U.S. Fish and Wildlife Service

Pacific Islands Fish and Wildlife Office

Conservation Partnerships Program Annual Report

Fiscal Year 2005

The Year in Review: Fiscal Year 2005

The Pacific Islands Conservation Partnerships Program provides cost-share funding, biological expertise and technical assistance to landowners, nonprofit organizations, and community groups for the restoration of native habitats. Our program is part of the U.S. Fish and Wildlife Service's Pacific Islands Office, based in Honolulu, Hawai'i.

Developing partnerships with non-Federal landowners is essential to conserving threatened and endangered species and their habitats in Hawaii and the other Pacific Islands. This is due to the high number of listed species and the low percentage of land in Federal ownership. Hawaii, for example, is home to a quarter of the nation's listed species, and over 90 percent of land in Hawai'i is in private or State ownership.

In fiscal year 2005, the Pacific Islands Conservation Partnerships Program provided approximately $2.5 million to cooperators for habitat restoration. This level is lower than the previous two years, and one program, the Hawaii Biodiversity Joint Venture has been removed completely. Nevertheless, we were able to help a variety of partners implement important restoration projects to benefit a wide range of natural communities and listed species.

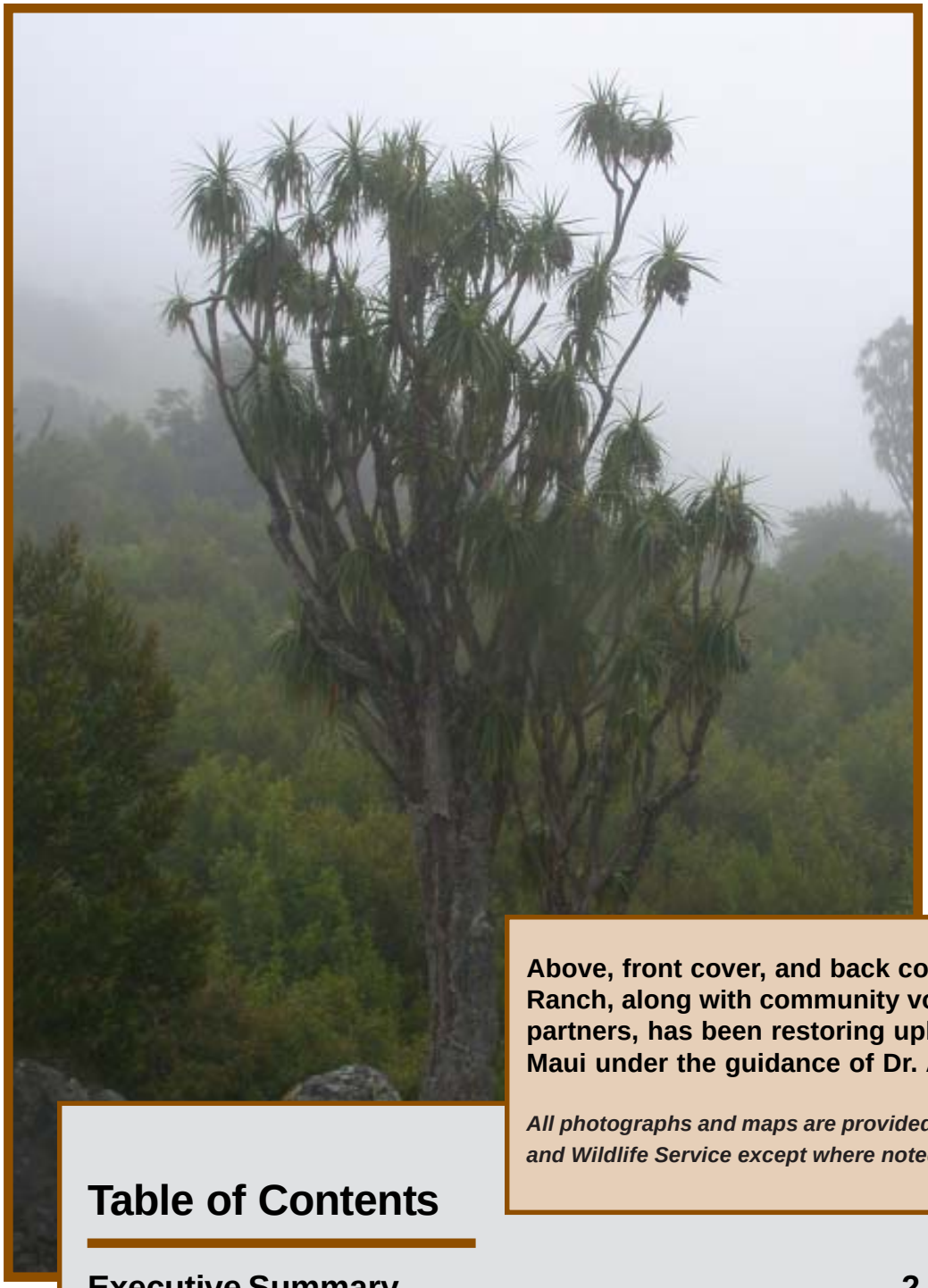
In February of 2005, our program was presented with the Secretary of the Interior's Four C's Award. This award is given to programs and individuals whose efforts demonstrate the Secretary's Four C's Initiative: communication, consultation, and cooperation, all in the service of conservation.

The Pacific Islands Conservation Partnerships Program compiled a report on the potential use of conservation endowments to provide for the long-term management needs of restoration projects. This report was funded by the U.S. Army, but its findings are appropriate to all conservation land managers.

Our plans for fiscal year 2006 are to ensure that ongoing projects continue toward completion and to work with our partners in developing new projects where the conservation need is the greatest.

None of our accomplishments would be possible without the extraordinary efforts of our partners. We are privileged to work with them and look forward to continued collaboration and to the development of additional partnerships in future years.

Craig Rowland
Conservation Partnerships Coordinator



Above, front cover, and back cover: Ulupalakua Ranch, along with community volunteers and other partners, has been restoring upland dry forests on Maui under the guidance of Dr. Arthur Medeiros.

All photographs and maps are provided by staff of the U.S. Fish and Wildlife Service except where noted.

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Program Description

The Pacific Islands Conservation Partnerships Program (PICPP) implements a collection of voluntary habitat restoration programs in the U.S. Fish and Wildlife Service's Pacific Islands Office. The goal of the PICPP is to restore native habitats by providing cost-share funds, technical assistance, and coordination to community groups, private landowners, conservation organizations, and other government agencies. The PICPP emphasizes the collaborative aspects of the U.S. Fish and Wildlife Service's mission statement which is "working with others, to conserve, protect and enhance fish, wildlife, and plants and their habitats for the continuing benefit of the American people."

There are five program elements within the PICPP, having different areas of emphasis, but sharing the overall goal of habitat restoration. These program elements are as follows:

- ***Partners for Fish and Wildlife***
- ***Pacific Islands Coastal Program***
- ***Private Stewardship Grants Program***
- ***Hawai'i Community Conservation Initiative***
- ***Hawai'i Invasive Species Initiative***

In addition to implementing these funding programs, the PICPP continued to work with watershed partnerships and other multi-landowner groups to assist in coordination and implementation of conservation actions over broad landscapes. Further information and habitat restoration resources can be found on our website at: http://www.fws.gov/pacificislands/worg/orghc_conpart.html (or search on Pacific Island Conservation Partnerships).

Future Direction

The goals of the Conservation Partnerships Program are as follows:

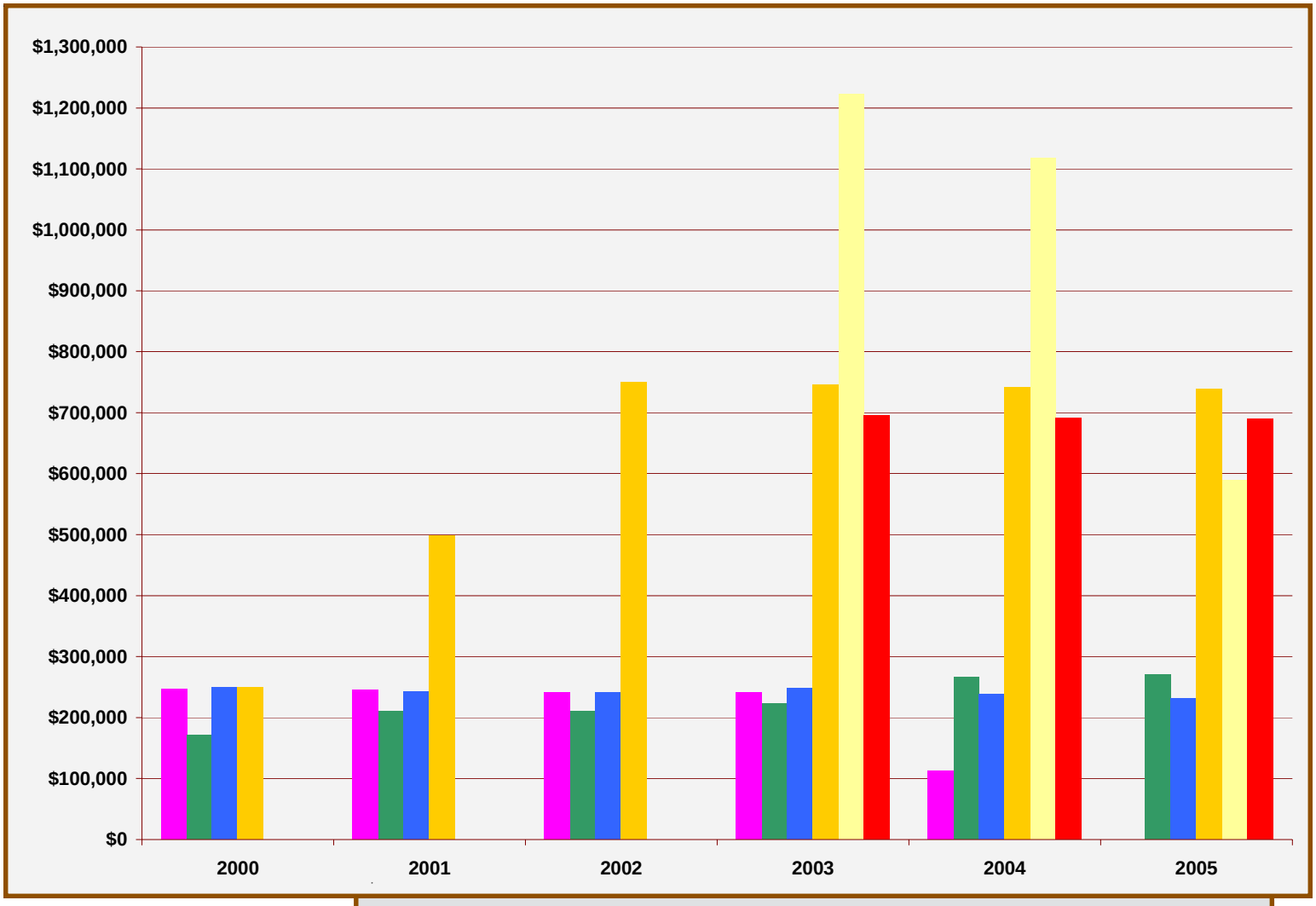
- Continue with multi-party, landscape scale conservation efforts;
- Help partners secure sufficient funding for ongoing projects to ensure their long-term success;
- Use GIS and other information systems to focus new project implementation on ecosystems and threats that are not currently addressed; and
- Build the capacity of the habitat restoration community in Hawai'i and the Pacific islands;

Program Staff

The Conservation Partnerships Program staff are:

- ***Conservation Partnerships Coordinator:*** *Craig Rowland*
- ***Pacific Islands Coastal Program Coordinator:*** *Chris Swenson*
- ***Partners for Fish and Wildlife Coordinator:*** *Benton Pang*
- ***Private Stewardship Grants Coordinator:*** *Naomi Bentivoglio*
- ***Fish and Wildlife Biologists:*** *Donna Ball and Stephanie Bennett*

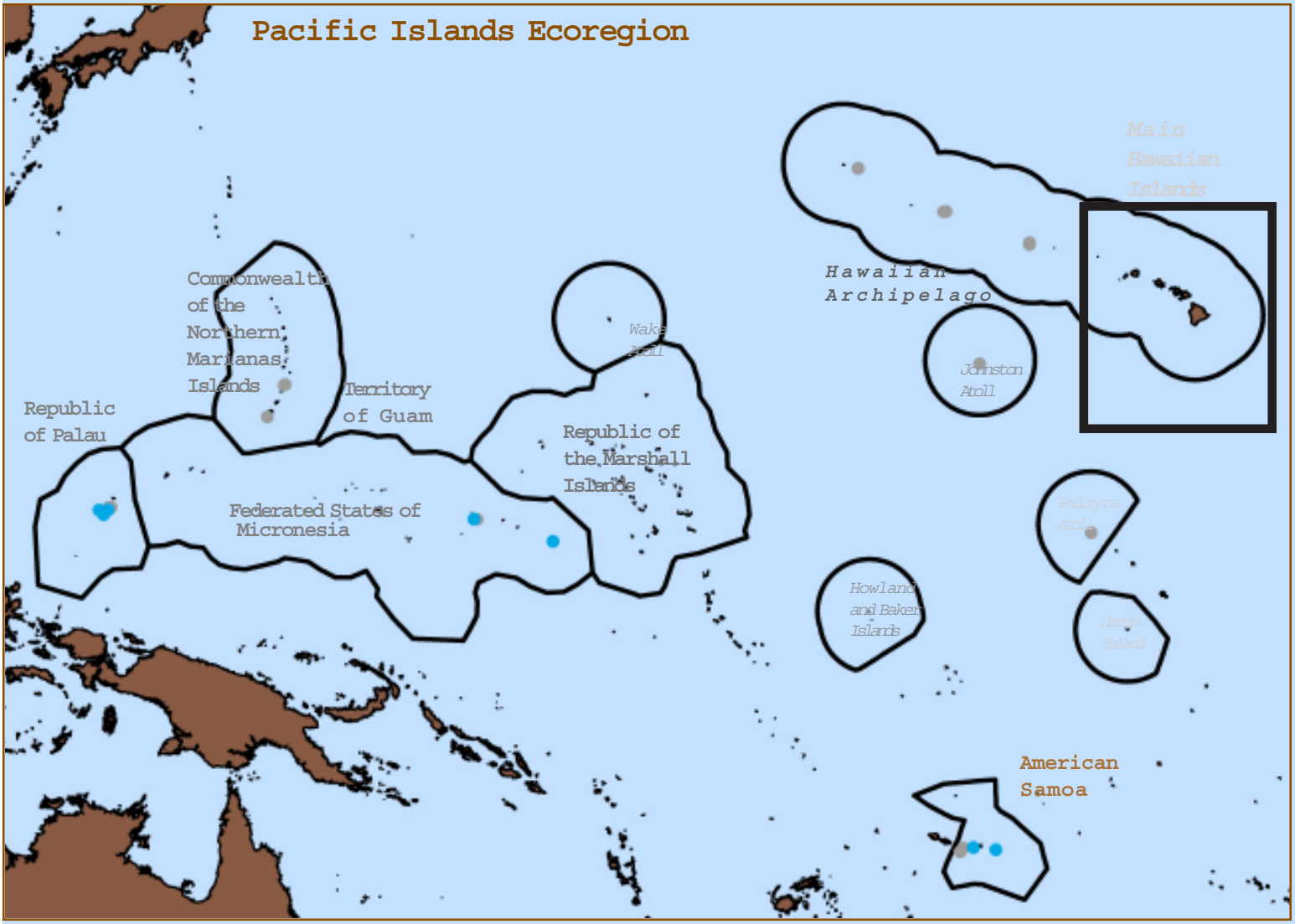
Figure 1. Conservation Partnerships Program Funding Levels (2000-2005)



Hawai`i Biodiversity Joint Venture	
Partners for Fish and Wildlife	$269,907
Pacific Islands Coastal Program	$237,915
Hawai`i Community Conservation Initiative	$739,581
Private Stewardship Grants	$580,198
Hawai`i Invasive Species Initiative	$690,275
Fiscal Year 2005 Total	$2,519,800

Niihau
Kauai

Oahu


Pacific Islands Ecoregion
Main Hawaiian Islands
Hawaiian Archipelago
Commonwealth of the Northern Mariana Islands
Wake Atoll
Johnston Atoll
Territory of Guam
Republic of Palau
Republic of the Marshall Islands
Federated States of Micronesia
Palmyra Atoll
Howland and Baker Islands
Jarvis Island
American Samoa

Conservation Partnerships Program Projects

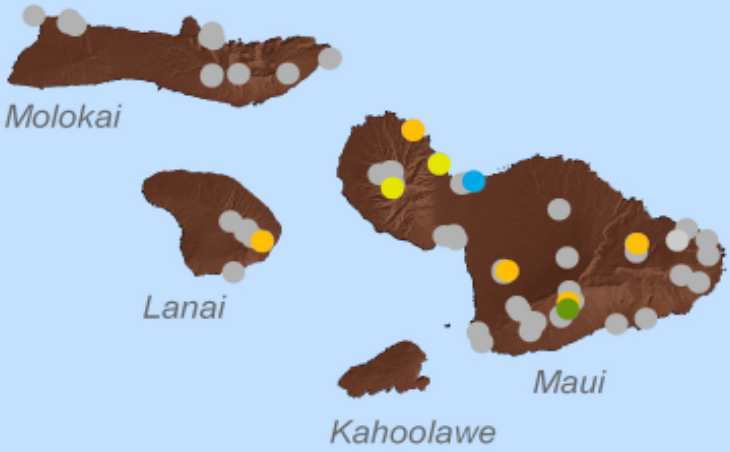
Fiscal Year 2005

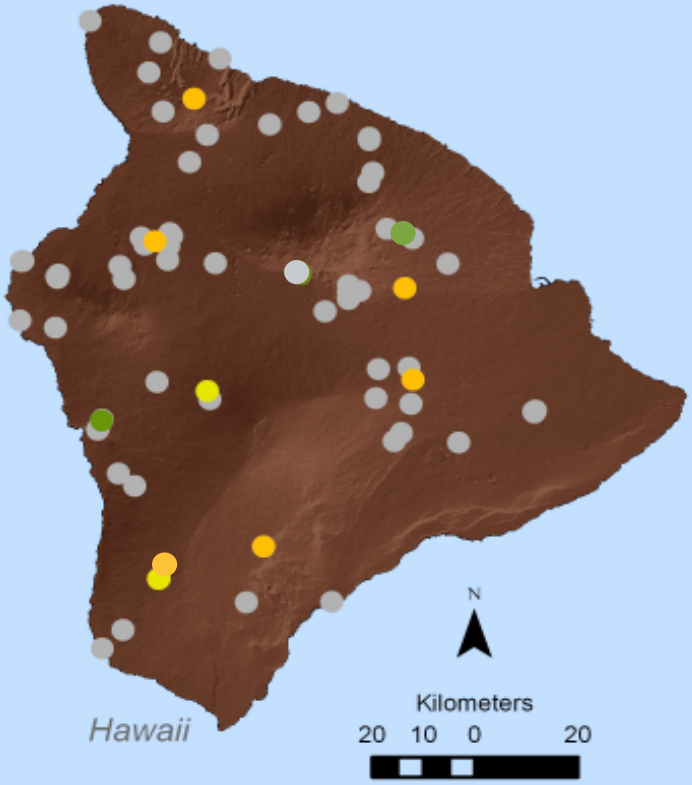
- Hawai'i Community Conservation Initiative
- Private Stewardship Grants Program
- Partners for Fish and Wildlife Program
- Pacific Islands Coastal Program
- Hawai'i Invasive Species Initiative

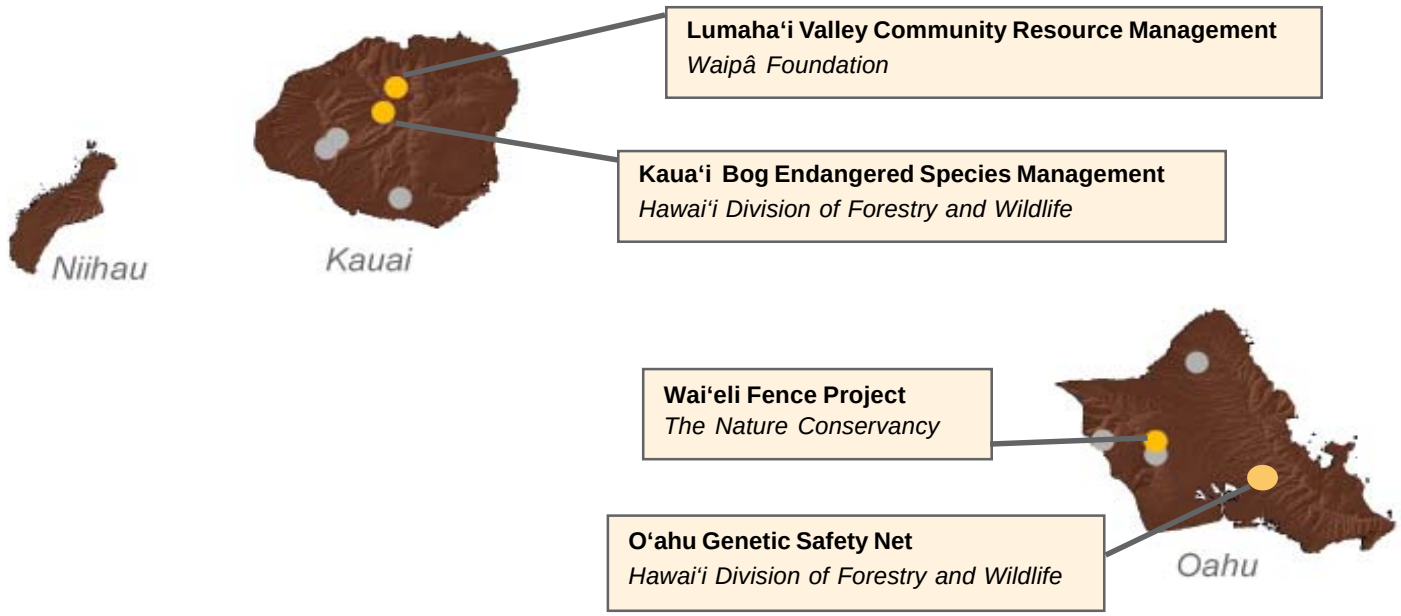
Previous Fiscal Years

- All Programs

** There are over 30 current and previous multi-island projects not shown on map.*







Hawai‘i Community Conservation Initiative

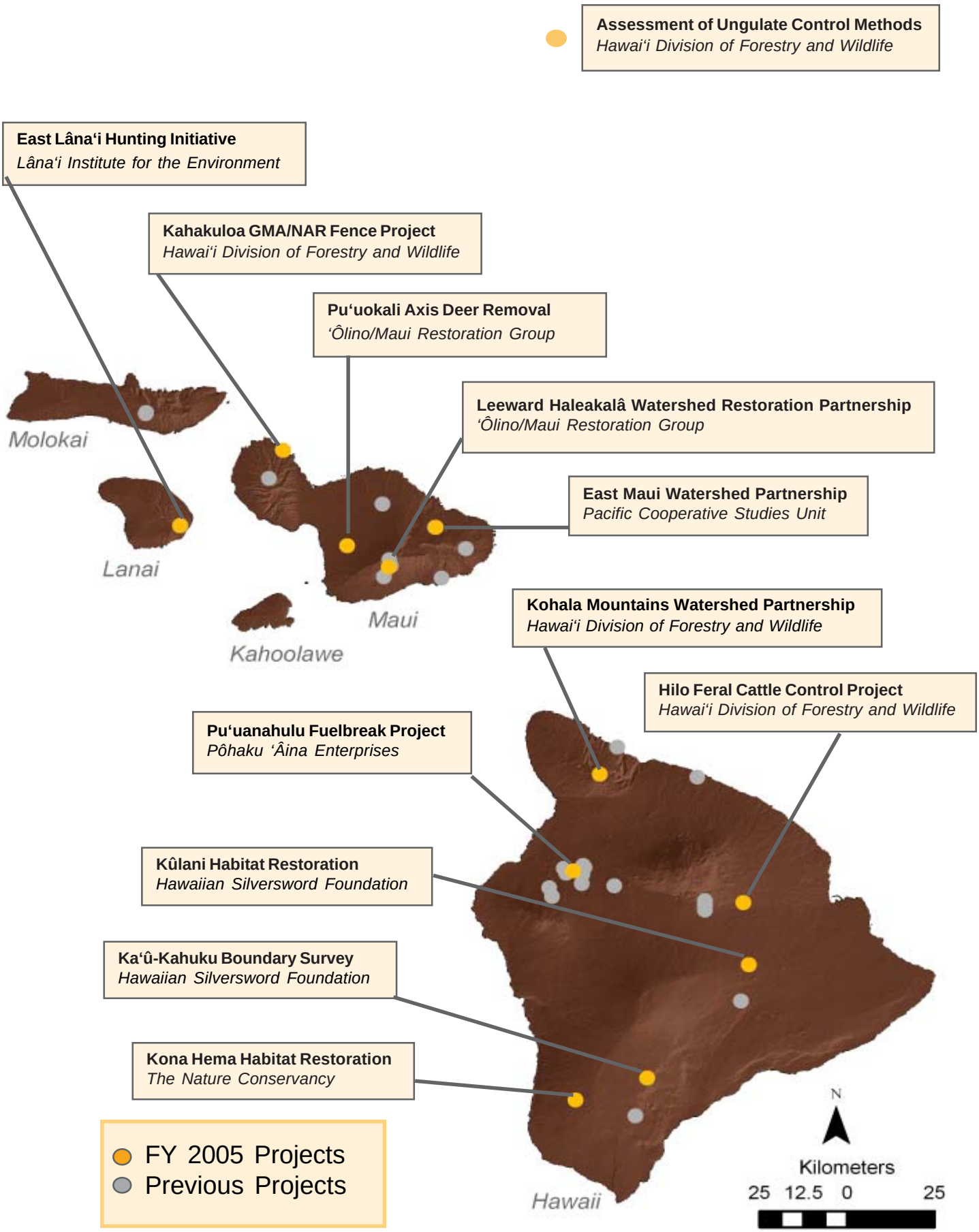
The Hawai‘i Community Conservation Initiative (HCCI) is a unique USFWS program designed to engage landowners and community groups in the implementation of conservation actions to benefit listed species.

The program’s focus for Fiscal Year 2005 was to implement projects that reduce the conflict between endangered species management and game mammal management throughout the State of Hawai‘i.

The conflict between managing areas for public hunting and for the conservation of endangered species continues to be a significant challenge in Hawaii and to exact an economic, social and environmental cost. The major cause of this conflict is the difficulty of managing game mammal populations in a way that does not continue to result in habitat degradation that continues to push species to the brink of extinction.

This initiative’s goal was to increase the quality of hunting opportunities to reduce the need to maintain game populations in areas important to endangered species. Likewise, increasing populations of certain endangered species in appropriate areas should result in reduced conflict between endangered species and programs that support game mammal populations.

The Hawai‘i Community Conservation Initiative received $739,581 this year to implement the program’s objectives and funded 15 projects across the state.


Assessment of Ungulate Control Methods
Hawai‘i Division of Forestry and Wildlife
East Lâna‘i Hunting Initiative
Lâna‘i Institute for the Environment
Kahakuloa GMA/NAR Fence Project
Hawai‘i Division of Forestry and Wildlife
Pu‘uokali Axis Deer Removal
‘Ôlino/Maui Restoration Group
Leeward Haleakalâ Watershed Restoration Partnership
‘Ôlino/Maui Restoration Group
East Maui Watershed Partnership
Pacific Cooperative Studies Unit
Kohala Mountains Watershed Partnership
Hawai‘i Division of Forestry and Wildlife
Hilo Feral Cattle Control Project
Hawai‘i Division of Forestry and Wildlife
Pu‘uanahulu Fuelbreak Project
Pôhaku ‘Âina Enterprises
Kûlani Habitat Restoration
Hawaiian Silversword Foundation
Ka‘û-Kahuku Boundary Survey
Hawaiian Silversword Foundation
Kona Hema Habitat Restoration
The Nature Conservancy
Molokai
Lanai
Maui
Kahoolawe
Hawaii
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Lumaha‘i Valley Community Resource Management

Waipâ Foundation

The main objective of the program is to remove ungulates from the 1,500 acre conservation management area (above 1,300 feet elevation) and manage game hunting in the lower portion of the valley (approximately 5,000 acres) below the conservation management area. Ungulate removal in the conservation management area will protect native lowland wet forest habitat that is home to a variety of endangered species.

O‘ahu Genetic Safety Net

Division of Forestry and Wildlife

The goal of this project is to survey and monitor 34 rare plant species identified by the Hawaii Rare Plant Restoration Group as being on the brink of extinction. All but five of these species are listed as endangered. Found primarily on O‘ahu, each species has fewer than 50 individuals left in the wild.

Kaua‘i Bogs Endangered Species Management

Division of Forestry and Wildlife

The purpose of this project is to continue conservation efforts for the nine bogs in the Alaka‘i Wilderness Area. This work includes fence maintenance, weeding, monitoring of vegetation, rare plant recovery, and collection of seeds from rare plants for genetic storage and future reintroductions.

Wai‘eli Ungulate Fence

The Nature Conservancy

The proposed restoration project is to construct a portion of a 150-acre ungulate fence at Wai‘eli, adjacent to the Honouliuli Preserve. The fence will connect to existing ungulate exclosures and will benefit five listed plant taxa.

Leeward Haleakalâ Watershed Restoration Partnership

‘Ôlino /Maui Restoration Group

A coordinator will assist in the facilitation of restoration activities for this partnership by serving as a communication link between the partners, developing a management plan, and assisting with the implementation of high priority conservation projects.

Kahakuloa Fence Project

Division of Forestry and Wildlife

The West Maui Mountains Watershed Partnership will continue fencing operations that will reduce the threats to the recovery of listed species found in the Kahakuloa Natural Area Reserve (KNAR) and surrounding lands. The project goal is to prevent ingress of ungulates from adjacent Kahakuloa Game Management Area and West Maui Forest Reserve lands. Further benefits will be realized through the reduction of conflicts between rare species conservation within the KNAR while also providing hunting opportunities below KNAR in the forest reserve and game management areas.

Pu‘uokali Axis Deer Removal

‘Ôlino/Maui Restoration Group

This project will develop and implement an ungulate removal plan for the remaining axis deer (*Axis axis*) located within the 236 acre deer proof enclosure at Pu‘uokali on Maui. Approximately 40-50 deer remain within the fenced exclosure and while native vegetation has steadily recovered since fence construction, these remaining deer pose a significant threat to the native plant community. Axis deer by nature are extremely elusive and at Pu‘uokali they have avoided detection from hunters on the ground and low-flying helicopters. The plan will identify safe and effective technologies to monitor and manage increasing axis deer populations. It is anticipated that the techniques implemented at Pu‘uokali can be used in other restoration areas where axis deer present a management problem.

East Maui Watershed Partnership (EMWP)

Pacific Cooperative Studies Unit

The EMWP will reduce the threats of feral animals and invasive plant species on the region’s forested watershed by constructing one-half mile of fence along the border of the Hanawî Natural Area Reserve and continuing the implementation of threat abatement programs above 5.5 miles of fence in the East Maui Watershed. This includes conducting routine fence inspections and controlling weeds along fence lines, landing zones, and campsites.

Kohala Mountains Watershed Partnership

Department of Forestry and Wildlife

The Kohala Watershed Management Plan encompasses more than 68,000 acres of the Kohala Mountains on the Island of Hawaii. The purpose of the public workshops will be to facilitate completion of the Final Watershed Management Plan and provide for public scoping required in the development of the Environmental Assessment. Endangered species conservation and game hunting efforts will be addressed by this partnership.

Hilo Feral Cattle Control Project

Division of Forestry and Wildlife

This projects assists DOFAW in reducing the number of feral cattle (estimated to be more than 200 head) in the Hilo Forest Reserve through public hunting. Reducing the number of feral cattle will benefit the watershed, native forests, and rare species.

East Lâna‘i Hunting Initiative

Lâna‘i Institute for the Environment

The purpose of this project is to enhance access for active management of feral ungulates on the eastern portion of Lâna‘i Island. This is the third year of funding for this project in which roads and trails will be regraded and cleared for access in order to provide better control of the axis deer population and reduce or eliminate mouflon sheep. Active management of feral ungulates will be beneficial to native plants, birds, and invertebrate resources on Lâna‘i. A biological training program for hunters will also be developed as part of the project.

Kona Hema Habitat Restoration

The Nature Conservancy

The proposed project is designed to augment ongoing habitat management at Kona Hema Preserve by collecting, propagating and outplanting native plants. One goal of this project is to restore the forest habitat so that it may become a release site for the critically endangered Hawaiian crow or ‘alala which survives now only in captivity.

Ka‘û-Kahuku Boundary Survey

Hawaiian Silversword Foundation

The purpose of this project is to survey a fence line along the common boundary between the Kahuku Ranch parcel of Hawaii Volcanoes National Park and Kapâpala Forest Reserve. The fence to be constructed, will follow ecological boundaries rather than property boundaries in order to benefit listed species conservation and provide hunting within the adjacent State forest reserve.

Kûlani Habitat Restoration

Hawaiian Silversword Foundation

This three-year project will restore approximately 500 acres of native koa/‘ôhi‘a forest, enhance the long-term survival of native plant and animal communities, and assist in the recovery of the endangered nçnç. In addition, the Kûlani Correctional Facility will develop an agroforestry training program for inmates.

Pu‘uanahulu Fuels Management Project

Pôhaku ‘Âina Enterprises

The purpose of this conservation project is to protect the dryland forest of Pu‘uanahulu from wildfire. This work will entail cutting vegetation along thirty miles of roadside fuelbreaks within the proposed Pu‘uanahulu Game Management Area and maintaining a firebreak surrounding the rare plant exclosure at Kîpuka ‘Owç‘owç.

Assessment of Ungulate Control Methods

Division of Forestry and Wildlife

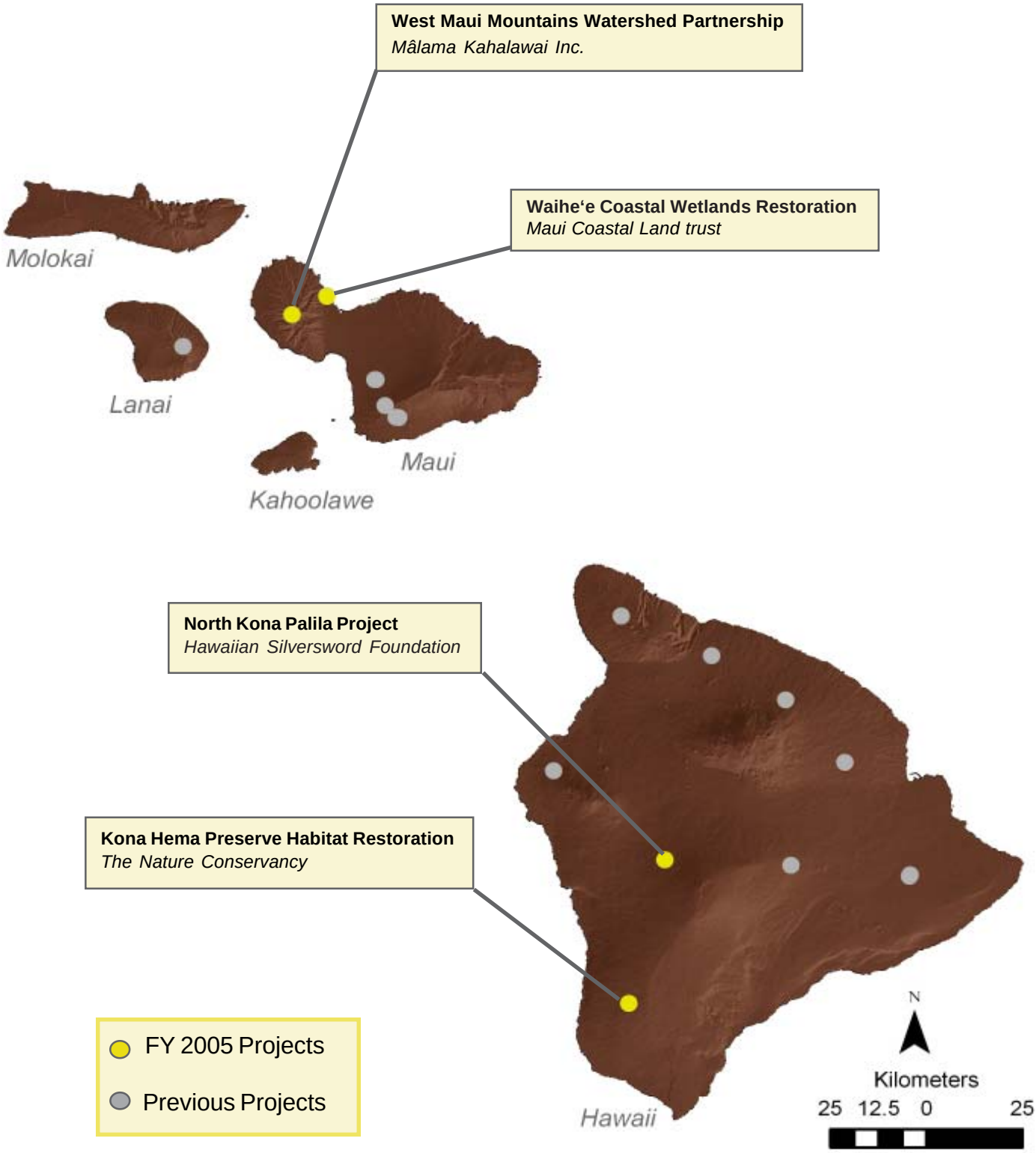
This project will review the methodologies currently used by the State of Hawai‘i for controlling non-native game animals in Hawai‘i’s forest areas, collect information on other techniques available, and assess each techniques’ effectiveness and feasibility for application in Hawai‘i.

Private Stewardship Grants Program

The Private Stewardship Grants Program is a focused effort to restore habitat on private land for species that are endangered, threatened, candidates, or species of concern. These projects compete on a regional level for funding.

In the first two years of the program, 210 Private Stewardship grants totaling more than $16 million were awarded to private landowners across the country. During this time, Hawai‘i was awarded more money than any other state, receiving $2,340,827.

In fiscal year 2005, four projects in Hawai‘i were awarded $580,198 out of roughly $6.5 million available nationwide. These projects will help conserve and restore native habitat for a wide range of species on the islands of Hawai‘i and Maui.


West Maui Mountains Watershed Partnership
Mâlama Kahalawai Inc.
Waihe'e Coastal Wetlands Restoration
Maui Coastal Land trust
Molokai
Lanai
Maui
Kahoolawe
North Kona Palila Project
Hawaiian Silversword Foundation
Kona Hema Preserve Habitat Restoration
The Nature Conservancy
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North Kona Palila Project

Hawaiian Silversword Foundation

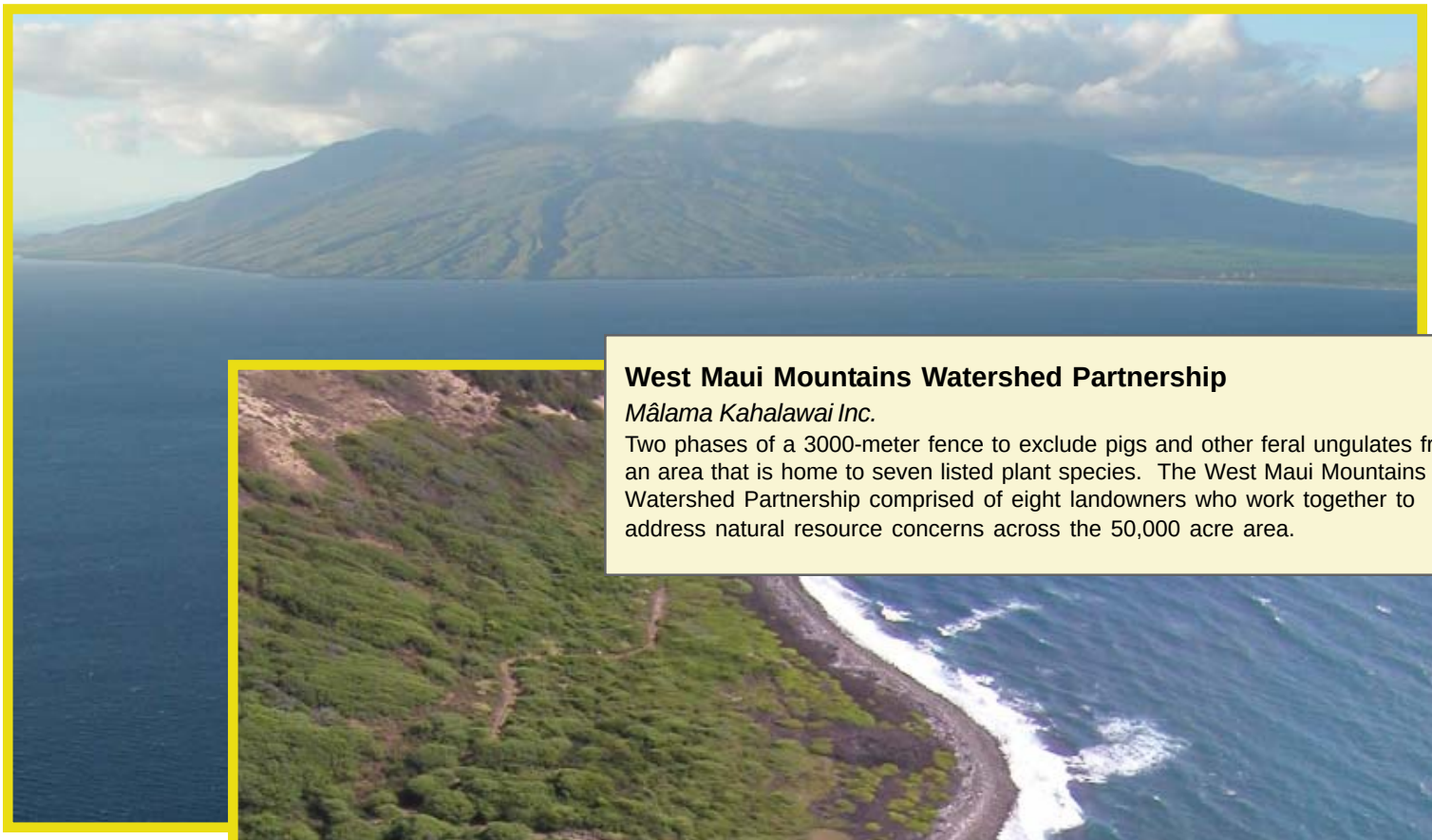
Working with Federal, State, and local partners, the Hawaiian Silversword Foundation will assist in the protection and restoration of 11,000 acres of native mâmane (*Sophora chrysophylla*) forest habitat for the endangered palila (*Loxioides bailleui*) and other endangered species. Protection of this forest through fence construction and feral ungulate control are the critical first steps in the restoration of this property.

Photo courtesy of Dan Sailer
The Nature Conservancy

Kona Hema Preserve Habitat Restoration

The Nature Conservancy

The objective of this project is to remove feral ungulates from the three fenced management units, (Honomalino: 4,010 acres, Kapua: 1,800 acres, and Pâpâ: 2,279 acres) within the next two years. One goal of this project is to restore habitat as a potential release site for the endangered Hawaiian crow or ‘alalâ which now survives only in captivity.



West Maui Mountains Watershed Partnership

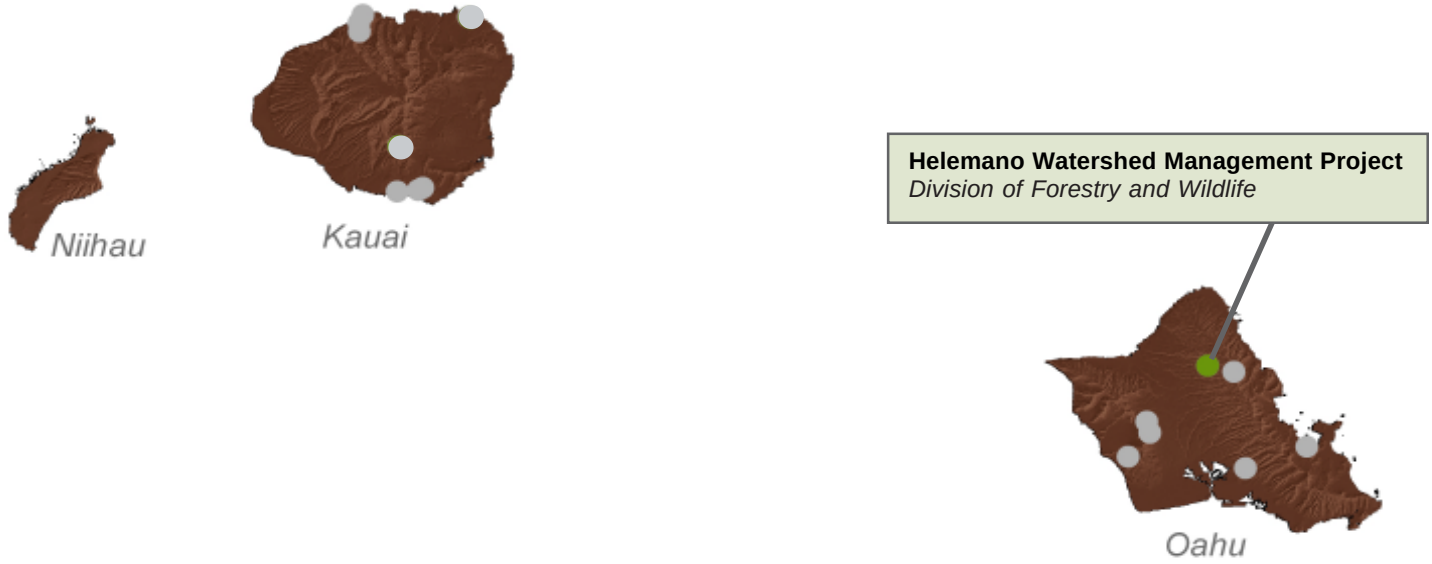
Mâlama Kahalawai Inc.

Two phases of a 3000-meter fence to exclude pigs and other feral ungulates from an area that is home to seven listed plant species. The West Maui Mountains Watershed Partnership comprised of eight landowners who work together to address natural resource concerns across the 50,000 acre area.

Waihe‘e Coastal Wetlands Restoration

Maui Coastal Land Trust

The Maui Coastal Land Trust, working with numerous partner organizations, will conduct a portion of a long-term (10-year plus) ecological restoration project for the 213 acre Waihe’e Preserve on the Island of Maui. As part of a comprehensive strategy designed to enhance the quality of this native coastal ecosystem. This grant will restore habitat essential for endangered bird species including the ae’o or Hawaiian stilt, ‘alae ke’oke‘o or Hawaiian coot, ‘alae ‘ula or Hawaiian gallinule, and kôloa or Hawaiian duck, and improve habitat for endangered plants.

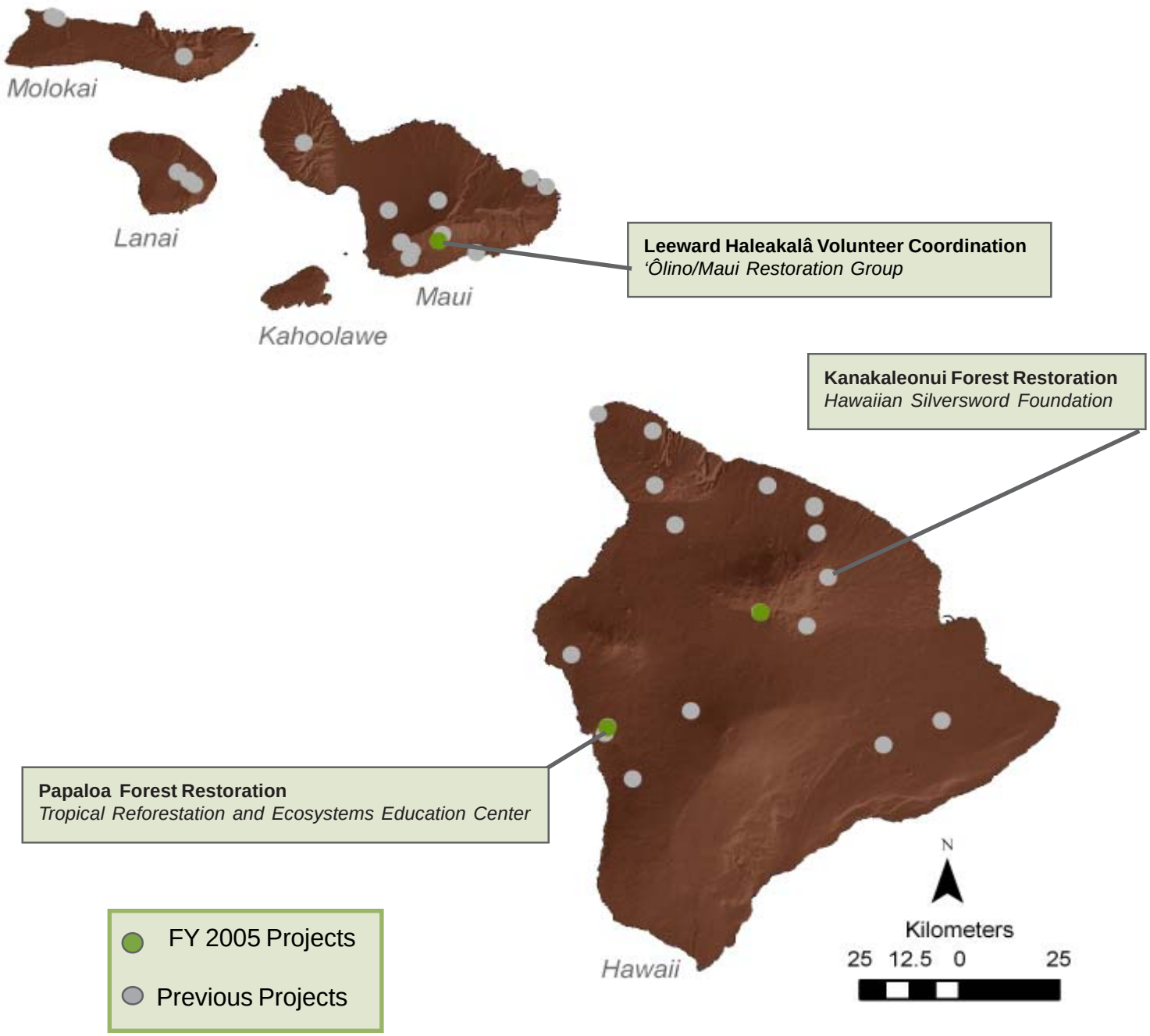


Partners for Fish and Wildlife Program

The Partners for Fish and Wildlife (PFW) Program was established to offer technical and financial assistance to landowners who wish to restore wildlife habitat (native ecosystems) on their property.

Since 1994, the PFW program in Hawai'i has contributed almost $1M to restoration projects targeting unique ecosystems: caves that provide habitat for listed invertebrates; bogs that contain diverse and rare plant species; dryland forests that have disappeared from most of the islands; wetlands that are home to endangered waterfowl; and island watersheds that connect rainforests with coral reefs.

The PFW continued its successful development and implementation of restoration projects on private lands by providing almost $200,000 to four projects in Fiscal Year 2005.


Molokai
Lanai
Kahoolawe
Maui
Hawaii
Leeward Haleakalâ Volunteer Coordination
'Ôlino/Maui Restoration Group
Kanakaleonui Forest Restoration
Hawaiian Silversword Foundation
Papaloa Forest Restoration
Tropical Reforestation and Ecosystems Education Center
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Kanakaleonui Forest Restoration

Hawaiian Silversword Foundation

The goal of this project is to protect and restore a large area of native mamane forest habitat near Hakalau Forest National Wildlife Refuge for the endangered palila and other native plants, birds, and invertebrates. The Kanakaleonui project will provide a native forest corridor connecting the Hakalau Forest with the Mauna Kea Forest Reserve.

Papaloa Forest Restoration

Tropical Reforestation and Ecosystems Education Center (TREE)

TREE will construct a 10-acre ungulate-proof fence in order to restore native Hawaiian forest habitat at Kealakekua Ranch on the Island of Hawai‘i. If successful, the habitat may be suitable for the long-term maintenance of populations of several rare or endangered understory plant species endemic to montane dryland forests of South Kona.

Helemano Watershed Management Project
Division of Forestry and Wildlife
Supplemental funds are being provided to complete a planned ungulate-free area of approximately 200 acres in the Northern Ko'olau Mountains that will provide habitat for rare plants and tree snails. This project builds upon the efforts of the 'Ôpae'ula Watershed Fencing Project, an adjacent fenced area of 150 acres completed in May 2001.

Leeward Haleakalâ Volunteer Coordination
'Ôlino/Maui Restoration Group
A coordinator will plan and implement volunteer work trips on a variety of dryland forest habitat restoration efforts within the Leeward Haleakalâ Watershed Restoration Partnership area. This coordination will help to capitalize on the huge number of volunteers that have become involved in Leeward Haleakalâ's projects since 1999.

Pacific Islands Coastal Program

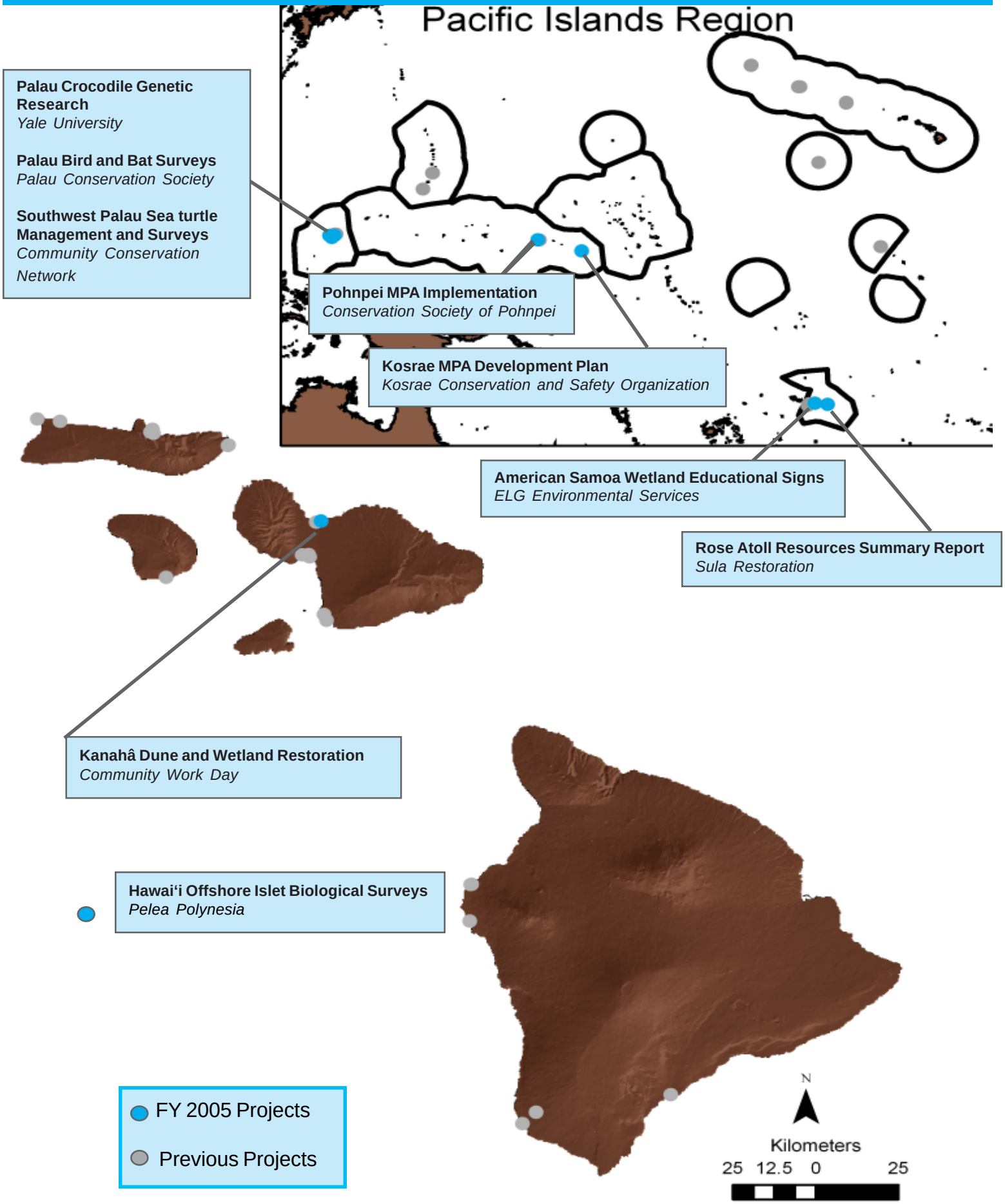
The Pacific Islands Coastal Program (PICP) is one of 21 such programs around the nation. Established in Fiscal Year 2000, the PICP funds landowners, nonprofit groups, government agencies, and others to conduct habitat restoration, biological surveys, GIS mapping, applied restoration research, and environmental education.

The PICP covers hundreds of islands scattered over thousands of square miles of ocean. Pacific island coasts and nearshore environments include over 90% of the U.S. coral reefs and a range of unique, tropical habitat types that support many endemic species, hundreds of which are listed as threatened or endangered.

In Fiscal Year 2005, the PICP provided approximately $191,000 to fund 10 projects. These projects include assistance to Hawaii, American Samoa, the Republic of Palau and the States of Pohnpei and Kosrae in the Federated States of Micronesia.

Offshore islet restoration will continue to be a focus of the PICP in Fiscal Year 2006. Offshore islets are the last refuge for many coastal species including seabirds, listed plants and rare, endemic invertebrates. Another continuing focus area will be community-based management and conservation of marine resources.

Pacific Islands Coastal Program


Pacific Islands Region
Palau Crocodile Genetic Research
Yale University
Palau Bird and Bat Surveys
Palau Conservation Society
Southwest Palau Sea turtle Management and Surveys
Community Conservation Network
Pohnpei MPA Implementation
Conservation Society of Pohnpei
Kosrae MPA Development Plan
Kosrae Conservation and Safety Organization
American Samoa Wetland Educational Signs
ELG Environmental Services
Rose Atoll Resources Summary Report
Sula Restoration
Kanahâ Dune and Wetland Restoration
Community Work Day
Hawai'i Offshore Islet Biological Surveys
Pelea Polynesia
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Rose Atoll Biological Resource Summary Report

Sula Restoration

This report will compile all published and unpublished research findings, trip reports, and survey data on the terrestrial and marine systems of Rose Atoll National Wildlife Refuge in American Samoa. This compendium will summarize all available information on past activities in order to better plan future management of the atoll.

Pohnpei Marine Protected Area Assistance

Conservation Society of Pohnpei

This project provides assistance in marking the boundaries of three previously established marine protected areas (MPAs); increases community understanding, participation, and monitoring in MPAs. It also assists the communities in developing and implementing their own MPA conservation plans. Two species of endangered sea turtles, coral reefs, a variety of other invertebrate species, and reef fish will benefit.

Kosrae Community-Based Marine Protected Area Development

Kosrae Conservation and Safety Organization

The purpose of this agreement is to engage local communities in Kosrae, Federated States of Micronesia, in marine conservation practices and to assist them in planning, managing and delineating marine protected areas.

American Samoa Wetland Educational Signs

ELG Environmental Services

The American Samoa Coastal Management Program is producing a mangrove viewing platform with educational signs in English and Samoan, to be located at the Northern end of Lions Park, Tutuila Islands. This project will produce and install the educational signs.

Lehua Island Restoration Planning and Implementation

Hawai'i Chapter of the Wildlife Society and the Offshore Islet Restoration Committee

This project will carry out restoration planning and implementation for Lehua Island and other islets of high biological value. This is a multi-year project, including planning and permitting, removal of invasive mammals and weeds, public education, and outplanting of native species. Species that will benefit include seabirds, native plants, and native insects - many of which are either rare or listed under the Endangered Species Act.

Hawai'i Offshore Islet Biological Surveys

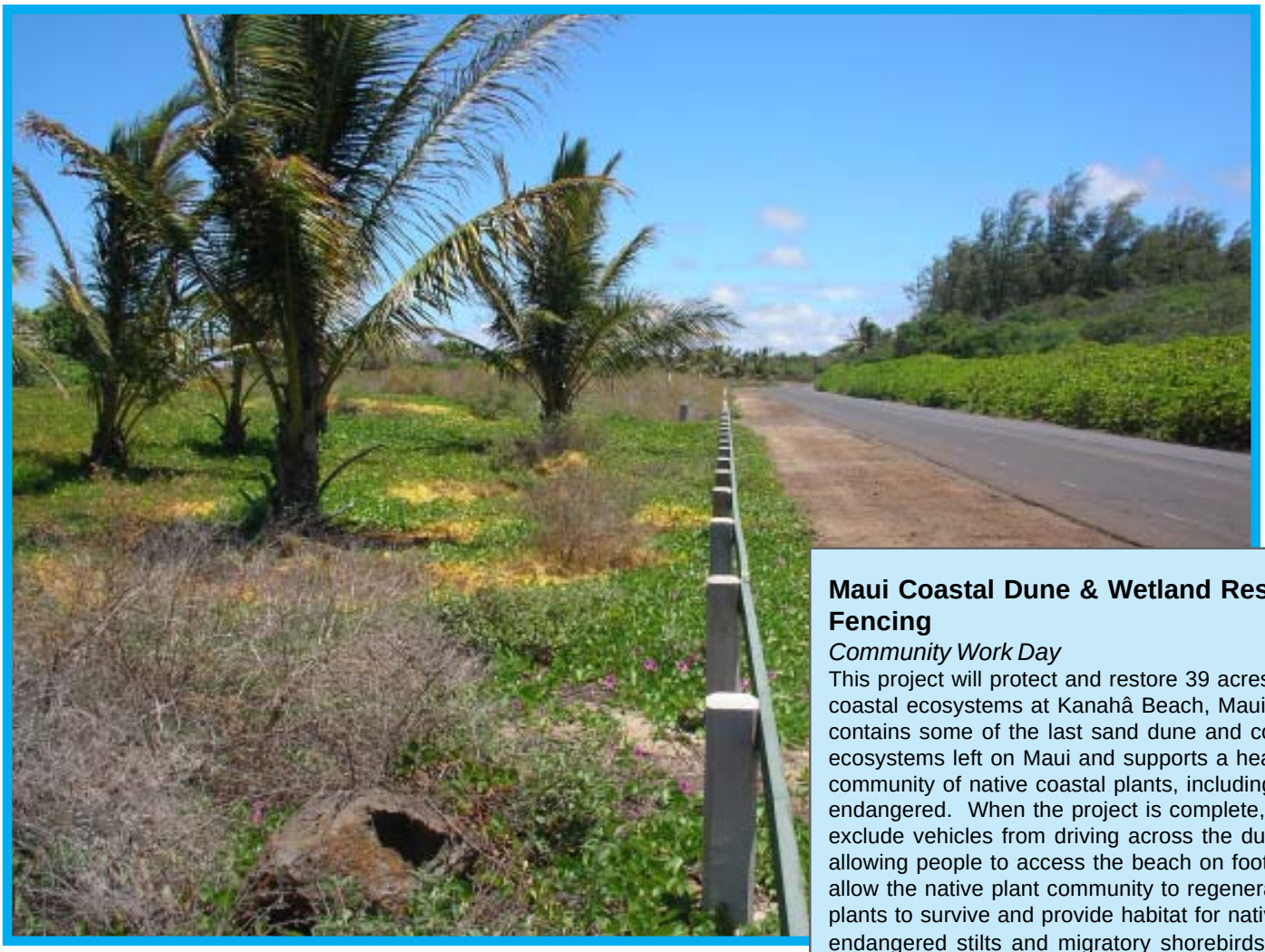
Pelea Polynesia

These surveys provide important information for planning and prioritizing habitat restoration on these important areas. Seeds and propagules of rare and endangered plants will also be collected for future restoration activities.

Palau Saltwater Crocodile Genetics Study

Yale University

Molecular/biochemical assays and techniques will be applied to blood and tissue samples in order to determine genetic and morphological characteristics in order to better manage these endangered crocodiles.



Maui Coastal Dune & Wetland Restoration Fencing

Community Work Day

This project will protect and restore 39 acres of native coastal ecosystems at Kanahâ Beach, Maui. This area contains some of the last sand dune and coastal wetland ecosystems left on Maui and supports a healthy community of native coastal plants, including two that are endangered. When the project is complete, a fence will exclude vehicles from driving across the dunes, while still allowing people to access the beach on foot. This will allow the native plant community to regenerate, rare plants to survive and provide habitat for native insects, endangered stilts and migratory shorebirds.

Palau Bird and Bat Surveys

Palau Conservation Society

This project seeks to update distribution and population data that was last collected in 1991 in order to identify and protect important terrestrial habitats as part of the Important Bird Area (IBA) Project.

Southwest Palau Turtle Management & Survey Project

Community Conservation Network

This agreement will build local capacity to support a cooperative management program for the endangered green sea turtle (*Chelonia mydas*) in the southwest states of the Republic of Palau. This area is home to the largest nesting green sea turtle population in Palau.

Lehua Island Restoration Planning
Hawai'i Department of Land and Natural Resources, National Tropical Botanical Garden, Hawai'i Chapter of the Wildlife Society

Hawai'i Invasive Species Initiative

The Hawai'i Invasive Species Initiative aims to reduce the impact and potential risk of invasive species to listed endangered species and native ecosystems. The major factor limiting endangered species recovery and contributing to degradation of native ecosystems in Hawai'i is the continued presence of habitat-altering invasive species.

Interdiction and incipient control (control of very limited populations that have not yet become established) is designed to address early colonization events and prevent future invasive species problems. The most cost-effective way to deal with invasive species issues is to prevent the introduction of pests that would impact negatively the State of Hawai'i prior to their introduction or to eradicate small populations of high risk pests before they become established in the State. An aspect of this work is the development of risk assessment and screening methods to help predict what species could potentially become pests. Additionally, it involves the development of techniques to eradicate high risk pests prior to their establishment.

This initiative also involves control of known ecosystem-altering alien species that are documented in limited sites but not widely established in the State of Hawai'i (more than incipient, yet still controllable). The list of these alien species is highly varied and includes marine algae, terrestrial plants, insects, mammalian predators (such as mongooses and rats), mosquito-born diseases (such as avian malaria), and feral ungulates (such as pigs, deer and goats).

Surveillance Capacity for West Nile Virus
Hawai'i Department of Health

Invasive Alien Reptiles and Amphibians Risk Assessment Study
Bishop Museum

Invasive Mosquito Survey
Hawai'i Department of Health

Statewide Environmental Assessment for Aerial Broadcast of Diphacinone Rodenticide
Contractor to be determined

Koloa Hybrid Study
University of California – Davis, US Department of Agriculture - APHIS/Wildlife Services

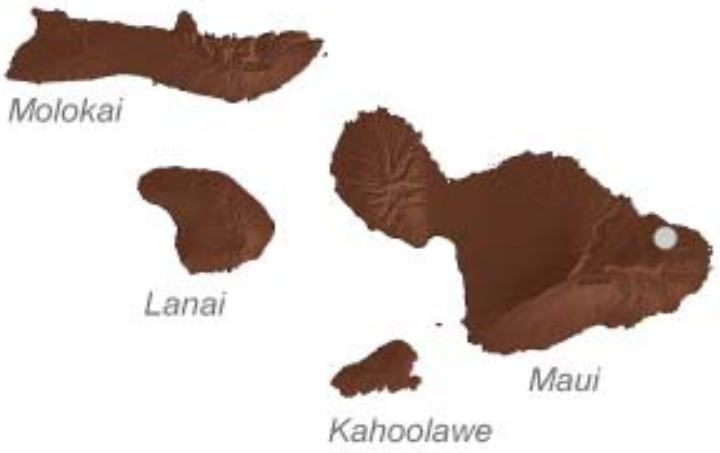
Invertebrate Identifications from Studies of Introduced Reptiles and Amphibians
Bishop Museum

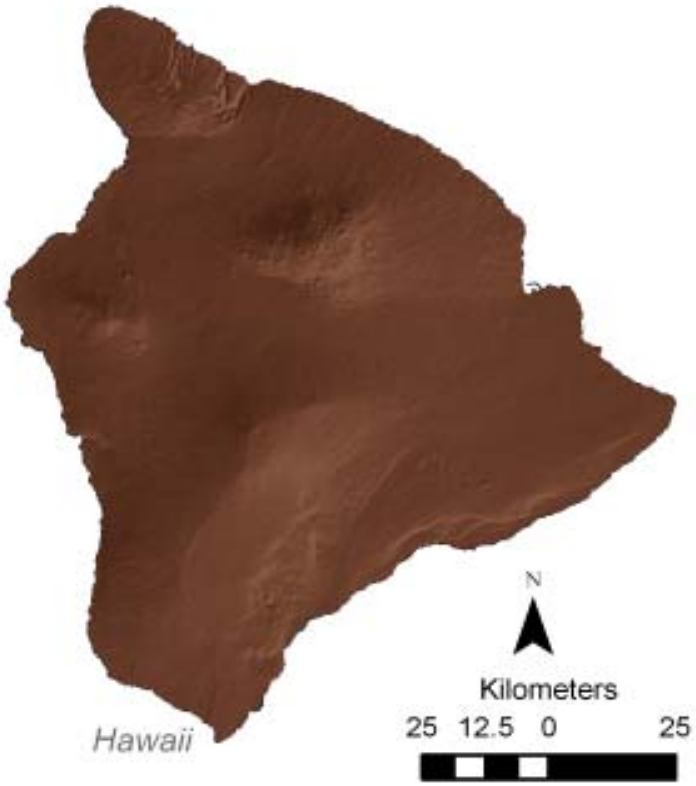
Invasive Species Committee/Coordinating Group on Alien Pest Species Base
University of Hawai'i

Preventing the Brown Treesnake (*Boiga irregularis*) from Invading Hawai'i
University of Hawai'i

Effects of Fountain Grass Management Strategies on Plant Communities
University of Hawai'i

Field Evaluation of Food Baits for Luring Small Indian Mongooses
US Department of Agriculture - APHIS/ Wildlife Services





FY 2005 Projects

Previous Projects

Invasive Mosquito Survey

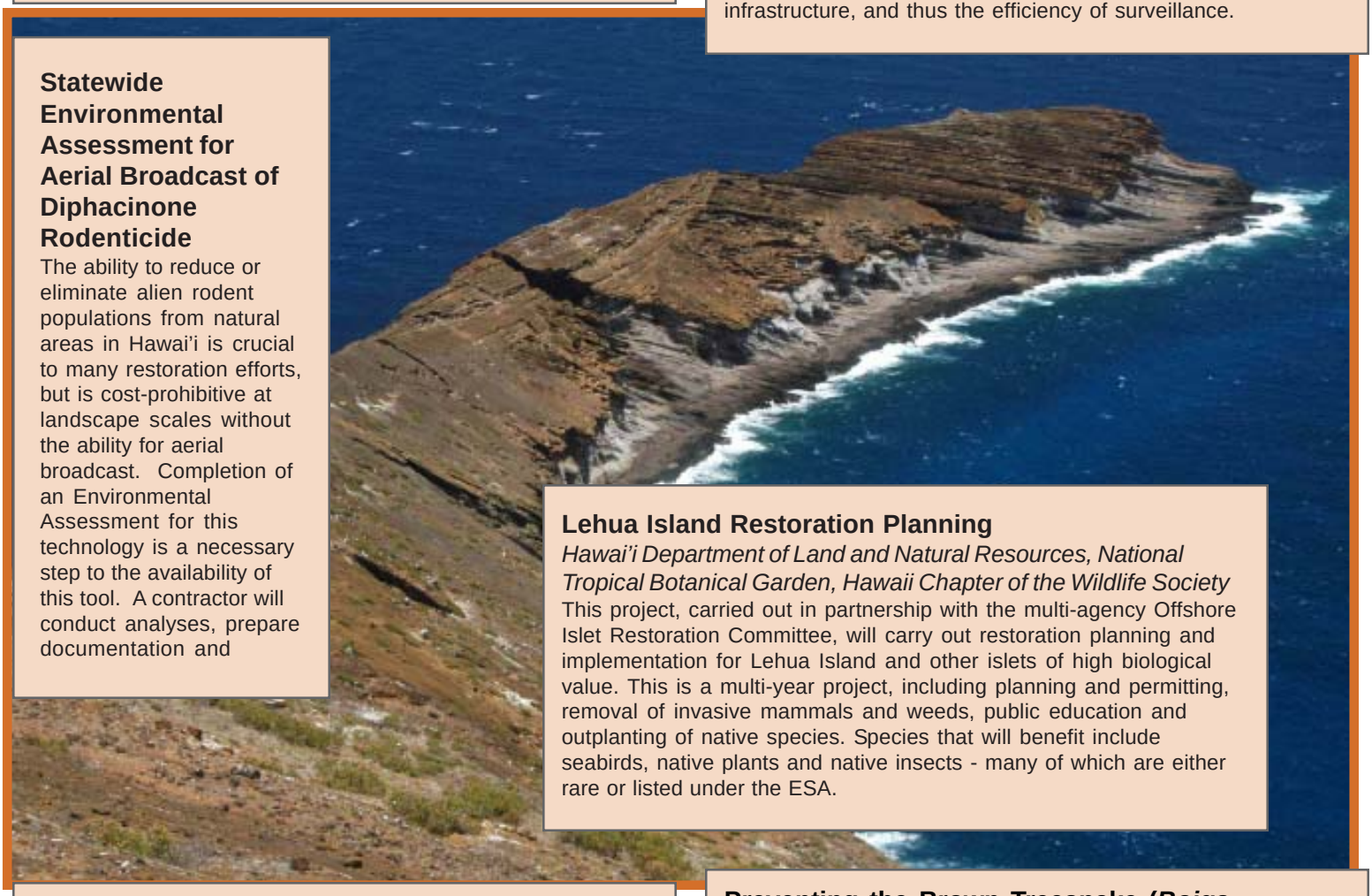
Hawai'i Department of Health

The distribution of a new invasive mosquito (*Aedes japonicus japonicus)* on the island of Hawai'i will be determined using light traps and other survey methods. This species is a vector for West Nile virus, Japanese encephalitis, and possibly avian malaria. It has the potential for surviving at high altitudes and thus would be a threat to remaining native bird populations. Early detection and range mapping are crucial to effective control of this species.

Surveillance Capacity for West Nile Virus

Hawai'i Department of Health

West Nile virus is not yet in Hawai'i , but its effects on bird populations in North America show that it presents a severe threat to the survival of many of Hawai'i's endemic birds, as well as the health of the public. Preventing the establishment of West Nile virus in Hawai'i depends upon an efficient surveillance system for sampling mosquitoes and dead birds. Efficiency increases with number and size of samples, but the single laboratory testing these samples faces constraints on reagents and equipment. This grant improves the testing infrastructure, and thus the efficiency of surveillance.



Statewide Environmental Assessment for Aerial Broadcast of Diphacinone Rodenticide

The ability to reduce or eliminate alien rodent populations from natural areas in Hawai'i is crucial to many restoration efforts, but is cost-prohibitive at landscape scales without the ability for aerial broadcast. Completion of an Environmental Assessment for this technology is a necessary step to the availability of this tool. A contractor will conduct analyses, prepare documentation and

Lehua Island Restoration Planning

Hawai'i Department of Land and Natural Resources, National Tropical Botanical Garden, Hawaii Chapter of the Wildlife Society

This project, carried out in partnership with the multi-agency Offshore Islet Restoration Committee, will carry out restoration planning and implementation for Lehua Island and other islets of high biological value. This is a multi-year project, including planning and permitting, removal of invasive mammals and weeds, public education and outplanting of native species. Species that will benefit include seabirds, native plants and native insects - many of which are either rare or listed under the ESA.

Invasive Alien Reptiles and Amphibians Risk Assessment Study

Bishop Museum

Invasive alien reptiles and amphibians have not been properly assessed but pose a potentially significant threat to native species and ecosystems in Hawai'i. Over the past several years, Dr. Kraus of the Bishop Museum has been developing a database on reptile and amphibian introductions throughout the world. These data will be used to identify pathways, ecological hazards each species poses, and the probability of it becoming established once it is introduced to Hawai'i. In addition, this analysis will allow for the identification of high risk reptiles and amphibians which are most susceptible to transport in Hawai'i. Identification of these pathways will provide the best means to curtail future arrival of additional harmful reptiles and amphibians in Hawai'i.

Preventing the Brown Treesnake (*Boiga irregularis*) from Invading Hawai'i

University of Hawai'i

The brown treesnake was accidentally introduced to the island of Guam as a passive stowaway in a military cargo ship shortly after World War II. Since its establishment, the brown treesnake has caused significant environmental and socioeconomic problems on Guam. The high densities of brown treesnake on Guam, combined with Guam's importance as a shipping hub, make the spread of brown treesnake a critical threat to other Pacific Islands such as Hawai'i. An emerging problem for environmental policy is how to design efficient strategies for the prevention and control of invasive species such as the brown treesnake. Dr. Roumasset and graduate student Kim Burnett will develop a model, using existing data related to control and interdiction, to determine the optimal effort to prevent the introduction of the brown treesnake into Hawai'i.

Kôloa Hybrid Study

University of California – Davis

The primary threat to the recovery of the endangered Hawaiian duck, or kôloa (*Anas wyvilliana*), is hybridization with feral mallards (*Anas platyrhynchos*). It is however, difficult to distinguish hybrids from pure kôloa in the field. The removal of hybrids cannot be attempted until methodology has been developed to distinguish hybrids from pure kôloa. In 2004 Dr. Engilis began the initial phase of this study, examining museum skins and sampling kôloa, hybrids, and feral mallards in order to develop the best genetic analytical technique and identify morphological characteristics that will best settle this identification problem. In 2005, additional funds were requested to increase the sample size of hybrid birds, particularly females.

Effects of Fountain Grass management strategies on plant communities

University of Hawai'i

Research on the effects of fountain grass (*Pennisetum setaceum*) management strategies, such as herbicide application, prescribed burning, and grazing treatments, will have on the demographics of a tropical dry forest plant community and how this will effect a potential new invader, *Senecio madagascariensis* (Madagascar ragwort). Temporary removal of fountain grass allows several introduced plant species to become dominant in its place, namely *Ricinis communis* (castor bean), *Nicotiana glauca* (tree tobacco), and *Senecio madagascariensis* (Madagascar ragwort). *S. madagascariensis* is of particular interest since it manages to survive both grazing and burning to become a dominant herbaceous species.

Invertebrate Sample Identifications from Ecological Studies of Introduced Reptiles and Amphibians

Bishop Museum

Hawai'i has no native terrestrial reptiles and amphibians. Many species have been introduced to the islands and have become established in native ecosystems. Little research has been conducted to assess the impacts of these introduced species on native invertebrates and ecosystem processes. Several projects are currently underway or being planned which require the services of a professional entomologist familiar with Hawai'i's native invertebrates to identify insects found within the stomachs of introduced reptiles and amphibians, such as the Caribbean tree frog (*Eleutherodactylus coqui*), Jackson's chameleon (*Chamaeleo jacksonii xantholophus*), and the veiled chameleon (*C. calyptratus*), as well as invertebrates collected from within study areas.

Field evaluation of the effectiveness of selected food baits in luring small Indian mongooses (*Herpestes auropunctatus*) to bait stations in Hawai'i

US Department of Agriculture - APHIS/Wildlife Services

Mongooses have been persistently reported from the island of Kaua'i for several years, but the extent of the population, if any, is unknown. Detection of a predator such as a mongoose in a prey-rich environment requires trapping, and while good baits are available, the behavior of mongoose is poorly known. This field study will use radio telemetry and automatic microchip readers to evaluate the attractiveness of the top food baits in luring mongooses to a core baited area. Researchers will measure the spatial and temporal responses of marked mongooses to the food baits and monitor bait longevity.

Invasive Species Committee/Coordinating Group on Alien Pest Species

University of Hawai'i

The Coordinating Group on Alien Pest Species (CGAPS) is comprised of participants from every major agency and organization involved in invasive species work including federal, state, county and private entities. The group was formed to improve communications, increase collaboration, and promote public awareness regarding alien pest species. The Island Species Committees (ISCs) are voluntary partnerships of private, government, non-profit organizations and concerned individuals working together under a unified statewide approach to protect each island from the negative impacts caused by invasive species. The overall goal of the ISCs is to prevent, eradicate, or control priority incipient invasive plant and animals species that threaten Hawai'i's most intact conservation lands.

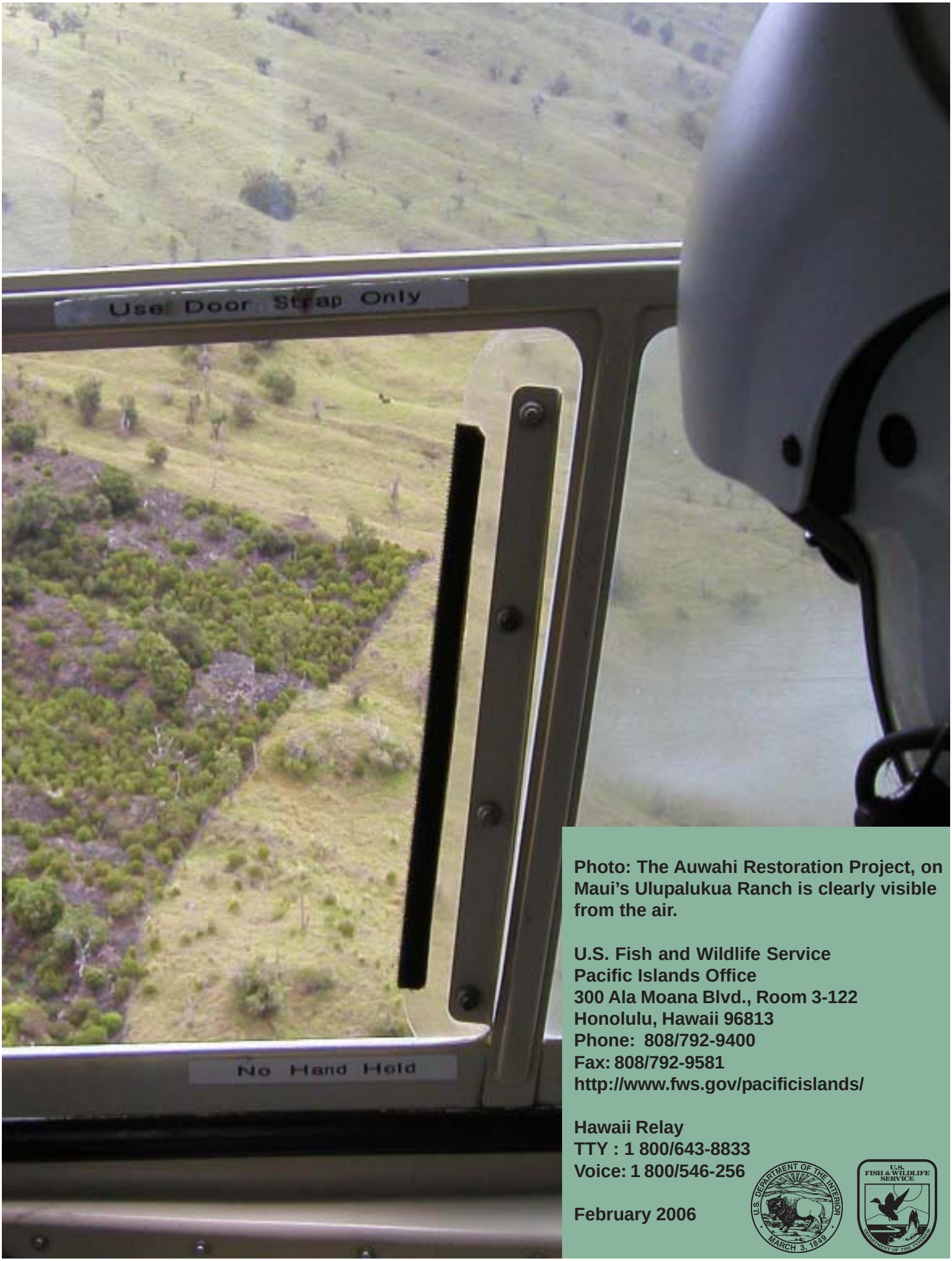


Photo: The Auwahi Restoration Project, on Maui's Ulupalukua Ranch is clearly visible from the air.

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