1 1991
William W. Paty, Chairperson

Approved by  Date May 22, 1991
John Waihee, Governor, State of Hawaii



EXECUTIVE CHAMBERS
HONOLULU

JOHN WAIHEE
GOVERNOR

FOREWORD

An entire industry has been built around images of Hawaii as an island paradise -- lush landscapes, white sand beaches, crystalline blue waters, sunny skies, and gentle tradewinds. But, ours is a fragile and vulnerable paradise. Anyone who works to protect our water supplies knows this. Anyone working with our islands' unique native plants and wildlife knows this.

As resident and visitor populations increase, so does the pressure for development of our lands and natural resources. The loss of open space or a scenic view is a loss not only for us, but for our visitors, too.

This Plan provides a management program that allows judicious use of the State's natural resources. It relies, in part, on increased vigilance of individuals and public and private agencies and organizations in protecting these resources. I am confident that implementation of this Plan will make us all better caretakers of this fragile paradise that is our home.


JOHN WAIHEE



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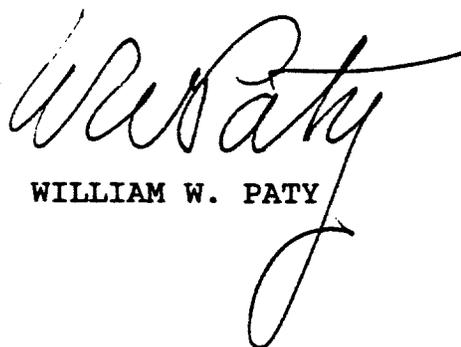
PREFACE

The Conservation Lands Functional Plan addresses the impacts of population growth and economic development on our natural environment and provides a framework for the protection and preservation of our pristine lands and shorelines.

Within the overall theme of balanced growth, the plan also provides for enhancement and increased access to Hawaii's scenic natural resources and the effective management of already developed lands.

Through the creation of resource inventories, management plans and objectives and public information and education initiatives, the plan offers a blueprint for managing and protecting Hawaii's unique and fragile environment.

The Conservation Lands Functional Plan is a tool for the present and a vision for the future.



WILLIAM W. PATY

STATE OF HAWAII
John Waihee, Governor

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CHAPTER I

INTRODUCTION

The Hawaii State Plan, Chapter 226, Hawaii Revised Statutes, provides a long-range guide for Hawaii's future. It establishes State goals, objectives and policies and a Statewide Planning System to carry them out. This system requires the development of State Functional Plans (SFP) which are approved by the Governor. The Functional Plans guide implementation of State and county actions in the following areas: agriculture, conservation lands, education, employment, energy, health, higher education, historic preservation, housing, human services, recreation, tourism, transportation and water resources development.

In 1984-85, the Legislature adopted the first 12 Functional Plans. Revisions to five SFPs related to human needs (education, employment, health, housing and human services) occurred in 1987-88. The Governor approved the plans in 1989 in accordance with amendments to Chapter 226, HRS, which changed approval responsibility to the Governor. In 1989-90, the SFP revision process has focused primarily on the preparation of seven SFPs relating to physical resource needs and development:

<u>Area</u>	<u>Coordinating Agency</u>
Agriculture	Department of Agriculture
Conservation Lands	Department of Land and Natural Resources
Energy	Department of Business, Economic Development and Tourism
Historic Preservation	Department of Land and Natural Resources
Recreation	Department of Land and Natural Resources
Tourism	Department of Business, Economic Development and Tourism
Transportation	Department of Transportation

PURPOSE OF THE STATE FUNCTIONAL PLANS

In conjunction with County General Plans, State Functional Plans are the primary guideposts for implementing the Hawaii State Plan. While the Hawaii State Plan establishes long-term objectives for Hawaii, the State Functional Plans delineate specific strategies of policies and priority actions that need to be addressed in the short-term.

In addition, there is an increased emphasis on the implementation of programs and actions. Therefore, Functional Plans contain specific, implementable actions that can be directly related to budget items.

The purposes of the State Functional Plans with respect to Chapter 226, Hawaii Revised Statutes, are to:

- * Identify major statewide priority concerns;
- * Define current strategies for the functional area;
- * Identify major relationships among functional areas;
- * Provide the direction and strategies for departmental policies, programs and priorities;
- * Provide a guide for the allocation of resources to carry out various State activities in coordination with county activities; and
- * Assist in reconciling and coordinating State and county roles and responsibilities in the implementation of the Hawaii State Plan.

ROLE OF THE STATE FUNCTIONAL PLANS

Functional Plans primarily address priority actions that should be taken within a two- to six-year period. This time-frame coincides with the Biennial Budget and Capital Improvement Program budgetary cycles. The plans primarily affect State operations; however, recommendations for coordinated actions at the federal, county and private sector levels are also included.

State Functional Plans are intended to act in a coordinated fashion with County General Plans and Development Plans. Chapter 226, Hawaii Revised Statutes, states that County General Plans and Development Plans shall be used as a basis in the formulation of State Functional Plans. Conversely, the law also states that the counties shall use approved State Functional Plans as guidelines in formulating, amending and implementing the County General Plans and Development Plans. Thus, State Functional Plans and the County General Plans and Development Plans each draw from the knowledge embodied in the other, and all are essential to implement the Hawaii State Plan. However, State Functional Plans are still not to be interpreted as law or statutory mandates, nor do they mandate county or private sector actions. The Functional Plans assure that problems and issues of statewide importance are addressed, while the County General and Development Plans indicate desired population and physical development patterns for each county, and assure that the unique problems and needs for each county are addressed.

THEME: BALANCED GROWTH

The major theme for these physical Functional Plans focus on the promotion of a balanced growth approach in the use of our limited resources. This recognizes the need for economic development while preserving our fragile environment and multi-cultural lifestyles throughout our island State. The strategies for each SFP are aimed at initiating desired development, while at the same time limiting or discouraging development which would impact negatively on our resource base. It also means enhancing our natural environment and cultural resources through actions aimed at protecting, preserving and promoting their significance. In order to achieve balanced growth, the Functional Plans address issues through the following interrelated elements: Resource Management which ensures the preservation and conservation of fragile, unique ecosystems and other natural physical and historical/cultural resources from loss or degradation; Resource Development which ensures the compatibility of development activities with surrounding communities and infrastructure, and ensures the diversification of economic activities to increase the viability and stability of our economic, environmental and social base; and Infrastructure and Service Supports that promote public and private partnerships for effective management and the timely provision of services and physical infrastructure.

STATE FUNCTIONAL PLAN ADVISORY COMMITTEE

Each Functional Plan has an advisory committee composed of State officials, county officials, members of the public from each county and experts in the particular functional area. Members are appointed by the Governor in accordance with provisions of the Hawaii State Plan, section 226-57, Hawaii Revised Statutes.

The State Functional Plan Advisory Committee plays a major role in advising State Functional Plan agencies in the revision and implementation of the SFPs. The committee provides an opportunity for other governmental agencies, the private sector and the public to participate in the revision process. Representation of county officials on each of the State Functional Plan Advisory Committees ensures that the SFPs take into account major concerns in each county. Once the plan has been approved, the committee meets on a periodic basis to monitor implementation of the Functional Plan.

REVIEW AND REVISION

In order to be responsive to constantly changing needs and conditions, Functional Plans are subject to review and revision at least every two years, the timing of which is linked to the review process of the Hawaii State Plan.

COORDINATION

This Functional Plan document has been produced by the Department of Land and Natural Resources through meetings and consultations with the State Conservation Lands Functional Plan Advisory Committee, the Office of State Planning, other affected State and county agencies, the private sector, and the general public.

The Functional Plan agencies initiate interagency coordination by identifying areas with complementary and competing interests. The review and monitoring activities conducted by their advisory committees provide assurance that areas of complementary and competing relationships continue to be addressed in the implementation process.

While each Functional Plan agency develops a process for public and agency input, overall responsibility for assuring coordination among Functional Plans on a continuing basis rests with the Office of State Planning.

Each of the major participants in the SFP revision process with their corresponding functions are identified in Chart 1.

CHART 1

**KEY PARTICIPANTS IN THE STATE FUNCTIONAL PLAN
REVISION PROCESS ¹**

PARTICIPANT	FUNCTION / ROLE	MANDATE
Governor	• Establishes Advisory Committees.	\$226-55
	• Designates Functional Plan Agencies.	\$226-55
	• Approves State Functional Plans (SFPs).	\$226-56
	• Transmits Functional Plans to Legislature, Mayors, County Councils for information and use.	
Legislature	• Reviews approved Functional Plans to be used as guidelines for resource allocation in implementing State policies.	\$226-57
Department of Budget and Finance	• Prepares guidelines for the preparation and revision of SFPs.	\$226-56
	• Assures that the approved SFPs are used as guidelines in the budgetary review and allocation process.	\$226-52
State Functional Plan Agency	• Responsible for preparing and updating SFP.	\$226-52
	• Works with the SFP Advisory Committee, State and County agencies.	\$226-55
	• Solicits public views and comments on the SFP.	\$226-55
Functional Plan Advisory Committee	• Advises SFP agencies in preparing, implementing, monitoring, and updating SFPs.	\$226-55
Office of State Planning	• Provides recommendations to the Governor, State and County agencies.	\$226-53
	• Prepares reports and special studies for the Governor.	\$226-53
	• Reports on emerging issues for use in the updating of SFPs.	\$226-53
General Public	• Serves on SFP Advisory Committees.	\$226-55
	• Provides comments, concerns, and input on Functional Plans to SFP agencies through public informational meetings, surveys or other agency contacts.	\$226-55

¹ Based on the passage of Act 76, Session Laws of Hawaii 1991, enacted on April 30, 1991, which amended provisions of Part II of the Hawaii State Plan, Chapter 226, H.R.S.

CHAPTER II.

APPROACH TO FUNCTIONAL PLAN ISSUES

LONG-TERM PHILOSOPHY STATEMENT

The overall theme of the Hawaii State Plan is to provide Hawaii's people with individual and family self-sufficiency, social and economic mobility, and community or social well-being.

One of the three goals directed toward implementing this theme is the achievement of a desired physical environment, characterized by beauty, cleanliness, quiet, stable natural systems, and uniqueness that enhances the mental and physical well-being of the people.

Further growth in population and the economy in Hawaii is inevitable but must be balanced with Hawaii's need to minimize the negative effects on the natural environment and the physical and social setting in which those benefits are enjoyed.

To meet these statewide concerns, the State must provide leadership in managing growth. Plans must be formulated in terms of balancing desired development with the protection and enhancement of natural resources. Specifically the State Plan presents priority guidelines to:

- 1) Direct future urban development away from critical environmental areas or impose mitigating measures so that negative impacts on the environment would be minimized.
- 2) Identify critical environmental areas in Hawaii to include but not be limited to the following: watershed and recharge areas; wildlife habitats on land and in the ocean; areas with endangered species of plants and wildlife; natural streams and water bodies; scenic and recreational shoreline resources; open space and natural areas; historic and cultural sites; areas particularly sensitive to reduction in water and air quality; and scenic resources.
- 3) Utilize Hawaii's limited land resources wisely, providing adequate land to accommodate projected population and economic growth needs while ensuring the protection of the environment and the availability of the shoreline, conservation lands, and other limited resources for future generations.
- 4) Protect and enhance Hawaii's shoreline, open spaces, and scenic resources.

With these guidelines and the goal of balanced growth, the Conservation Lands Functional Plan establishes a rational basis for managing conservation lands and natural resources in Hawaii.

One of the primary methods for achieving this balance and major theme of this functional plan is to insure that pristine and primarily pristine lands are managed for their inherent value while development and manipulation of lands and resources occur only on formerly developed lands.

OVERVIEW OF THE PLAN

While Hawaii is the nation's fourth smallest state in land area, it has one of the most varied environments. It also has more than 25 times the shoreline per area of any other state. These statistics plus the fact that much of Hawaii's land is difficult to access provides a difficult task to those in charge of overseeing the State's natural resources.

Major areas of concern addressed by this Plan include continued efforts to broaden public use of natural resources and lands while protecting and preserving the lands from overuse. For example, establishment of a system of scenic streamside parks and a system of nature trails will not only permit greater use of these areas but will help to control use and protect the streams and trails both through regulations and a greater appreciation by the public of major natural resources. Another example of protection through management is the purchase of coastal lands and beaches to help ease the growing use of these areas.

Another area of importance addressed by this Plan is the aquaculture industry. This Plan outlines actions which should be taken to promote its development and marketing as part of Hawaii's emphasis on economic diversification with environmentally compatible industries and balanced use of much of its land and water resources.

OBJECTIVES AND SCOPE OF PLAN

The objective of the State Conservation Lands Functional Plan is to provide for a management program allowing for judicious use of the State's natural resources balanced with the need to protect these resources to varying degrees.

The Plan outlines responsibilities and roles of the public and private sectors in use, management, and protection of natural environmental resources. The bulk of the responsibility lies with the State, although in areas such as preservation of endangered species, international, federal, and private assistance is needed. Counties play a key role in directing urban and agricultural activities and in retaining open space and cultural sites as lands become urbanized.

As used in this plan, "Conservation District" means that area delineated by the Land Use Laws contained in sec. 205.2 (HRS) while "conservation lands" means those lands included in this Plan as listed below as major resources. It should also be noted that "use" includes a wide range of activities from building a major resort to hiking and hunting to scientific research.

Major resources to be managed or protected for our current population and future generations are:

- (1) Lands, waters and other resources within the Conservation District already designated for conservation;
- (2) Land and water bodies over which the Board of Land and Natural Resources and the Commission on Water Resource Management have responsibility for natural and cultural resources; and
- (3) Land and water areas which offer significant opportunities for the management of native plant and animal resources.

COORDINATION OF THE STATE CONSERVATION LANDS FUNCTIONAL PLAN WITH OTHER STATE FUNCTIONAL PLANS

The State Conservation Lands Functional Plan shares a close relationship with other state functional plans concerned with the use of natural resources and/or environmental protection including the Energy, Health, Historic Preservation, Recreation, and Water Resources Development Functional Plans. These plans include many complementary as well as potentially competing interests. By approaching an issue from many directions, the State can insure that all the varied interests involved are addressed and where necessary compromises can be made.

For example, development of parks is necessary to provide areas of public recreation and enjoyment. However, it is equally necessary to balance this development with the view of conserving natural resources. Therefore, efforts should be made to develop parks only in areas which have already been disturbed. In those few areas where a wilderness park is established, mitigating measures must be taken to insure that the park's development does not degrade the existing environment.

ISSUE AREAS ADDRESSED IN PLAN

Conservation lands include a wide range of areas from streams to forests to publicly and privately owned facilities, to areas next to urban developments. Rather than divide the Plan into types of uses, or habitats, it has been divided into three issue areas directly related to planning and management:

- (1) Inventories of resources and background information and basic research;
- (2) Management; and
- (3) Education and public information.

1. Inventories of resources and background information and basic research.

Essential to any management program is a concise inventory of what is to be managed including as much information about each part as possible. The more information that is readily available, the easier and more concise the management decisions can be. Current methods of information retrieval and analysis of conservation lands are not as efficient as they would be if put into a computer data base program. Such programs are now in use in various parts of the country and could be converted to use in Hawaii.

Once a comprehensive inventory is begun, additional information may be added as it becomes available. As with any management program, each piece of data can be used in establishing the criteria for management which can then be applied equally to similar areas. For example, the need to increase and protect watershed areas, especially forest lands within and outside of Conservation Districts, is growing in importance as demands on water supplies rise. Conversion of forest lands to other uses and intensive grazing of forest lands contribute to flood runoff and soil erosion and decreases percolation to recharge groundwater bodies. Pressure to use watershed lands for other purposes will continue, but land use planners need to consider the effects of further encroachments on forest lands in terms of the value of lost water, costs of increased flooding, and soil loss. Once such basic information is available, management decisions can become more focused.

2. Management.

As the State's population grows, so does the demand for Hawaii's limited natural resources. In the 1980's the population of Hawaii rose by approximately 200,000. In 1990 nearly 150,000 tourists were present in the State at any one time. This demand for limited resources is compounded by the fact that many of the resource uses conflict with one another. Working to resolve these conflicts and provide access for people to enjoy and use the many varied uses is a priority issue for those responsible for conservation lands management. Identification of areas needing protection or enhancement and development of plans to accomplish this is a necessary first step.

Hawaii contains some of the most fragile and rare resources in the world. Many species exist in Hawaii and nowhere else. Population and use pressures put their survival in jeopardy. Protection of these species and their ecosystems must be continually strengthened and new techniques and methods developed to preserve them.

Management which includes protection of fragile resources also includes utilization of resources to benefit the people of Hawaii. With the expansion of the State's economy, diversified agricultural products and expanded recreational areas have become increasingly important. Environmentally sound sustainable development of aquaculture, fisheries, and tree farms provide natural resource based opportunities for diversification and marketing. Enhancement through the expansion of areas under protection or conservation and restoration of degraded environments will ensure the availability of valued recreational resources for future generations.

Increased use of natural resources and conservation lands requires a similar increase in enforcement of the laws and regulations which apply to these areas. Illegal uses of these lands such as growing marijuana can produce great damage in isolated areas. Overuse can also be destructive. A final area in need of enforcement is that of conflicting use. Where many uses are allowed in one area, these uses often conflict and regulations must be instituted and enforced to prevent harm to the environment or injury to the users.

3. Education and public information.

Without the understanding of the public which uses the State's natural resources, no amount of management can protect the resources from degradation and loss. As pressure for use of these natural resources increases, the public must be made aware of the need for protection and mitigation measures to lessen the impact their use has on the natural resources.

The growing awareness of the public to environmental concerns has increased interest in environmental information and management decisions. Data concerning conservation lands and natural resources should be available and processes developed to encourage meaningful public and agency input into the management of the state's resources.

CHAPTER III.

OBJECTIVES, POLICIES, AND IMPLEMENTING ACTIONS

This chapter presents the issue statements, objectives, policies, and implementing actions of the State Conservation Lands Functional Plan.

ISSUE AREA I: INVENTORIES OF RESOURCES AND BACKGROUND INFORMATION AND BASIC RESEARCH

- * Establishment of data bases for inventories of existing lands and resources.
- * Establishment of criteria for management of land and natural resources.

This first issue area contains those actions necessary to more easily obtain the basic information to make management decisions. This information includes such data as physical characteristics, habitat type and current use even to the type and number of buildings or improvements on a particular property.

Current methods to retrieve these types of information include a cross-section of agencies and often require reference to maps. Because this method may at times be difficult and somewhat inaccurate, this Plan provides for the organization (in a computer data base) of this information into inventories of resources whether they are parcels of land or aquatic areas. Once the initial information base is established, additional data may be added to keep the data base current.

Provision of this information is essential for the formulation of management plans. Management decisions must be based on current data which will be available easily and efficiently if organized in a data base connected directly to the geographic area.

OBJECTIVE IA: Establishment of data bases for inventories of existing lands and resources.

Policy IA(1): Develop and maintain a centralized statewide data base of conservation areas and natural resources.

Implementing Action IA(1)a: Develop a centralized land inventory and natural resource data base in conjunction with the State Geographic Information System.

Lead Organization: DLNR
Assisting Organizations: OSP; DOT; HHA; OEQC; UH;
TNC/HHP; Counties; Bishop Museum; US Soil Conservation Service; various environmental organizations

Start Date: FY91-92, subject to availability of funds
Total Budget Estimate: \$300,000
Target Location: Statewide
Comments: Centralized data base and overlay of identified items.

Policy IA(2): Develop and maintain a centralized statewide data base of all permits/actions relative to land usage within the Conservation District.

Implementing Action IA(2)a: Establish a Conservation District land-use data base to include CDDA's, temporary variances, emergency authorizations, correspondence, EIS/EA reviews, and enforcement structured to serve the department and the State through linkage with the State's Geographic Information System.

Lead Organization: DLNR Office of Conservation and Environmental Affairs
Assisting Organizations:
Start Date: FY91-92, subject to availability of funds
Total Budget Estimate: \$100,000
Target Location: Statewide
Comments: Archive of all land use permits/approvals and issue items.

Policy IA(3): Locate, preserve and encourage the availability of sites suitable for commercial aquaculture by both private and public sector landowners.

Implementing Action IA(3)a: Identify public and privately owned sites suitable for commercial aquaculture.

Lead Organization: DLNR Aquaculture Development Program
Assisting Organizations: UH-SOEST (Sea Grant) and CTAHR; and Counties
Start Date: FB91-93
Total Budget Estimate: Current funding
Target Location: Statewide
Comments: Current land use trends make finding sites for commercial aquaculture more difficult. Use of computer assisted inventory and mapping methods could improve locating sites. Also, direct contact with major landholders through meetings and conferences will be carried out.

Policy IA(4): Identify appropriate lands for commercial forest production.

Implementing Action IA(4)a: Conduct inventory of selected high-quality hardwood plantations for future harvest.

Lead Organization: DLNR Division of Forestry and Wildlife
Assisting Organizations: U.S. Soil Conservation Service; and
Counties
Start Date: 1990
Total Budget Estimate: \$50,000
Target Location: Island of Hawaii
Comments: The initial inventory will be conducted on the Big
Island. Other counties will be reviewed in the future.

Policy IA(5): Conduct inventories of aquatic and terrestrial
resources.

Implementing Action IA(5)a: Assemble a comprehensive inventory
of critical marine and freshwater environmental areas in Hawaii
to include wetlands; watershed and recharge areas; wildlife
habitats (ocean); areas with endangered species; and natural
streams and waterbodies.

Lead Organization: DLNR Division of Aquatic Resources
Assisting Organizations: NMFS; USFWS; COE; WRRC; TNC/HHP; DLNR
Divisions of Water Resource Management and Forestry and
Wildlife; private organizations; and citizens.
Start Date: FB91-93, subject to availability of funds
Total Budget Estimate: \$110,000/year (includes federal funds)
Target Location: Statewide
Comments: Studies to be initiated to obtain baseline inventory
data, for monitoring marine and freshwater environments, and
to assess impact on aquatic environments.

Implementing Action IA(5)b: Develop the Main Hawaiian Islands
Marine Resource Investigation Project to enhance understanding of
coastal resources and effects of fishing and environmental
changes.

Lead Organization: DLNR Division of Aquatic Resources
Assisting Organizations: UH Sea Grant; NMFS; USFWS; HIMB;
TNC/HHP; WPRFMC; and private organizations.
Start Date: FB91-93, subject to availability of funds
Total Budget Estimate: \$600,000/year (includes federal funds)
Target Location: Maunalua Bay, Oahu; Hilo Bay, Kailua-Kona,
Hawaii; Kihei, Maui; Hanalei, Kauai
Comments: Specific actions include:

- 1) survey of resources and incorporation of commercial and
recreational catch information into a geographic database to
be used by management;
- 2) studies of impacts of human-induced environmental change on
growth and productivity;
- 3) design and implementation of resource monitoring; and
- 4) formulation of an MHI Resource Management Plan. These
projects will supplement recent initiatives for Kaneohe Bay.

Implementing Action IA(5)c: Survey and monitor populations of nominated and listed endangered and threatened marine species.

Lead Organization: NMFS; USFWS; DLNR Division of Aquatic Resources.

Assisting Organizations: DLNR Division of Forestry and Wildlife; TNC/HHP; private organizations; citizens; and conservation groups.

Start Date: FB91-93, subject to availability of funds

Total Budget Estimate: \$10,000/year

Target Location: Statewide

Comments: Activities will include handling of reported strandings of whales, marine turtles, Hawaiian monk seals, etc., and development of appropriate survey methods, in support of federal agencies with primary responsibility over threatened and endangered species and marine mammals.

Implementing Action IA(5)d: Survey populations of nominated and listed endangered and threatened terrestrial species, native terrestrial ecosystems and terrestrial wildlife habitats.

Lead Organization: DLNR Division of Forestry and Wildlife; and USFWS

Assisting Organizations: TNC/HHP; National Plant Society; and Bishop Museum

Start Date: FY91-92, subject to availability of funds

Total Budget Estimate: \$300,000

Target Location: Statewide

Comments:

Implementing Action IA(5)e: Complete multi-resource forest inventory for Maui and Hawaii.

Lead Organization: DLNR Division of Forestry and Wildlife

Assisting Organizations: TNC/HHP

Start Date: FB93-95, subject to availability of funds

Total Budget Estimate: \$400,000

Target Location: Hawaii and Maui

Comments: Multi-resource forest inventories have been completed for Molokai, Oahu, and Kauai. Completion of Maui and Hawaii would allow for a consistent data base on forest resources.

Policy IA(6): Survey important native aquatic and terrestrial ecosystems and species.

Implementing Action IA(6)a: Define habitat requirements of native species with special reference to stream flow; define appearance and distribution of undesirable exotics.

Lead Organization: DLNR Division of Aquatic Resources

Assisting Organizations: COE; USFWS; WRRC; and DLNR Division of Water Resource Management

Start Date: FB91-93, subject to availability of funds
Total Budget Estimate: \$125,000/year (includes federal funds)
Target Location: Statewide
Comments: Provides data for appropriate management of important aquatic ecosystems and species.

Implementing Action IA(6)b: Define habitat requirements of native terrestrial species with special reference to those which are endangered. Define impacts and distribution of undesirable non-native organisms, control the expansion or distribution of these populations, where possible, and take measures to prevent the introduction of new organisms.

Lead Organization: DLNR Division of Forestry and Wildlife
Assisting Organizations: USFWS; TNC/HHP
Start Date: FB91-93, subject to availability of funds
Total Budget Estimate: \$350,000 per year
Target Location: Statewide
Comments: Provides data for management of important terrestrial ecosystems and species.

OBJECTIVE IB: Establishment of criteria for management of land and natural resources.

Policy IB(1): Develop and institute new controls in regions where necessary to ensure equitable sharing of water use commensurate with replenishment, and long-term availability.

Implementing Action IB(1)a: Investigate urban encroachment into watersheds and near Conservation District areas.

Lead Organization: DLNR Division of Conservation and Resources Enforcement
Assisting Organizations: DLNR Division of Land Management, Division of Water Resource Management, the Office of Conservation and Environmental Affairs, and Division of Forestry and Wildlife; and County Boards of Water Supply
Start Date: 1991
Total Budget Estimate: \$80,000
Target Location: Statewide
Comments: Redelineate Conservation District boundaries to encompass lands with watershed potential.

Implementing Action IB(1)b: Establish instream flow standards that would sustain streamflows needed for instream uses of value.

Lead Organization: DLNR Division of Water Resource Management
Assisting Organizations: UH Water Resources Research Center;
USFWS; DLNR Division of Aquatic Resources; U.S. Soil
Conservation Service; U.S. Army Corps of Engineers; and
Counties.

Start Date: 1990

Total Budget Estimate: \$325,000

Target Location: Statewide

Comments: Establish instream flow standards for identified
streams. Summary of streams recommended for priority
establishment of instream flow standards:

Oahu: Maunawili Stream/Kawainui Marsh Stream System and
Kahana and Punaluu Streams

Maui: Hanawi Stream

Other streams on these and other islands will continue to be
evaluated for establishment of instream flow standards.

Implementing Action IB(1)c: Develop criteria for minimizing the
effects of stream dewaterment, including the maintenance of
conservation flow patterns, if such usage is warranted and
unavoidable.

Lead Organization: DLNR Division of Aquatic Resources
Assisting Organizations: COE; USFWS; WRRRC; and DLNR Division of
Water Resource Management

Start Date: FB91-93, subject to availability of funds

Total Budget Estimate: \$125,000/year (includes federal funds)

Target Location: Statewide

Comments: Existing procedures for defining the effects of
reduction in stream flows have proven unreliable and have
minimal predictive value.

Policy IB(2): Develop regulatory criteria for stream channel
alterations to protect instream uses.

Implementing Action IB(2)a: Establish engineering guidelines
for environmentally-sensitive channel alterations.

Lead Organization: DLNR Division of Water Resource Management
Assisting Organizations: DLNR Division of Aquatic Resources;
UH Water Resources Research Center; U.S. Army Corps of
Engineers; and County public works departments

Start Date: 1990

Total Budget Estimate: \$50,000

Target Location: Statewide

Comments: New guidelines are needed to ensure that future
channel alterations maintain aquatic habitat and resources.

Implementing Action IB(2)b: Develop criteria to better evaluate mitigation measures required of stream alteration projects.

Lead Organization: DLNR Division of Water Resource Management
Assisting Organizations: U.S. Army Corps of Engineers
Start Date: FY 92
Total Budget Estimate: \$45,000
Target Location: Statewide
Comments:

Policy IB(3): Identify and assess high quality and other streams for preservation.

Implementing Action IB(3)a: Identify potential locations for scenic streamside parks.

Lead Organization: DLNR Division of Water Resource Management
Assisting Organizations: DLNR Division of State Parks and Division of Conservation and Resources Enforcement; and County park agencies
Start Date: 1991
Total Budget Estimate: \$50,000/year
Target Location: Statewide
Comments: Scenic streamside parks provide much-needed passive urban recreation areas and possibly an urban-rural trail system. Streamside parks prevent urban encroachment on the stream and floodway, preventing future flood damage to structures and minimizing the need for erosion and flood control structures. This project will be done utilizing the data presented in the draft of the Hawaii Stream Assessment Study of June 1990 prepared by the Department of Land and Natural Resources.

Policy IB(4): Study movement and behavior of fish in local waters.

Implementing Action IB(4)a: Identify movement and behavior of opakapaka in local waters.

Lead Organization: DLNR Division of Aquatic Resources
Assisting Organizations: NMFS; fishing industry organizations; and individual fishers
Start Date: FB91-93, subject to availability of funds
Total Budget Estimate: \$35,000/year (includes federal funds)
Target Location: Ewa, Oahu, and Penguin Bank (Molokai/Oahu), initially.

Comments: Currently, the opakapaka has the highest priority. Preliminary results of tagged opakapaka recoveries suggest the internal tag used in the pilot study is unsuitable and some other alternative means should be investigated. Juvenile fish and adult fish are not found in same grounds and the study will also determine movement between habitats.

Policy IB(5): Establish standards and feasibility of alternate uses of public lands.

Implementing Action IB(5)a: Determine the optimum use of public lands in the short-term and the long-term.

Lead Organization: DLNR
Assisting Organizations: Counties
Start Date: FY91-92, subject to availability of funds
Total Budget Estimate: To be determined
Target Location: Statewide
Comments:

Implementing Action IB(5)b: Determine the economics, feasibility, and desirability of beach enhancement of public lands.

Lead Organization: DLNR
Assisting Organizations: Counties
Start Date: FY91-92, subject to availability of funds
Total Budget Estimate: To be determined
Target Location: Statewide
Comments:

Implementing Action IB(5)c: Address the opportunity costs (in the short- and long-term) if selective uses, such as landfills, sewage treatment plants, and other noxious or obtrusive uses, are allowed on the property.

Lead Organization: DLNR
Assisting Organizations: Counties
Start Date: FY91-92, subject to availability of funds
Total Budget Estimate: To be determined.
Target Location: Statewide
Comments:

ISSUE AREA II: MANAGEMENT

- * Development of natural resources and land management plans.
- * Protection of fragile or rare natural resources.
- * Enhancement of natural resources.
- * Appropriate development of natural resources.
- * Promotion and marketing of appropriate natural resources designated for commercial development.
- * Increased enforcement of land and natural resource use laws and regulations.

The second issue area of this Conservation Lands Functional Plan contains management objectives. Using the data available in the inventories, management plans can be devised, and strategies for resource use can be balanced with protection measures. This issue area also includes enforcement measures.

It is important to note that management exists on a continuum from preservation to development for general public use. Depending on the resource and its location, specific management decisions must be made to provide for necessary growth balanced with resource conservation. Because of the fragile and isolated nature of Hawaii's natural resources, stress must be placed on the knowledge that many of these resources, be they individual species or entire ecosystems, occur nowhere else in the world. It is equally important to recognize the diversity of our natural resources. We must insure that these resources are conserved for future generations.

OBJECTIVE IIA: Establishment of plans for natural resources and land management.

Policy IIA(1): Formulate and maintain a management plan for resources and lands having significant conservation value.

Implementing Action IIA(1)a: Update the Conservation District Plans (prepared in 1977).

Lead Organization: DLNR Division of Forestry and Wildlife, Office of Conservation and Environmental Affairs and Division of Land Management

Assisting Organizations: Counties

Start Date: FY91-92, subject to availability of funds

Total Budget Estimate: \$750,000

Target Location: Statewide

Comments: Based on increasing conflicts relating to appropriate resource protection and use in the Conservation District, the Conservation District Plans must be reviewed and updated to ensure that our valuable natural resources are protected and preserved. At the same time, this update should also define or re-define those areas that are more appropriately designated for varying degrees of development and/or management to ensure sustained enhancement and use of our natural resources.

Implementing Action IIA(1)b: Review existing and future uses of public lands and forest reserves.

Lead Organization: DLNR Division of Land Management and Division of Forestry and Wildlife
Assisting Organizations: DLNR Divisions; OSP; State departments; Counties; private landowners; and community associations
Start Date: FY91-92, subject to availability of funds
Total Budget Estimate: \$850,000
Target Location: Statewide
Comments:

Implementing Action IIA(1)c: Evaluate applications for use of conservation lands and other uses to prevent adverse impacts on aquatic resources.

Lead Organization: DLNR Division of Aquatic Resources
Assisting Organizations: OEQC; DOH; DLNR Office of Conservation and Environmental Affairs; County planning agencies; NMFS; USFWS; COE; private organizations and citizens
Start Date: FB91-93, subject to availability of funds
Total Budget Estimate: \$100,000/year (includes federal funds)
Target Location: Statewide
Comments: This action will provide technical guidance on resource distribution, existing uses, potential for impact, and means of avoiding or minimizing adverse impact to project developers, acting agencies, and permit authorities. Five hundred comments are expected to be prepared per year.

Implementing Action IIA(1)d: Develop plans or mechanisms to assess and mitigate the impacts of energy and water development and establish means to monitor those impacts and enforce mitigative measures.

Lead Organization: DLNR
Assisting Organizations: DLNR Division of Water Resource Management, Division of Aquatic Resources, Division of Forestry and Wildlife, and Division of Land Management; DBED Energy Division; HNEI; and Counties
Start Date: FY92
Total Budget Estimate: Operating funds.
Target Location: Statewide
Comments: Assessment of potential environmental impacts and the formulation of mitigating actions are frequently necessary when the development of a specific resource is being studied. For example, exploration for geothermal energy, hydroelectric and water resource development may have negative environmental impacts on natural resources that should either be avoided or mitigated. Once activities are underway, monitoring and enforcement should be in place to assure compliance with mitigation plans.

Policy IIA(2): Identify and enhance appropriate lands for commercial forest production and sustained-yield hunting.

Implementing Action IIA(2)a: Write a forestry action plan with GACC and UH to identify bottlenecks in the forest commodity sector.

Lead Organization: DLNR Division of Forestry and Wildlife;
GACC; UH College of Agronomy & Soil Sciences; and Counties
Assisting Organizations:
Start Date: 1990
Total Budget Estimate: \$50,000
Target Location: Statewide
Comments:

Policy IIA(3): Identify and enhance appropriate areas for wildlife sanctuaries.

Implementing Action IIA(3)a: Finish the end-result master planning for the new Kawainui Marsh Wildlife Sanctuary on Oahu.

Lead Organization: DLNR Division of Forestry and Wildlife
Assisting Organizations: DLNR Division of State Parks and
Division of Historic Preservation
Start Date: 1990
Total Budget Estimate: \$250,000
Target Location: Kawainui Marsh, Oahu
Comments:

Implementing Action IIA(3)b: Identify and prepare development and management plans for identified high priority wildlife sanctuary sites for waterbirds, seabirds and forest birds with emphasis on the alala.

Lead Organization: DLNR Division of Forestry and Wildlife
Assisting Organizations: USFWS; NPS; and TNC
Start Date: 1990
Total Budget Estimate: \$125,000
Target Location: Statewide
Comments: Will provide guideline for budgetary requests and implementing management or resources.

OBJECTIVE IIB: Protection of fragile or rare natural resources.

Policy IIB(1): Develop protection and preservation of habitats of rare and endangered wildlife and native ecosystems in Hawaii.

Implementing Action IIB(1)a: Establish sanctuaries for populations of endangered plant and animal species when necessary to protect critical habitats.

Lead Organization: DLNR Division of Forestry and Wildlife
Assisting Organizations: USFWS; NMFS; DLNR Division of Aquatic Resources; UH-Hilo; private organizations; and citizens.
Start Date: FB91-93, subject to availability of funds
Total Budget Estimate: \$100,000/year (includes federal funds)
Target Location: Statewide
Comments: To provide assistance as appropriate to federal agencies with overall management responsibility.

Implementing Action IIB(1)b: Develop coordination with federal and county agencies and interest groups in efforts to protect and assist recovery of threatened and endangered species and habitats.

Lead Organization: USFWS; NMFS; and DLNR Division of Aquatic Resources.
Assisting Organizations: USFWS; NMFS; DLNR Division of Forestry and Wildlife; UH-Hilo; private organizations; and citizens.
Start Date: FB91-93, subject to availability of funds
Total Budget Estimate: \$10,000/year (includes federal funds)
Target Location: Statewide
Comments: This activity will lead to assisting federal lead agencies mandated to prepare and implement Recovery Plans for threatened and endangered species, including those for the Hawaiian Monk Seal and Hawaiian Sea Turtles.

Implementing Action IIB(1)c: Develop new techniques to manage Hawaii's endangered plants and ecosystems.

Lead Organization: DLNR Division of Forestry and Wildlife
Assisting Organizations: National Tropical Botanical Gardens; Waimea Arboretum; and Center for Plant Conservation.
Start Date: 1990
Total Budget Estimate: \$300,000
Target Location: Statewide
Comments:

Implementing Action IIB(1)d: Monitor populations of nominated and listed endangered and threatened terrestrial species.

Lead Organization: DLNR; and USFWS
Assisting Organizations: USFWS; UH-Hilo; private organizations; and citizens
Start Date: FB91-93, subject to availability of funds
Total Budget Estimate: \$100,000
Target Location: Statewide
Comments: Expected to provide assistance to appropriate federal agencies with overall management responsibility.

Policy IIB(2): Intensify protection of important native aquatic ecosystems and species.

Implementing Action IIB(2)a: Establish new Marine Life Conservation Districts (MLCD) and monitor existing ones.

Lead organization: DLNR Division of Aquatic Resources
Assisting Organizations: DOT; County Aquatic Life and Wildlife Advisory Committees (ALWAC); NMFS; USFWS; Counties; private organizations; and citizens.
Start Date: FB91-93, subject to availability of funds
Total Budget Estimate: \$25,000/year (includes federal funds)
Target Location: Statewide
Comments: New MLCDs suggested include Anini Beach, Poipu, Hanalei, Na Pali, Kilauea Point reef areas, Kauai; Moanui, Molokai; Kapoho Tidepool area and Makaiwa Bay areas, Hawaii.
(See Recreational Functional Plan 1A(1)b)

Implementing Action IIB(2)b: Review federal no-net-loss policy regarding wetlands for possible State adoption.

Lead Organization: DLNR Division of Forestry and Wildlife
Assisting Organizations: DLNR Division of Water Resource Management
Start Date: 1991
Total Budget Estimate: No additional cost
Target Location: Statewide
Comments:

Implementing Action IIB(2)c: Prevent artificial alterations in water flow of ecologically important streams, and restore natural flows when appropriate; develop methods to propagate native stream species for population restoration; identify critical stream habitats for preservation; prevent introduction of undesirable exotics, control or eradicate when possible.

Lead Organization: DLNR Division of Aquatic Resources
Assisting Organizations: COE; USFWS; WRRRC; DOA; and Counties
Start Date: FB91-93, subject to availability of funds
Total Budget Estimate: \$125,000/year (includes federal funds)
Target Location: Statewide
Comments: Provides actions needed to protect important aquatic ecosystems and species.

Policy IIB(3): Develop a coordinated approach to wetlands protection, acquisition, and management.

Implementing Action IIB(3)a: Protect the following top-priority wetlands through fee acquisition, land banking, cooperative agreements, conservation easements, cooperation with private landowners, and other strategies:

Kauai: (1) Wailua-Opaekaa Valley Area
(2) Waita Reservoir and Wetlands
(3) Hanalei-Waioli Area
(4) PuuPoa Marsh
Oahu: (1) Kawainui Marsh
(2) Heeia Wetlands
(3) Ukoa Pond
Molokai: (1) Paialoa Pond and Wetlands (in the Kamalo area)
Hawaii: (1) Opaepa Pond (at Makalawena)
(2) Aimagapa Pond (near Honokohau)
(3) Waimanu Valley

Lead Organization: DLNR Division of Forestry and Wildlife
Assisting Organizations: DLNR Division of Aquatic Resources; and Counties
Start Date: FY91-92, subject to availability of funds
Budget Estimate: \$200,000
Target Location: Statewide
Comments: The above list includes current priorities for wetlands protection and is subject to change.
(See Recreation Functional Plan VIC(1)a)

Implementing Action IIB(3)b: Clarify and coordinate agency roles and responsibilities for wetlands acquisition and management.

Lead Organization: DLNR Division of Forestry and Wildlife
Assisting Organizations: USFWS; DLNR Divisions of Aquatic Resources and State Parks; and Counties
Start Date: FY91-92
Total Budget Estimate: Operating funds
Target Location: Statewide
Comments: (See Recreation Functional Plan VIC(1)b)

Implementing Action IIB(3)c: Establish partnerships with the private sector for the acquisition, restoration, and management of wetlands.

Lead Organization: DLNR Division of Forestry and Wildlife
Assisting Organizations: USFWS; Nature Conservancy; DLNR Division of State Parks; and other private agencies
Start Date: FY92-93
Total Budget Estimate: Operating funds
Target Location: Statewide
Comments: (See Recreation Functional Plan VIC(1)c)

Policy IIB(4): Continue aggressive management to protect Hawaii's intact forested ecosystems.

Implementing Action IIB(4)a: Expand the current efforts to protect the State's natural area reserves (NARS) from non-native animals and plants to portions of the Forest Reserve in the Protection subzone.

Lead Organization: DLNR Division of Forestry and Wildlife
Assisting Organizations: TNC; USFWS; and NPS
Start Date: FY 92
Total Budget Estimate: \$1,000,000/year
Target Location: Statewide
Comments: Provides accelerated actions and augments existing programs needed to protect Hawaii's intact native forested ecosystems.

Implementing Action IIB(4)b: Expand the current efforts to protect lands of natural area quality on private lands by developing a public/private cost sharing program.

Lead organization: DLNR Division of Forestry and Wildlife
Assisting Organizations: TNC
Start Date: FY 92
Total Budget Estimate: \$1,750,000/year
Target Location: Statewide
Comments: Provides accelerated actions needed to protect Hawaii's intact native forested ecosystems on private lands.

OBJECTIVE IIC: Enhancement of natural resources.

Policy IIC(1): Expand marine and fresh water fishing areas and promote fishing opportunities.

Implementing Action IIC(1)a: Develop understanding of, and voluntary solutions to fishing gear use and conflict.

Lead Organization: DLNR Division of Aquatic Resources
Assisting Organizations: Western Pacific Fishery Management Council; fishing industry; and individual fishers.
Start Date: FB91-93, subject to availability of funds
Total Budget Estimate: \$10,000/year
Target Location: Waianae; Kaneohe; Hilo; and Pohoiki.
Comments: Recent arrivals of longline fishing vessels from the U.S. mainland will take time to learn the fishing grounds and local fishing customs.
(See Recreation Functional Plan IVB(2)d)

Implementing Action IIC(1)b: Develop fishery management areas and game fish populations and habitats.

Lead Organization: DLNR Division of Aquatic Resources
Assisting Organizations: DOT; ALWAC; private organizations; and citizens.
Start Date: FB91-93, subject to availability of funds
Total Budget Estimate: \$75,000/year.
Target Location: Statewide

Comments: Establish new areas as needed (e.g., Kaunakakai, Molokai; Kona Coast, including Kailua Bay (expansion) and Keauhou Bay (new). On-going surveys are required to determine effectiveness of measures limiting or prohibiting certain fishing gear at specific FMA locations. Fish counts and creel censusing at the Waikiki-Diamond Head Shoreline FMA, Oahu, Puako Reef FMA, Hawaii, and other established areas.

Implementing Action IIC(1)c: Enhance fish habitat with expanded artificial reefs.

Lead Organization: DLNR Division of Aquatic Resources
Assisting Organizations: COE; USCG; US NAVY; NMFS; and DOT.
Start Date: FB91-93, subject to availability of funds
Total Budget Estimate: \$210,000/year (includes federal funds).
Target Location: Statewide
Comments: Artificial reefs are to be expanded with additions of reef building materials. Artificial reefs have increased standing crop of fish life by as much as 35 times. The deepwater artificial reef transforms barren bottom areas into habitats attractive to opakapaka, ehu, onaga, and other fishes which live in deeper waters.
(See Recreation Functional Plan IA(1)5)

Implementing Action IIC(1)d: Expand the management of freshwater Public Fishing Areas (PFA).

Lead Organization: DLNR Division of Aquatic Resources
Assisting Organizations: USFWS; DOA; COE; ALWAC; other public and private organizations; and citizens.
Start Date: FB91-93, subject to availability of funds
Total Budget Estimate: \$225,000/year (includes federal funds)
Target Location: Statewide
Comments: Activities to include hatching and culturing trout, channel catfish, bass, and tucunare to fingerling size for stocking PFAs and improve and maintain facilities (i.e., cutting back grass, herbiciding, fixing boat ramp facilities, etc.). More PFA's to be established.

Policy IIC(2): Expand and enhance outdoor recreation opportunities and other resource uses.

Implementing Action IIC(2)a: Upgrade and enhance the State's outdoor recreational infrastructure of roads, trails, and shelters.

Lead Organization: DLNR Division of Forestry and Wildlife
Assisting Organizations: DLNR Divisions of State Parks and Conservation and Resources Enforcement; Na Ala Hele; county parks & recreation agencies; and private groups (e.g., Honolulu Trail and Mountain Club, Sierra Club)

Start Date: 1990
Total Budget Estimate: \$2,000,000/year
Target Location: Statewide
Comments: See Recreation Functional Plan IIA(3)

Implementing Action IIC(2)b: Expand nature trail system.

Lead Organization: DLNR Division of Forestry and Wildlife
Assisting Organizations: DLNR Division of Historic Preservation; Na Ala Hele; and Counties
Start Date: 1990
Total Budget Estimate: \$100,000
Target Location: Statewide
Comments: See Recreation Functional Plan IIA(3)a,b

Implementing Action IIC(2)c: Improve public hunting opportunities by expanding cooperative game management areas (Molokai and Lanai) and improving game habitat on newly created and established public hunting areas (Kapapala (Hawaii); Kahakuloa (Maui); Kuaokala (Oahu); and Kekaha (Kauai)).

Lead Organization: DLNR Division of Forestry and Wildlife
Assisting Organizations: DLNR Division of Land Management
Start Date: 1990
Total Budget Estimate: \$300,000/year
Target Location: Statewide
Comments:

Implementing Action IIC(2)d: Enhance watershed cover on private forest lands by increasing service forestry responsiveness to private landowners by providing more technical assistance and funds through a new forest stewardship program.

Lead Organization: DLNR Division of Forestry and Wildlife
Assisting Organizations: U.S. Forest Service; Resource Conservation & Development Councils; U.S. Soil Conservation Service; and Counties.
Start Date: 1990
Total Budget Estimate: \$250,000
Target Location: Statewide
Comments: Hawaii & Maui emphasis

Implementing Action IIC(2)e: Provide and improve public access to the shoreline and to mauka areas as condition on leases, executive orders, easements, and other encumbrances on lands with recreation and/or educational potential.

Lead Organization: DLNR Division of Land Management
Assisting Organizations: DLNR Division of Forestry and Wildlife; DLNR Division of Historic Preservation; Na Ala Hele; and Counties
Start Date: 1991
Total Budget Estimate: \$300,000
Target Location: Statewide

Comments: Proposed amendments to Chapter 520 will encourage private landowners to open up their lands for public use if they receive liability protection from the State.

Implementing Action IIC(2)f: Establish Na Ala Hele demonstration trails and support functioning advisory councils on all major islands.

Lead Organization: DLNR Division of Forestry and Wildlife
Assisting Organizations: Na Ala Hele Advisory Groups
Start Date: 1990
Total Budget Estimate: \$200,000
Target Location: Statewide
Comments:

OBJECTIVE IID: Appropriate development of natural resources.

Policy IID(1): Develop and expand resources to protect natural shorelines and wilderness recreation areas.

Implementing Action IID(1)a: Acquire undeveloped shoreline properties.

Lead Organization: DLNR Divisions of Land Management, State Parks and Forestry and Wildlife
Assisting Organization: County recreation and planning agencies
Start Date: 1991
Total Budget Estimate: To be determined.
Target Location: Statewide
Comments: For list of areas recommended for acquisition see the State Recreation Functional Plan. Development of these resources includes mitigation of adverse impacts where possible. (See Recreation Functional Plan IA(1)a)

Policy IID(2): Develop aquatic resources.

Implementing Action IID(2)a: Improve assistance to fishers in locating fish at sea by installing and maintaining additional Fish Aggregation Devices.

Lead Organization: DLNR Division of Aquatic Resources
Assisting Organizations: US Navy; COE; USCG; NMFS; and DOT.
Start Date: FB91-93, subject to availability of funds
Total Budget Estimate: \$300,000/year (includes federal funds)
Target Location: Statewide
Comments: Fish catches reportedly made around FADs currently average between one to two million pounds per year and are expected to increase. (See Recreation Functional Plan IVB(2)d)

Implementing Action IID(2)b: Provide a full range of development assistance for commercial aquaculture farms including staff support and research, demonstration and extension assistance.

Lead Organization: DLNR Division of Aquatic Resources; and Aquaculture Development Program
Assisting Organizations: UH (SOEST-Sea Grant Program, CTAHR); DOA; and private pond operators
Start Date: FB91-93, subject to availability of funds
Total Budget Estimate: \$173,000/year
Target Location: Statewide
Comments: Encourage small-scale hatcheries to produce freshwater Malaysian Prawn (Macrobrachium rosenbergii) seed for stocking ponds. Advisory services to include pond and hatchery management, water chemistry laboratory support, library reference services.

Implementing Action IID(2)c: Establish a State natural stock enhancement research and development program for commercial and recreationally important species.

Lead Organization: DLNR Division of Aquatic Resources
Assisting Organizations: UH Hilo/HIMB; Oceanic Institute; Waikiki Aquarium; NMFS; and private pond operators
Start Date: FB91-93, subject to availability of funds
Total Budget Estimate: \$150,000/year (includes federal funds)
Target Location: Statewide
Comments: Although major efforts have been expended with mass production of freshwater Malaysian prawn post larvae for industry needs (to stock ponds), research on various commercial and recreationally important species will be emphasized.

Policy IID(3): Develop recreational and archaeological resources on the shoreline and mauka areas.

Implementing Action IID(3)a: Acquire and/or develop areas for historic preservation.

Lead Organization: DLNR Division of Historic Preservation
Assisting Organizations: Counties
Start Date: FY91-92, subject to availability of funds
Total Budget Estimate: To be determined.
Target Location: Statewide
Comments: For list of areas recommended for acquisition or development, see the State Historic Preservation Functional Plan. Development of these resources includes mitigation of adverse impacts where possible.

Implementing Action IID(3)b: Establish a statewide trails and access system.

Lead Organization: DLNR Division of Forestry and Wildlife
Assisting Organizations: DLNR Division of State Parks; City & County Parks & Recreation; Maui County; National Parks; Na Ala Hele; and private groups.
Start Date: 1990

Total Budget Estimate: \$400,000/year
Target Location: Statewide
Comments: See Recreation Functional Plan IIA(3)a,b.

Policy IID(4): Expand the forest reserve system and game management areas.

Implementing Action IID(4)a: Purchase areas for inclusion in the Forest Reserve System.

Lead Organization: DLNR Division of Forestry and Wildlife
Assisting Organizations: Division of Land Management
Start Date: 1990
Total Budget Estimate: \$2,000,000
Target Location: South Kona, Hawaii; and Waioli, Kauai
Comments:

Implementing Action IID(4)b: Open up new game management areas at Kahakuloa on Maui; Puu Waa Waa/Puuanahulu on Hawaii; and other appropriate areas.

Lead Organization: DLNR Division of Forestry and Wildlife
Assisting Organizations: DLNR Division of Land Management
Start Date: 1990
Total Budget Estimate: \$200,000
Target Locations: Kahakuloa on Maui; Puu Waa Waa/Puuanahulu on Hawaii
Comments:

Policy IID(5): Determine feasibility of product development for commercially viable natural resources and assist in initial steps necessary for such determination.

Implementing Action IID(5)a: Determine the feasibility of development of a statewide system of public, public/private and private aquaculture parks.

Lead Organization: DLNR Aquaculture Development Program
Assisting Organizations: DOA; and Counties
Start Date: FB91-93, subject to availability of funds
Total Budget Estimate: \$150,000
Target Location: Statewide
Comments: Approximately 30% of existing farms are located in park situations and over 60% of farm expansions or new farms want to locate in parks. The need to develop new parks and expand to other islands is clearly indicated.

Implementing Action IID(5)b: Provide State Phase I construction funds to upgrade the University of Hawaii's Mariculture Research and Training Center into the "Hub" facility of a statewide network of pond research and technology transfer facilities.

Lead Organization: DLNR Aquaculture Development Program in cooperation with UH-SOEST (HIMB) and CTAHR
Assisting Organizations: Private industry
Start Date: FY91-92, subject to availability of funds
Total Budget Estimate: \$4 million CIP funds (\$2 million in FY 91-92)
Target Location: Kahaluu, Oahu
Comments: The 1989 State Legislature in response to the recommendations of a conceptual planning and site identification study provided \$500,000 for detailed planning and design of the "Hub" facility. The next step is provision of planning, design, and construction funding in the next fiscal year.

Implementing Action IID(5)c: Assist in planning, designing and the construction of a satellite aquaculture pond research and technology transfer facility on Maui that will be part of the statewide network of facilities.

Lead Organization: DLNR Aquaculture Development Program in cooperation with Maui County.
Assisting Organizations: UH-SOEST (HIMB) and CTAHR; and private industry
Start Date: FB91-93, subject to availability of funds
Total Budget Estimate: \$1 million CIP funds
Target Location: To be finalized.
Comments: A conceptual plan for the Maui County facility has been prepared and \$1.5 million of county funds have been authorized. The State contribution of \$1 million would complete initial funds required for planning, design, and construction. Facilities in other counties are at the planning stage.

Implementing Action IID(5)d: Examine designating selected coastal areas on all islands as sites where direct ocean intake and discharge is allowed for commercial aquaculture purposes under a master permit.

Lead Organization: DLNR Aquaculture Development Program
Assisting Organizations: DOH; private sector; Counties
Start Date: FB91-93, subject to availability of funds
Total Budget Estimate: \$100,000
Target Location: Statewide
Comments: Recent studies funded by the federal government have built an information base to begin seriously addressing the effluent issue in Hawaii. This project was suggested as a next step.

Implementing Action IID(5)e: Determine mechanisms to authorize the use of ancient Hawaii fishponds for commercial aquaculture.

Lead Organization: DLNR Aquaculture Development Program
Assisting Organizations: Counties; commercial aquaculture groups; and Hawaiian organizations

Start Date: FB91-93, subject to availability of funds

Total Budget Estimate: \$50,000

Target Location: Statewide

Comments: Hawaii has many ancient fishponds that are under and unutilized because of regulatory constraints. Preservation through appropriate, expanded commercial use is an option currently being developed by a DLNR funded demonstration project. Permit streamlining would greatly assist widespread implementation of the pond management techniques. The participation of Hawaiian organizations will help insure that their interests in these historical structures are addressed.

Implementing Action IID(5)f: Participate in legislative action to establish a Forest Stewardship Assistance Program to encourage private landowners to improve management of their forest lands.

Lead Organization: DLNR Division of Forestry and Wildlife
Assisting Organizations: State Legislature; U.S. Forest Service; and County tax departments.

Start Date: 1991

Total Budget Estimate: \$400,000

Target Location: Statewide

Comments: Current property tax structure and lack of an effective public cost-sharing program has resulted in deforestation and watershed degradation on private land.

Implementing Action IID(5)g: Study possible reforestation in Central and West Molokai.

Lead Organization: DLNR Division of Forestry and Wildlife
Assisting Organizations: DLNR Division of Water Resource Management; DHHL; National Park Service; Counties; and private landowners.

Start Date: 1992

Total Budget Estimate: \$50,000

Target Location: Molokai

Comments:

Implementing Action IID(5)h: Provide increased funding for high leverage aquaculture research to support the further development of the commercial industry and establish Hawaii as a national and international center of excellence.

Lead Organization: DLNR Aquaculture Development Program

Assisting Organizations: UH; and private sector

Start Date: FB91-93, subject to availability of funds

Total Budget Estimate: \$400,000/year additional project funding

Target Location: Statewide

Comments: Project funds have suffered a gradual erosion of "research buying power" calculated at nearly 80% based on inflation. Currently, upwards of \$1.5 million in requests for funding--about three times the funds available--are received from the public and private sector each year. Increased funding would meet the present needs for the industry, take advantage of the increasing opportunities to attract federal funds and meet the challenges of becoming a world leader in technology.

Implementing Action IID(5)i: Assist in planning, designing and the construction of a satellite aquaculture pond research and technology transfer facility on the Big Island that will be part of the statewide network facilities.

Lead organization: DLNR Aquaculture Development Program in cooperation with the University of Hawaii at Hilo (UHH); and Hawaii County
Assisting Organizations: UH-SOEST (HIMB) and CTAHR; and private industry.
Start Date: FB91-93, subject to availability of funds
Total Budget Estimate: \$1,000,000 CIP funds
Target Location: To be finalized
Comments: A conceptual plan for the Hawaii County facility is being prepared by UHH. Phase I planning, design and construction funds of an estimated \$1,000,000 will be needed to build a functional facility.

OBJECTIVE IIE: Promotion and marketing of appropriate natural resources designated for commercial development.

Policy IIE(1): Establish broader project applicability, easier availability and realistic loan limits in public and private sector aquaculture loan programs.

Implementing Action IIE(1)a: Examine raising the loan limits for the Aquaculture Revolving Loan Fund, DOA, to better meet the current needs of the industry.

Lead Organization: DOA
Assisting Organizations: DLNR
Start Date: FB91-93
Total Budget Estimate: Current funding
Target Location: Statewide

Comments: The 1990 legislative session substantially raised the loan limits for agribusiness loans in recognition of the increased costs to start and expand a business in Hawaii. Aquabusinesses are subject to similar costs and have not been adjusted for the last five years.

Policy IIE(2): Expand aquaculture business assistance and investment incentives in the public sector to increase Hawaii's attractiveness as a location for aquaculture.

Implementing Action IIE(2)a: Maintain a full service aquaculture development program for the aquaculture industry to focus on improving the business climate; promoting investments, products and services; assisting in business start-ups; and solving problems and improving operations through research and extension.

Lead Organization: DLNR Aquaculture Development Program

Assisting Organizations:

Start Date: FB91-93, subject to availability of funds

Total Budget Estimate: \$78,108/year (three new positions).

Target Location: Statewide

Comments: With the tenfold expansion of the local industry, assistance to the industry and coordination of statewide development has more than doubled. Likewise, the expanding nationalization and internationalization of the Hawaii industry has increased the opportunities to provide proactive assistance, promote the industry globally and attract new business. Increased staffing is needed to serve the expanding industry, address more complex coordinating responsibilities and realize growth opportunities.

Implementing Action IIE(2)b: Network with existing federal, State, county, and private sector general business development and management assistance programs to increase their scope and availability to Hawaii's aquaculture entrepreneurs.

Lead Organization: DLNR Aquaculture Development Program

Assisting Organizations: DBED

Start Date: FB91-93

Total Budget Estimate: Current funding

Target Location: Statewide

Comments: Public and private organizations skilled in general business and business management have as their purpose to assist small business development in Hawaii. While not knowledgeable in aquaculture technologies, these organizations may have relevant expertise to further "backstop" the growing aquaculture industry. Efforts will be made to identify resources within these organizations and to network with them to increase services to the industry.

Policy IIE(3): Increase the demand for Hawaii's aquaculture products and services in local, national and international markets.

Implementing Action IIE(3)a: Develop a generic marketing plan for Hawaii's aquaculture products and services that identifies local and export markets.

Lead Organization: DLNR Aquaculture Development Program

Assisting Organizations: Private industry

Start Date: FY91-92

Total Budget Estimate: Current funding

Target Location: Statewide

Comments: Expansion and diversification of the industry has emphasized the need for planned and coordinated direct marketing efforts. The first step to increased State assistance is formulation, in cooperation with industry, of a generic marketing plan.

Implementing Action IIE(3)b: Establish a high profile promotional campaign for Hawaii's aquaculture products and services.

Lead Organization: DLNR Aquaculture Development Program

Assisting Organizations: DBED; DOA; and private industry

Start Date: FY91-93, subject to availability of funds

Total Budget Estimate: \$60,000/year additional marketing support

Target Location: Statewide

Comments: Aggressively positioning Hawaii's products and services as unique and of the highest quality requires expanding promotional efforts using the latest media and marketing approaches. Additional resources are needed to leverage cooperation and participation by producers, distributors in major media preparation and trade show events. Approximately two to three to one match (non-state to state funds) can be expected.

Policy IIE(4): Assist the fishing industry to develop new markets and improve production and processing of fishery products.

Implementing Action IIE(4)a: Support development and trials of practical technology for improving fish quality.

Lead Organization: DLNR Division of Aquatic Resources
Assisting Organizations: UH Department of Food Sciences and
Technology; County; and private companies and individual
fishers.

Start Date: FB91-93, subject to availability of funds

Total Budget Estimate: \$50,000/year

Target Location: Statewide

Comments: Make available to fishers simple test kit to detect
ciguatoxin poison in fish.

OBJECTIVE IIF: Increase enforcement of land and natural resource use
laws and regulations.

Policy F(1): Diminish the destruction of wildlife habitats and
vegetation caused by marijuana growers and improve public safety.

Implementing Action IIF(1)a: Increase enforcement measures to
remove marijuana growers.

Lead Organization: DLNR Division of Conservation and Resources
Enforcement

Assisting Organizations: DLNR Division of Forestry and Wildlife

Start Date: FB91-93, subject to availability of funds

Total Budget Estimate: To be determined.

Target Location: Statewide

Comments:

Policy IIF(2): Strengthen monitoring and enforcement of use laws
and regulations.

Implementing Action IIF(2)a: Acquire additional enforcement
staff to enforce use laws and regulations.

Lead Organization: DLNR Division of Conservation and Resources
Enforcement

Assisting Organizations:

Start Date: FB91-93, subject to availability of funds

Total Budget Estimate: To be determined.

Target Location: Statewide

Comments:

Implementing Action IIF(2)b: Monitor lessees to ensure
compliance with State permits, leases, easements, uses permitted
and approved in the Conservation District, and executive orders
granted are consistent with the management plans for
Conservation Districts and State-owned lands and other agency
plans.

Lead Organization: DLNR

Assisting Organizations:

Start Date: 1991

Total Budget Estimate: To be determined.

Target Location: Statewide

Comments:

ISSUE AREA III: EDUCATION AND PUBLIC INFORMATION AND AGENCY COORDINATION

- * Expansion and promotion of a public conservation ethic through education.
- * Improved information access for the public and governmental agencies.

The final issue area of this Plan focuses on supplying conservation lands information to the public and government agencies. This includes both education initiated by those in charge of managing conservation lands and access to information requested by the public or agencies.

Because of the current methods of organizing information about lands and natural resources, providing this information to sister agencies or the public is difficult if not impossible. By establishing inventories in data bases, the availability of this information will be immeasurably increased.

Also, with the increased population of the State, it is important to involve the public in an understanding of our lands and natural resources, their protection and uses. Education is the first step toward achieving public interest and input into these areas which affect all of us in every facet of our lives.

OBJECTIVE IIIA: Expansion and promotion of a public conservation ethic through education.

Policy IIIA(1): Develop and implement conservation education programs for the general public and visitors.

Implementing Action IIIA(1)a: Develop and implement ongoing environmental education and information programs to address subjects such as litter, vandalism, poaching, anchor damage of coral, depletion of recreational fisheries, and destruction of native upland ecosystems.

Lead Organization: DLNR; DOE; and UH College of Education
Assisting Organizations: SOEST (Sea Grant Program); DBED Ocean Resources and Tourism Branches; DOH; OEQC; DOT, OSP Coastal Zone Management Program; the Aquarium; DLNR Division of Aquatic Resources and Division of Forestry and Wildlife; Hawaii Nature Center; Moanalua Gardens Foundation; and Hawaii Visitors Bureau

Start Date: 1991

Total Budget Estimate: To be determined.

Target Location: Statewide

Comments: Government agencies should be encouraged to coordinate with the private sector to promote environmental awareness.

Implementing Action IIIA(1)b: Develop and implement ongoing interpretive programs to promote an appreciation and understanding of unique natural and cultural resources.

Lead Organization: DLNR Division of State Parks, Division of Forestry and Wildlife, Division of Aquatic Resources, and Division of Historic Preservation
Assisting Organizations:
Start Date: 1991
Total Budget Estimate: To be determined.
Target Location: Statewide
Comments:

Policy IIIA(2): Develop and implement information and educational programs directed toward specific areas and users of lands and natural resources.

Implementing Action IIIA(2)a: Develop and improve the Aquatic Resources Education program.

Lead Organization: DLNR Division of Aquatic Resources
Assisting Organizations: DOE; USFWS; NMFS; DBED Ocean Resources; DOT; and other public and private organizations.
Start Date: FB91-93, subject to availability of funds
Total Budget Estimate: \$230,000/year (includes federal funds)
Target Location: Statewide
Comments: Project supports fish restoration and management efforts by increasing awareness among resource users of the need for conservation ethics and of their responsibility to aquatic resources, the environment, and the rights of others. Segments involve planning and research to identify and assess specific aquatic resources "problems" for developing information and education strategies. Specific applications of educational and informational methods will be modified as appropriate. Range of program activities includes coordination and liaison among users and other interested organizations and governmental agencies.

Implementing Action IIIA(2)b: Develop a public education program on beach park use for users of limited ocean and shoreline recreation resources and facilities.

Lead Organization: DLNR Division of State Parks
Assisting Organizations: DBED Ocean Resources; TORCH; DOT; HVB; and County parks agencies
Start Date: FB91-93, subject to availability of funds
Total Budget Estimate: To be determined.
Target Location: Statewide
Comments:

Implementing Action IIIA(2)c: Carry out a targeted educational campaign to encourage Hawaii's major landholders to identify and make sites available for aquaculture.

Lead Organization: DLNR Aquaculture Development Program
Assisting Organizations:
Start Date: FY91-92
Total Budget Estimate: Current funding
Target Location: Statewide
Comments: Approaches to be used include: presentations, informational packages, seminars, and provision of free resource assessment teams.

Implementing Action IIIA(2)d: Conduct targeted educational activities and public printed materials that aid in the evaluation of risk in commercial aquaculture ventures.

Lead Organization: DLNR Aquaculture Development Program
Assisting Organizations: UH and private sector
Start Date: FB91-93
Total Budget Estimate: Current funding
Target Location: Statewide
Comments: Realistic risk assessment materials are key to getting investors, bankers and landowners involved in the industry.

Implementing Action IIIA(2)e: Continue publication and distribution of quarterly newsletter to inform public of current management issues and provide a forum to discuss natural resource issues.

Lead Organization: DLNR
Assisting Organizations:
Start Date: 1990
Total Budget Estimate: \$50,000/year
Target Location: Statewide
Comments:

Implementing Action IIIA(2)f: Increase outdoor educational opportunities by expanding nature trail system and providing educational materials.

Lead Organization: DLNR Division of Forestry and Wildlife
Assisting Organizations: Hawaii Nature Center; Bishop Museum; DLNR Division of State Parks and Division of Historic Preservation; National Park Service; and Department of Education
Start Date: 1990
Total Budget Estimate: \$100,000
Target Location: Statewide
Comments: Education materials will include information on proper forest behavior including sections on:

- 1) importance and prevention of seed transportation;
- 2) emphasis on low impact use;
- 3) overpicking of lei materials; and
- 4) use of fire.

Implementing Action IIIA(2)g: Develop interpretive programs and research facilities at Kualoa Regional Park for the preservation of Hawaiian culture, artifacts, and history. Acquire other archaeological sites adjacent to the park, particularly Molii Pond.

Lead Organization: City & County of Honolulu Department of Parks & Recreation.

Assisting Organizations: DLNR Division of Historic Preservation

Start Date: FY91-92

Total Budget Estimate: \$100,000

Target Location: Oahu

Comments: Interpretive programs would introduce the public to the historical and archaeological significance of the Kualoa area. Funds are needed to further ascertain specific archaeological sites within the park and to build facilities to store, categorize, and analyze artifacts as they are found. (See Recreation Functional Plan IIA(1)b and Historic Preservation Functional Plan F2b).

Implementing Action IIIA(2)h: Improve the hunter licensing system.

Lead Organization: DLNR Division of Conservation and Resources Enforcement

Assisting Organizations: DLNR Division of Forestry and Wildlife

Start Date: 1990

Total Budget Estimate: \$30,000/year

Target Location: Statewide

Comments:

Policy IIIA(3): Develop and implement educational programs for schools.

Implementing Action IIIA(3)a: Work with the 'Ohia Project to assist development of a land use component in their seventh and eighth grade curricula.

Lead Organization: DLNR Division of Forestry and Wildlife; and the 'Ohia Project

Assisting Organizations: DOE; Bishop Museum; and Moanalua Gardens Foundation

Start Date: 1990

Total Budget Estimate: \$10,000

Target Location: Statewide

Comments: Honolulu Office

OBJECTIVE IIIB: Increase access to land and natural resource data by the public and increase cooperation between agencies by making access to land and natural resource information more efficient.

Policy IIIB(1): Ensure that technical and decision-making information is available to the general public and pertinent decision-makers.

Implementing Action IIIB(1)a: Implement a public and agency information program relative to inventory and land use decision-making data bases.

**Lead Organization: DLNR
Assisting Organizations: Counties
Start Date: FY91-92, subject to availability of funds
Total Budget Estimate: To be determined.
Target Location: Statewide
Comments:**

Policy IIIB(2): Develop educational programs and mediation mechanisms to mitigate and resolve conflicts over use of conservation lands or natural resources.

Implementing Action IIIB(2)a: Establish a centralized environmental education materials depository.

**Lead Organization: DLNR Division of Forestry and Wildlife
Assisting Organizations: DLNR agencies; Counties; Hawaii Nature Center; Bishop Museum; and Nature Conservancy
Start Date: 1990, subject to availability of funds
Total Budget Estimate: \$100,000
Target Location: Statewide
Comments: Honolulu Office**

Implementing Action IIIB(2)b: Encourage participation in conferences, workshops and training programs.

**Lead Organization: DLNR
Assisting Organizations:
Start Date: 1990
Total Budget Estimate: Operating funds.
Target Location: Statewide
Comments: Participate in the second annual environmental forum held by the Natural Resources Defense Council**

Implementing Action IIIB(2)c: Develop conflict management procedures where appropriate to avoid, manage and resolve conflicts over use of conservation land or natural resources.

Lead Organization: DLNR

Assisting Organizations: OSP; DOH; DOT; DBED; Counties;
Community and environmental organizations
Start Date: FY92
Total Budget Estimate: To be determined
Target Location: Statewide
Comments: Where appropriate retain the services of conflict
management professionals such as the Office on Alternative
Dispute Resolution to: a) develop processes that can be used to
assess the potential for conflicts and develop procedures to
avoid them; b) assess the nature of existing conflicts and
determine methods to better manage them; and c) analyze
entrenched disputes and determine the appropriateness of the
various means of resolution.

APPENDIX

LIST OF ACRONYMS

ALWAC: Aquatic Life and Wildlife Advisory Committee
CDUA: Conservation District Use Assessment
CIP: Capital Improvement Project
COE: Army Corps of Engineers
CTAHR: College of Tropical Agriculture and Human Resources
DBED&T: State Department of Business, Economic Development & Tourism
DHHL: State Department of Hawaiian Home Lands
DLNR: State Department of Land and Natural Resources
DOA: State Department of Agriculture
DOE: State Department of Education
DOH: State Department of Health
DOT: State Department of Transportation
EA: Environmental Assessment
EIS: Environmental Impact Statement
FAD: Fish agregation device
FB: Fiscal Biennium
FY: Fiscal Year
GACC: Governor's Agriculture Coordinating Committee
HIMB: Hawaii Institute of Marine Biology
HRS: Hawaii Revised Statutes
MHI: Main Hawaii Islands (Marine Resource Investigation Project)
MLCD: Marine Life Conservation District
NARS: Natural Areas Reserve System
NMFS: National Marine Fisheries Service
OEQC: Office of Environmental Quality Control
OHA: Office of Hawaiian Affairs
OSP: Office of State Planning
PFA: Public Fishing Area
TNC/HPP: The Nature Conservancy/Hawaii Heritage Program
TORCH: The Ocean Research Council of Hawaii
UH: University of Hawaii
USCG: United States Coast Guard
USFWS: United States Fish and Wildlife Service
WPRFMC: Western Pacific Regional Fisheries Management Council
WRRC: Water Resource Research Center