May 12, 2000

Mr. Ernest Kosaka
Federal Aid Coordinator
U.S. Fish and Wildlife Service
P.O. Box 50167
Honolulu, Hawaii 96850

Dear Mr. Kosaka:

Transmitted herewith are 4 copies of Federal Aid in Wildlife Restoration Program Grant Proposal Packages for the Hawaii Game Management Program-FY2001-2005 and the Hawaii Nongame Management Program-FY2001-2005. Also included are the Grant Agreement Documents to fund these programs for fiscal year 2001. The following documents are attached:

Grant Proposal Package
1. W-22-G, Segments 6-10, Hawaii Game Management Program. July 1, 2000 - June 30, 2005.
2. W-23-NG, Segments 6-10, Hawaii Nongame Management Program. July 1, 2000 - June 30, 2005.

Grant Agreement Documents
1. W-22-G, Segment 6, Hawaii Game Management Program. July 1, 2000 - June 30, 2001.
2. W-23-NG, Segment 6, Hawaii Nongame Management Program. July 1, 2000 - June 30, 2001.

Please note that the Grant Proposal Packages are being concurrently submitted to State and County agencies for "Clearing House Review", the State Historic Preservation Office for SHPO clearance, the State Office of Planning for CZM Federal Consistency Review, and made available for public review via the Division's webpage and a notice in the OEQC Bulletin.

Please call me if you have any questions.

Aloha,

PAUL J. CONRY
Wildlife Program Manager

cc: Leroy Taira, Fiscal

Hawaii Department of Land & Natural Resources

Division of Forestry and Wildlife

NONGAME MANAGEMENT PROGRAM FY01 - FY05

W-23-NG, Segments 6-10

HAWAII NONGAME MANAGEMENT PROGRAM

Grant: W-23-NG
Grant Period: July 1, 2000 - June 30, 2005

Introduction

Background

Hawaii, because of its geographic isolation and its diverse climates and habitats, became home to one of the most unique and spectacular assemblages of terrestrial wildlife on Earth—including 70 species of native birds, 2 species of native mammals, and well over 5,000 species of native insects and other invertebrates. Tragically, only a fraction of that which once occurred remains today and Hawaii continues to lose its native species at an alarming rate. This accelerated extinction rate is exemplified in the native bird fauna. Of 106 endemic taxa (species or subspecies) known from the historic or fossil record, 58 (55%) are now extinct. Of the 48 endemic bird taxa that survive today, 35 (73%) are listed as threatened or endangered by either the State or Federal Government—24 (50%) of these are forest birds. Twelve of these species are so rare that several may already be extinct and the remainder are at serious risk of extinction.

The goal of the Hawaii Nongame Management Program is to manage, preserve and protect the native avifauna and their habitats for their intrinsic, recreational, scientific, and educational values and to provide opportunities for the residents and visitors to Hawaii to use and enjoy these resources. A major focus of the program is on management and recovery of endangered species, including projects to monitor, manage habitat, and recover populations of nene on five islands; monitoring of endangered forest birds statewide; forest bird habitat management in key wildlife sanctuaries and forest reserves; and control of predators affecting endangered species. Other nongame projects include increased surveillance of non-native pests, construction of facilities and infrastructure to promote management or recreational opportunities to enjoy nongame resources, and maintenance of those facilities.

The management of the State's nongame resources is challenging to say the least. The geographic scope for the nongame program stretches from the remote Kure Atoll in the Northwest to the southern tip of the island of Hawaii on the south and includes numerous offshore islets where seabirds roost and nest. (See Appendix I for a map of nongame management areas throughout the State.) Division of Forestry and Wildlife management responsibility extends to all the wild lands controlled by the Department of Land and Natural Resources including over 640,000 acres in Forest Reserves; 122,703 acres in Natural Area Reserves, Wilderness or Research Preserves; and approximately 85,000 acres in State or Cooperative Wildlife Sanctuaries. Important nongame species in the State include 22 seabirds, 8 regular migrant shorebirds, 6 migrant waterfowl, 8 resident waterbirds, 28 native forest birds, 1 native upland goose, and 2 native birds of prey.

Program Overview

Participating in nongame related wildlife activities is an important recreational outlet for many of Hawaii's residents and visitors. According to the 1996 National Survey of Hunting, Fishing and Wildlife-Associated Recreation, 255,000 persons participated 2.4 million days of nonresidential wildlife-watching activities in Hawaii. The survey also indicated that participants spent $295,000,000 in the State for wildlife-watching activities. Wise management of these resources is essential to ensure that we can continue to provide for these recreational needs in the future.

There is a growing need to wisely manage our nongame resources and habitat to insure their survival in the future and to provide additional opportunity for wildlife-oriented recreational activities through out the State. Hawaii's Five Year Pittman-Robertson (PR) Nongame Management Program will fund Division projects to develop and enhance habitat for nongame species, control predators that decimate their populations, monitor populations status and distribution, and construct facilities and infrastructure

development that will aid in data gathering and analysis, and other activities that maximize recreational opportunities and staff efficiency.

The Hawaii Nongame Management Program (W-NG) covering the five year period July 2000 - June 2005 consists of six separate Subgrants (W-30-NGC through W-35-NGS) and 33 different projects or jobs within those subgrants. Specifics on planned management activities and expenditures are provided in the following project statements. A summary of the project titles and proposed funding levels is presented in the "Schedule of Funded Projects."

Federal Aid Section 7 Assessment

In developing these projects, precautions have been taken to evaluate potential impacts to threatened and endangered species and to incorporate measures which will protect listed species that may be affected by project activities. Hawaii currently has 377 species listed as threatened or endangered, an additional 123 proposed or candidate species under consideration for listing and 1,084 species of concern (See Appendix II for a list of endangered, threatened, proposed, and candidate species found on the various Islands throughout the State). A Federal Aid Assessment (Section 7 Evaluation Form) has been completed by the State Federal Aid Coordinator for each project to identify potential impacts and, where needed, incorporate additional measures that the State will take to avoid impacts or ensure that listed species are identified and protected. Completed Section 7 Evaluation Forms are included in Appendix III for reference.

The Division believes that Findings of "No Effect" or "Not Likely To Adversely Affect Listed Species" are warranted for the project activities in this grant package. The following considerations and mitigative measures were factors in reaching those findings.

1. The Nongame Management Program primary objective is to aid nongame and endangered species and has been purposefully designed to avoid activities that directly adversely affect listed species.

2. DOFAW's Resource Management Guidelines and distribution maps of listed species were used as planning tools in developing nongame management project activities and in assessing potential impacts to listed species in completing the State's portion of the Section 7 Assessments.

3. Many of the activities carried out under this program are routine, ongoing and located in previously developed and disturbed areas. Improvements are located to avoid impacts to listed species during construction.

Section B. Schedule of Funded Projects

Section C. Job Descriptions

Title: Nongame Program Coordination
Project 1: Statewide Coordination
Period: 2001-2005

Statewide Nongame Program Coordination

A. Need

Because of the complexity and volume of the program and geographic separation of project activities, overall coordination must be provided in order to adequately plan, review, administer, and monitor P.R. nongame projects. Liaison is needed with the U. S. Fish and Wildlife Service, State agencies and other organizations to ensure prompt and efficient handling of project affairs. Statewide program monitoring is needed to ensure compliance with Federal Aid standards and applicable State and Federal laws, regulations, and directives; and to monitor and respond to proposed changes in State laws and regulations which may affect State participation in the nongame portion of the P.R. program.

B. Objective.

To establish and maintain a system of planning, review, record keeping, project monitoring, supervision, reporting and coordination among staff and outside personnel and agencies adequate to meet the requirements for participation in and administration of the nongame management portion of the State's Federal Aid in Wildlife Restoration Program.

C. Expected Results and Benefits.

The Nongame Program Coordination Project will provide staff and procedures to ensure that the State meets its responsibilities for participation in the Federal Aid program, including work planning, record keeping, reporting, supervision of field staff, and coordination of nongame Federal Aid activities with the Service and other State and agency programs. Coordination of the nongame portion of the P.R. program will help ensure continued participation in the P.R. Federal Aid program and thereby improve hunting and increase sport hunting opportunities, protect and enhance wildlife habitat on both public and private land, integrate nongame management activities with other compatible or competing uses, and provide information on the wise management and appropriate nonconsumptive use of nongame species.

D. Approach.

The Federal Aid Coordinator will serve as the principal administrator of the Federal Aid Wildlife Restoration program and be responsible for compiling and submitting the statewide Grant Proposal Package, annual Grant Agreements and annual progress and status reports. Branch personnel will perform coordination activities at the branch level and provide the coordinator with project documents, reports, and recommendations to be incorporated in statewide documents. Coordination with staff or other agencies concerning P.R. project activities will be conducted by written or verbal communication or by attendance at meetings or conferences. The coordinator will provide training sessions for Division staff, review projects in the field throughout the State, and chair P.R. meetings. The coordinator will assure compliance with audit requirements, Federal Aid standards, applicable State and Federal laws and regulations and maximize utilization of available Federal Aid funding. The coordinator or other wildlife staff will attend annual meetings of Region 1 Federal Aid Coordinators, twice-annual meetings of the Western Association of Fish and Wildlife Agencies (WAFWA), and other national federal aid meetings and training as needed. The coordinator will schedule and chair 1-2 statewide federal aid meetings per year. The coordinator will conduct an annual site visit to each Branch to inspect federal aid projects for compliance with program guidelines. During FY01, the coordinator and Branch project leaders will participate and assist in a scheduled Federal Aid Program comprehensive audit.

The Wildlife Program Manager is the senior wildlife staff position on the administrative staff and has

been designated the Division Federal Aid Coordinator. The Wildlife Program Manager reports to and works through the Administrator who has line authority over all forestry and wildlife programs and activities in the state through branch managers to branch wildlife staff. The Wildlife Program Manager serves in a staff support and advisory function to the Administrator and Division staff. Key personnel, organizational titles, and project functions are as follows:

Paul Conry	Wildlife Prog. Manager	Statewide Coordinator
Thomas Telfer	Wildlife Biologist VI	Kauai Branch Project Leader
David Smith	Wildlife Biologist VI	Oahu Branch Project Leader
Meyer Ueoka	Wildlife Biologist VI	Maui Branch Project Leader
Ronald Bachman	Wildlife Biologist VI	East Hawaii District Project Leader
Tod Lum	Wildlife Biologist VI	West Hawaii District Project Leader

E. Location.
The Federal Aid Coordinator is stationed in the Honolulu Office of the Division of Forestry and Wildlife. The Branch Project Leaders are stationed in the respective Branch offices of the Division of Forestry and Wildlife in Lihue, Kauai; Honolulu, Oahu; Wailuku, Maui; Hilo, Hawaii; and Kamuela, Hawaii.

F. Estimated Costs.

Year 1 (FY01)	Year 2	Year 3	Year 4	Year 5	5-yr. Total
$25,000	$25,000	$25,000	$25,000	$25,000	$125,000

Title: Nongame Operations and Maintenance
Project 1: Hawaii County - East Hawaii District
Period: 2001-2005

Nongame Operations and Maintenance - East Hawaii District

A. Need.
Approximately 66,500 acres make up 3 wildlife sanctuaries and three Cooperative Endangered Species Management Areas (CESMA) in Hawaii County, East Hawaii District. Accommodations for field investigators are located in most sanctuaries for overnight stays. Buildings, roadways, fences, feed stations, and watering devices must be routinely inspected and repaired. All sanctuaries are patrolled regularly to prevent vandalism and detect other illegal activities. All appurtenances must be maintained for cost effectiveness. Grazing areas will be cleared of competing vegetation.

B. Objectives.
- Maintain current facilities and avoid replacement costs by inspecting and repairing facilities and amenities dedicated in support of the county's non-game and endangered species enhancement program.
- Monitor and manage human activities that may have negative impacts on endangered forest birds and their habitats in East Hawaii District.

C. Expected Results and Benefits.
Endangered waterbirds and forest birds, and other indigenous and migratory birds will be maintained in secure habitat, favoring their productivity and survival. All activities will assist in the fulfillment of endangered species recovery plan goals as well as reduce the likelihood of additional species becoming endangered.

Landowners in cooperative areas will be further encouraged to participate by agency maintenance of useful facilities that are indicative of a true commitment to this work.

D. Approach.
Maintain 7 buildings, 8 nene water units/feeders, 7 miles of fence, and 130 informational signs. Thirty miles of roads will be maintained by grading the existing road bed.

E. Location.
Kipuka Ainahou, Kahuku and Keauhou Wildlife Sanctuaries; Keaau, Kapapala Ranch, and King's Landing Cooperative Endangered Species Management Areas.

F. Estimated Costs.

Year 1	Year 2	Year 3	Year 4	Year 5	5-yr. Total
$12,925	$12,908	$11,509	$13,353	$13,416	$64,111

Title: Nongame Operations and Maintenance
Project 2: Hawaii County - West Hawaii District
Period: 2001-2005

Nongame Operations and Maintenance - West Hawaii District

A. Need.
Nongame wildlife areas within the district provide accommodations for field personnel (buildings, water tanks, fixtures) and roadways, fences and watering devices. Periodic inspection of these improvements are needed to keep them safe and operable. Inspections also provide a means of monitoring vandalism and/or inappropriate activities within the area.

B. Objectives.
- Maintain current facilities and avoid replacement costs by inspecting and repairing facilities and amenities dedicated in support of the non-game and endangered species enhancement program.
- Monitor and manage human activities that may have negative impacts on nongame wildlife and their habitats in West Hawaii.

C. Expected Results and Benefits.
All activities conducted within this job will assist in the fulfillment of endangered species recovery plan goals as well as reduce the likelihood of additional species becoming endangered. Maintaining these facilities indicates a commitment to cooperative landowners, conservation partners, environmental groups, etc. These groups will be further encouraged to participate in nongame conservation programs.

D. Approach.
Maintain five buildings, one nene water unit/feeder, 15 miles of fence, and 120 informational/boundary signs.

E. Location.
Puu Waawaa Forest Bird Sanctuary, Puu Keanui Cabin, Pohakuloa Wildlife Facility, and Makalawaena Cooperative Endangered Species Management Areas.

F. Estimated Costs.

Year 1	Year 2	Year 3	Year 4	Year 5	5-yr. Total
$11,050	$9,700	$11,700	$13,300	$12,100	$57,850

Title: Nongame Operations and Maintenance
Project 3: Maui County
Period: 2001-2005

Nongame Operations and Maintenance - Maui County

A. Need.

Kanaha Pond Wildlife Sanctuary on Maui is crucial to restoration and recovery of the endangered Hawaiian stilt, Hawaiian duck, and Hawaiian coot. There is, therefore, a vital need to protect, improve, restore, and maintain suitable wetland habitat conditions at Kanaha Pond Wildlife Sanctuary for those species as well as for numerous migrant shorebirds and waterbirds. The perimeter fence and sign maintenance, road and trail maintenance, and care of the public use facilities is crucial to sanctuary operations. Water level control, vegetation control; and restoration, upkeep and enhancement of the nesting islets directly and positively impacts bird numbers and recovery objectives.

In order to assure continued survival and enhancement of seabird colonies remaining on Maui, the seabird habitats at Pauwalu Point Sanctuary and the 22 offshore islets require continued improvements, and protection against human disturbance. The signs, access road, and boundary fences need to be maintained and improved on a regular basis.

Recent construction of holding and release pens, and with the ongoing successes of reintroduction of nene (Hawaiian goose) to Maui County at those mid- and low-elevation sites, requires continued operation and maintenance on a regular basis. The established signs, enclosure fences, and watering-units need continued care. Furthermore, nene habitat maintenance is essential to providing optimal foraging area for enhancement of species recovery.

B. Objectives.

- Enhance waterbird productivity and recovery at Kanaha Pond Wildlife Sanctuary on Maui through protection, preservation, habitat improvements and restoration such as through the enhancement of nesting islets, vegetation control, water level control, and sign, road and trail maintenance.
- Protect and maintain seabird populations at the Pauwalu Point Wildlife Sanctuary and other offshore islets sanctuaries where habitat protection, and reduction of human disturbances is necessary to resource management.
- Maintain and or enhance nene habitat management, and regularly maintain watering-units, holding, and release enclosures at mid- to low-elevation sites in Maui County.

C. Expected Results and Benefits.

Continued maintenance of wildlife sanctuaries, and suitable nene habitat and release sites, is expected to promote and provide for wetland habitat, seabird habitat, and recovery and enhancement of endangered wildlife of Maui County. These areas will provide opportunities to observe wildlife, for educational and scientific studies, and for general public information and enhanced public cooperation in wildlife management.

D. Approach.

Maintain Kanaha Pond for use by endangered and migratory waterbirds and shorebirds by maintaining the water drainage canals, consistent water level, and the deep-well pump. Nesting islets maintenance and sanctuary vegetation control and/or restoration will be necessary. 2.5 miles of roads and trails will be maintained by grading and vegetation control. Signs, public use facilities, and nenerelease sites with infrastructure and habitat areas will be maintained.

E. Kanaha Pond and Pauwalu Point Wildlife Sanctuaries on Maui, as well as nene mid- to low-elevation release sites on Maui and Molokai.

F. Estimated Costs.

Year 1	Year 2	Year 3	Year 4	Year 5	5-yr Total
$15,941	$15,626	$15,941	$15,626	$15,941	$79,075

Title: Nongame Operations and Maintenance
Project 4: Honolulu County
Period: 2001 - 2005

Nongame Operations and Maintenance - Oahu

A. Need.

Oahu's 13 offshore island Seabird Sanctuaries, Kapapa Island, Mokolii Island and Kure Atoll Wildlife Sanctuary provide refuge for over 20 species of seabirds and migratory shorebirds. Paiko Lagoon Wildlife Sanctuary, and Hamakua, Pouhala, Heeia, Salt Lake and Kawainui Marshes, provide habitat for native and migratory waterbird and shorebird species. The 14 State forest reserve areas on Oahu provide habitat for native forest birds, the Hawaiian short-eared owl, and the threatened Newell's shearwater. Kaena Point Natural Area Reserve provides nesting habitat for Laysan albatross and Wedge-tailed shearwaters, and a foraging and loafing site for several species of migratory shorebirds. Annual maintenance and operation of facilities is necessary to provide habitat on Oahu's sanctuaries and forest reserves for common native nongame and endangered species, and to provide for continued recreational opportunities for the public.

B. Objectives.

- Operate and maintain improvements to 37 wildlife management areas, totaling approximately 34,000 acres, in order to provide for the protection and management of nongame wildlife, including endangered species, and provide wildlife oriented recreation activities for the residents and visitors of Honolulu County.

C. Expected Results and Benefits.

Maintain and improve nesting habitat for 16 species of seabirds, four species of endangered waterbirds, and 5 species of native forest birds. Provide loafing and feeding sites for over 20 migratory shorebird species. Provide recreational wildlife viewing and appreciation, as well as research and educational opportunities. Provide access for public recreation, research, and educational opportunities. Protect wildlife through informational signs and cooperation with law enforcement officers.

D. Approach.

Seabird Sanctuaries: Maintain 120 signs, three Kure Atoll Field Camp buildings, one seabird holding pen (used to hold seabirds prior to banding), and perform custodial functions such as removal of wildlife entanglement hazards and other accumulated litter or debris.

Wetland Sanctuaries: Maintain 100 signs, one mile of access road, and one and a half mile of fence.

Forest Areas: Maintain 10 miles of road; 50 signs.

General: Maintain the non-game portion of three baseyard buildings at Makiki and Kawainui.

E. Location.

Seabird Sanctuaries: Kaohikaipu, Manana, the north and south Mokuluas, Popoi'a, Mokolea, Moku Manu, and Moku'auia; Kapapa and Mokolii Islands; Kaena Point Natural Area Reserve on Oahu; and Kure Atoll in the Northwest Hawaiian Islands.

Wetland Sanctuaries: Hamakua, Paiko, Heeia, Salt Lake, Pouhala, and Kawainui on Oahu.

F. Estimated Costs.

Year 1	Year 2	Year 3	Year 4	Year 5	5-yr. Total
$20,000	$20,000	$20,000	$20,000	$20,000	$100,000

Title: Non-game Operations and Maintenance
Project 5: Kauai County
Period: 2001-2005

Non-game Operations and Maintenance - Kauai County

A. Need.
Kawaiele Wildlife Sanctuary, currently under development, will need monthly maintenance. The need to protect, improve and maintain suitable wetland habitat at Kawaiele is part of the Hawaiian Waterbirds Recovery Plan aimed at providing stable nesting habitat for the Hawaiian stilt, coot, moorhen and koloa populations there, yet provide for public enjoyment of these resources. Signs, a parking area, viewing area, perimeter fencing, nesting islets, foot paths, and visitor kiosk and irrigation system will need to be maintained on a regular basis to enhance endangered waterbird productivity and yet allow for public enjoyment.

B. Objectives.
- Enhance waterbird productivity at Kawaiele Wildlife Sanctuary on Kauai through habitat protection and improvements such as maintenance of nesting islets, predator fencing, vegetation control, and visitor control.
- Maintain public use facilities including a parking area, foot paths, signs, and a visitor kiosk at Kawaiele Waterbird Sanctuary to afford public enjoyment of native wildlife without negatively impacting the resource by human disturbance.

C. Expected Results and Benefits.
The maintenance of this wildlife sanctuary is expected to enhance endangered waterbird productivity and survival by providing safe nesting, feeding and loafing habitat, while also providing for public enjoyment of the resource without causing negative impacts to it.

D. Approach.
Maintain 30 informational and boundary signs, 1.0 mile of perimeter fence, nesting islets, foot paths, a visitor kiosk, a grass irrigation system, and provide for litter control and control of predators with fencing at Kawaiele Wildlife Sanctuary on Kauai.

E. Location: Kawaiele Wildlife Sanctuary, Kauai County.

F. Estimated Costs.

Year 1	Year 2	Year 3	Year 4	Year 5	5-yr. Total
-	-	-	$4,000	$5,000	$12,000

Title: Nongame Population Management
Project 1: Hawaii County - East Hawaii District
Period: 2001-2005

Nongame Population Management - East Hawaii District

A. Need.

There are no native mammalian predators in Hawaii. Niches for small and medium-sized predators are filled by introduced Indian mongooses, feral dogs and cats and rats. In many instances they are the primary limiting factors on native ground-nesting birds such as endangered nene and seabirds. There are no naturally occurring large predators to control these introduced predators. Therefore control by people is necessary to help restore and maintain "normal levels" of native Hawaiian bird populations. Without predator control, efforts put into other management activities such as native bird propagation and release are of limited effectiveness. Injured or displaced individuals of endangered species need to be rescued, treated and released into secure habitats.

B. Objectives.

- Enhance reproduction and survival of endangered bird populations by reducing the numbers of mongooses, feral cats, rats, pigs and dogs in Wildlife Sanctuaries and Cooperative Endangered Species Management Areas in Hawaii County.
- Enhance survival of endangered species populations by rescuing, treating and releasing injured or displaced individuals into secure occupied habitat.

C. Expected Results and Benefits.

Some 66,500 acres of sanctuaries, cooperative release sites and critical habitat will support sustained populations of endangered and threatened wildlife. These protected species will eventually inhabit areas outside the sanctuaries as has been demonstrated by nene. Greater public appreciation will be gained for these species as they leave the threshold of extinction and become more available to non-consumptive appreciation.

D. Approach.

Predators such as mongooses, feral cats, rats, pigs and dogs will be trapped in Wildlife Sanctuaries and Cooperative Endangered Species Management Areas in East Hawaii District and disposed of humanely. Injured or displaced individuals of endangered species will be rescued, treated and released into secure habitats.

E. Location.

These activities will be conducted throughout East Hawaii District with particular emphasis in sanctuaries and Cooperative Endangered Species Management Areas.

F. Estimated Costs.

Year 1	Year 2	Year 3	Year 4	Year 5	5-yr. Total
$5,491	$5,405	$4,324	$5,595	$4,769	$25,584

Title: Nongame Population Management
Project 2: Hawaii County - West Hawaii District
Period: 2001-2005

Nongame Population Management - West Hawaii District

A. Need.

There are no native mammalian predators in Hawaii. Niches for small and medium-sized predators are filled by introduced Indian mongooses, feral dogs and cats and rats. In many instances they are the primary limiting factors on native ground-nesting birds such as endangered nene and seabirds. There are no naturally occurring large predators to control these introduced predators. Therefore control by people is necessary to help restore and maintain "normal levels" of native Hawaiian bird populations. Without predator control, efforts put into other management activities such as native bird propagation and release are of limited effectiveness.

Injured or displaced individuals of endangered species need to be rescued, treated and released into secure habitats.

B. Objectives.

- Enhance reproduction and survival of endangered bird populations by reducing the numbers of alien predators such as mongooses, feral cats, rats, pigs and dogs in Wildlife Sanctuaries and Cooperative Endangered Species Management Areas in West Hawaii.
- Enhance survival of endangered species populations by rescuing, treating and releasing injured or displaced individuals into secure occupied habitat.

C. Expected Results and Benefits.

Reduced predator levels will afford endangered species greater annual recruitment opportunities. As protected species numbers increase, they will eventually inhabit other suitable areas which will garner greater public support and appreciation for wildlife and related program activities, and eventually lead to the recovery of the species.

D. Approach.

Predators such as feral cats, pigs and dogs will be trapped in Wildlife Sanctuaries and Cooperative Endangered Species Management Areas and disposed of humanely. Mongooses and rats will be controlled using approved diphacinone bait stations. Injured or displaced individuals of endangered species will be rescued, treated and released into secure habitats.

E. Location.

These activities will be conducted throughout West Hawaii District with emphasis in sanctuaries and significant feeding, flocking, and nesting areas.

F. Estimated Costs.

Year 1	Year 2	Year 3	Year 4	Year 5	5-yr. Total
$5,600	$3,800	$4,600	$5,000	$6,900	$25,900

Title: Nongame Population Management
Project 3: Maui County
Period: 2001-2005

Nongame Population Management - Maui County

A. Need.
Wildlife population management activities in Maui County are necessary to the survival and recovery of endangered species of birds such as the nene (Hawaiian goose), Hawaiian stilt, Hawaiian duck, Hawaiian coot, and Dark-rumped petrel. Management for nene recovery activities now include placement of birds into lowland sites on Maui and Molokai. Abundant introduced feral mammals: especially cats, mongooses, dogs and rodents have greatly reduced nene and nongame waterbird and seabird populations. Numbers of non-native predatory mammals, especially where they are dense in lowland areas, need to be reduced in order to restore native nongame and endangered birds to safe and thriving levels. Injured or displaced individuals of endangered species need to be rescued, treated and released into secure habitats.

B. Objectives.
- Increase non-game waterbird populations, particularly those that are endangered, at Kanaha Pond Wildlife Sanctuary on Maui and oxidation ponds on Lanai and Molokai, with predator trapping and rodent control programs.
- Increase nene populations on lowland West Maui sites, Molokai, and eventually on Lanai,at the low elevation sites through bird releases and predator control.
- Rescue injured and displaced individuals of endangered species when necessary to assure their re-establishment and eventual recovery.

C. Expected Results and Benefits.
Year-round reductions of predators at Kanaha Pond Wildlife Sanctuary on Maui, and intensive predator trapping at the oxidation ponds, during the April through the August breeding season, on Molokai and Lanai will protect and enhance nongame and endangered species of waterbirds and their nests and young, and help to recover and stabilize their populations. Predator control at the lowland nene reintroduction sites will also assist in recovering the species on Molokai,West Maui, and Lanai. Rehabilitation and release, when appropriate, of injured endangered waterbirds, nene, and seabirds will also aid in species recovery.

D. Approach.
Predator numbers will be reduced by trapping and or use of approved rodenticides at Kanaha Pond Wildlife Sanctuary. Numbers of mammalian predators will be reduced on West Maui, Molokai, and Lanai at nene release sites, and at the oxidation ponds of Molokai and Lanai by trapping prior to and during the respective species' breeding seasons. All injured, ill, or displaced endangered species will be salvaged, treated and released, when possible, into secure habitat.

E. Location.
West Maui, Molokai, and Lanai at nene release sites, and for endangered waterbird protection, at the oxidation ponds on Lanai and Molokai, as well as at the Kanaha Pond Wildlife Sanctuary on Maui.

F. Estimated Costs.

Year 1	Year 2	Year 3	Year 4	Year 5	5-yr Total
$12,974	$11,974	$12,974	$11,974	$12,974	$62,870

Title: Nongame Population Management
Project 4: Honolulu County
Period: 2001 - 2005

Nongame Population Management - Oahu

A. Need.

Many native bird species (seabirds, water birds and forest birds) in Hawaii suffer the effects of competition from introduced predators. Native birds are susceptible to predation by mongooses, cats, rats, and dogs. In some areas, native birds have been eliminated from suitable habitat due to high levels of predation by non-native predators. In order to restore birds to their carrying capacity in nesting areas, numbers of introduced predators must be reduced or eliminated.

B. Objectives.

- To establish a population of 1000 nesting pairs of Wedge-tailed shearwaters and 12 nesting pairs of Laysan albatross at Kaena Point Natural Area Reserve, and 12 pairs of nesting Laysan albatross at Kuaokala Game Management Area by the year 2005.
- To monitor eradication efforts for Polynesian rats on Green Island, Kure Atoll.
- To perform predator assessments on Oahu offshore islands that are part of the State Seabird Sanctuary, and Mokolii and Kapapa Islands, off the windward coast of Oahu, and to plan and implement rat eradication programs on these islands where rats are present.
- To perform predator assessments, control activities, and management assessments on Oahu at Hamakua, Kawainui, Pouhala, and Heeia Marshes; and Paiko Lagoon Wildlife Sanctuary.

C. Expected Results and Benefits.

The restoration of Wedge-tailed shearwaters and Laysan albatross as a functional part of the Kaena Point Natural Area Reserve ecosystem and the enhancement of public recreational (wildlife viewing) opportunities.

Protection of nesting Laysan albatross at Kuaokala GMA, to enhance the diversity of species in this State-owned wildlife management area.

The restoration of seabird nesting levels to those present prior to the introduction of predators on Kure Atoll Wildlife Sanctuary and Oahu offshore islands in the State Seabird Sanctuary, and other offshore island seabird breeding colonies.

Establishment of protected nesting areas for native water birds, and feeding and loafing sites for migratory shorebirds and waterfowl in Hamakua, Kawainui, Pouhala, Salt Lake and Heeia Marshes Marshes, and Paiko Lagoon Wildlife Sanctuary.

D. Approach.

Kaena Point: Mongooses and cats will be controlled on 32 acres using 40 live traps deployed throughout the reserve. Rat numbers will be reduced using registered toxicants labeled for wildland use according to label specifications. Dogs will be controlled using fences and live traps.

Kuaokala GMA: Live traps, registered toxicants and shooting will be used to reduce numbers of rats, cats, mongooses and dogs in the vicinity of albatross nesting areas.

Oahu Offshore Islands: The presence of rats and their relative abundance will be assessed using standardized methods. Rats will be eradicated using toxicants labeled for wildland use according to label specifications. The islands will be monitored for predators for three years after the eradication effort.

Kure Atoll: As part of other survey and monitoring work on Kure Atoll, transects will be set to assess the efficacy of the rat eradication effort on the island. If rats are detected, efforts will resume to reduce their population to zero.

Hamakua, Kawainui, Pouhala, Salt Lake and Heeia Marshes, and Paiko Lagoon Wildlife Sanctuary: Control of mongooses, cats, rats and dogs as needed to assure protection of native and migratory waterfowl and shorebirds using traps, registered toxicants approved for use in wetlands, and shooting.

E. Location.
Green Island, Kure Atoll; Kaena Point Natural Area Reserve; Kuaokala GMA; Oahu Offshore Islands; Hamakua, Kawainui, Pouhala, Salt Lake and Heeia Marshes on Oahu, and Paiko Lagoon Wildlife Sanctuary.

F. Estimated Costs.

Year 1	Year 2	Year 3	Year 4	Year 5	5-yr. Total
$13,250	$13,250	$13,250	$13,250	$13,250	$66,250

Title: Nongame Habitat Management
Project 1: Hawaii County - East Hawaii District
Period: 2001-2005

Nongame Habitat Management - East Hawaii District

A. Need.
Sanctuaries and endangered species habitat have been degraded by invasive alien vegetation. Where carrying capacity for endangered species and other non-game wildlife has been diminished, it must be restored.

B. Objectives.
- Enhance endangered species and native bird habitat in select wildlife sanctuaries by outplanting desirable native food plants.
- Clear 4 acres of nonproductive brushy and weedy habitat in select nene sanctuaries and Cooperative Endangered Species Management Areas (CESMAs) and replant with vegetation of value to wildlife.

C. Expected Results and Benefits.
Better survival of various wildlife species can be expected by re-establishing compatible vegetation. With improved habitat, nene and forest birds will be less likely to leave secure areas and sanctuaries in search of food and cover.

D. Approach.
Two hundred native food plants will be planted per year in wildlife sanctuaries. Four acres of non-native brush and weedy vegetation will be mowed yearly and planted with desirable food plants for nene in nene sanctuaries.

Sites for native food plant outplanting will be cleared of weeds by hand or select use of herbicides and native species planted. Areas to be treated will be surveyed prior to mowing or clearing to ensure they do not have T&E listed plant species.

E. Location.
This job will be performed in wildlife sanctuaries and CESMA throughout the East Hawaii District.

F. Estimated Costs.

Year 1	Year 2	Year 3	Year 4	Year 5	5-yr. Total
$3,879	$3,752	$2,861	$4,451	$4,451	$19,394

Title: Nongame Habitat Management
Project 2: Hawaii County - West Hawaii District
Period: 2001-2005

Nongame Habitat Management - West Hawaii District

A. Need.
Sanctuaries and endangered species habitat have been degraded by highly invasive alien vegetation. Where carrying capacity for endangered species and other non-game wildlife has been diminished, it must be restored.

B. Objectives.
- Promote growth of endangered species and native bird habitat in Puu Waawaa Forest Bird Sanctuary by planting native trees and removing aggressive non-native weeds using livestock.

C. Expected Results and Benefits.
Better survival of various wildlife species can be expected by removing aggressive non-native plants and promoting growth of native plant species. With improved habitat, forest birds will be less likely to leave secure areas and sanctuaries in search of food and cover.

D. Approach.
Utilize small fenced exclosures to promote growth and survival of rare native plant colonies. Remove aggressive banana poka (*Passiflora mollissima*) and other aggrssive non-native weeds by employing grazing livestock in manageable fenced areas and by mechanical methods using volunteers. Collect seeds of native tree species, propagate, .

E. Location.
Activities will occur within the Puu Waawaa Forest Bird Sanctuary, island of Hawaii. The controlled cattle grazing will occur in the 836 Kalepiula Mauka Kona paddock within the Sanctuary .

F. Estimated Costs.

Year 1	Year 2	Year 3	Year 4	Year 5	5-yr. Total
$1,600	$3,400	$4,500	$3,500	$3,800	$16,800

Title: Nongame Habitat Management
Project 3: Honolulu County
Period: 2001 - 2005

Nongame Habitat Management - Oahu

A. Need.

High rates of plant species introductions over the past two hundred years have caused relatively rapid and ongoing physical changes to many of Hawaii's seabird nesting areas. The encroachment of weed species has reduced nesting habitat and optimal burrowing sites. In order to maintain stable populations of seabird species, vegetation control is needed to eliminate introduced weed species and restore vegetation preferred for nesting.

Encroaching non-native vegetation is threatening nesting, feeding, loafing and escape habitat for native waterbirds and migratory shorebirds in State-owned wetland habitats on Oahu. Control of this weedy vegetation is needed to maintain optimal habitat conditions.

B. Objective.

- Maintain physical vegetation and species composition suitable for seabird nesting by controlling vegetation on the Oahu offshore island seabird sanctuaries.
- Control non-native weed species in the State-owned wetland habitats on Oahu to assure accessible feeding, loafing and foraging habitat for native water birds and migratory shorebirds.

C. Expected Results and Benefits.

Oahu Offshore Islands: Control of two acres of non-native weeds per year to improve nesting habitat for Wedge-tailed shearwaters and Sooty terns.
Oahu Wetlands: Control 40 acres of non-native weeds to improve feeding, nesting and loafing habitat for Hawaiian stilts, Gallinules, coots and ducks, as well as improve foraging and loafing conditions for Pacific Golden plovers, Ruddy turnstones, Sanderlings, and a variety of other migratory shorebird and waterfowl species.

D. Approach.

Oahu Offshore Islands: Enhance and maintain two acres (0.8 ha) each year of nesting habitat through control of introduced grass, shrub and tree species. Alien grasses and shrubs will be pulled by hand and/or sprayed with herbicide; alien trees will be pruned to create more favorable physical nesting structure and/or cut and treated with registered herbicides. All habitat work will be done during January and February when the shearwaters are not present on the islands. Herbicides will be used sparingly in accordance with label instructions and applied in such a way as to insure no effect on non-target species. Cut branches and shrubs will be stacked to create brush piles, which provide shearwater nesting habitat.

Oahu Wetlands: Vegetation will be controlled by mowing, spraying and grazing according to strict guidelines established by the District Wildlife Manager. All habitat work will be done during the non-breeding seasons, or in areas where native bird life will not be disturbed. Herbicides will be used sparingly in accordance with label instructions and applied in such a way as to insure no effect on non-target species.

Habitat enhancement areas will be surveyed prior to management activities and necessary measures will be taken to protect both common native and threatened and endangered plant species.

E. Location.

Oahu offshore Islands and State-owned wetlands.

F. Estimated Costs.

Year 1	Year 2	Year 3	Year 4	Year 5	5-yr. Total
$6,000	$6,000	$6,000	$6,000	$6,000	$30,000

Title: Nongame Facilities Construction
Project 1: Hawaii County - East Hawaii District
Period: 2001-2005

Nongame Facilities Construction - East Hawaii District

A. Need.
Additional infrastructure development is needed to operate the non-game management program. Boundary and information signs are needed at sanctuaries and nene release sites to educate and inform the public of the status of these areas. Nene at Kipuka Ainahou will be encouraged to expand range by developing two more water units. Existing water units will be fenced to exclude dogs.

B. Objectives.
- Benefit up to 200 nene in the various release sites and sanctuaries by increasing the availability of water through additional water units.
- Educate and inform the public of the status of nene sanctuaries.

C. Expected Results and Benefits.
Nene will be more likely to stay in sanctuaries and cooperative management areas in dry years. A better informed public will reduce human disturbance and harassment of endangered species and increased public support for wildlife programs.

D. Approach.
Approximately 20 boundary and informational signs will be posted/year where needed. Two nene water units will be constructed and reservoirs at Keauhou I and Keaau. Both will be will be fenced to exclude feral dogs.

E. Location.
Kahuku, Keauhou, Keauhou 2, and Keaau Nene Sanctuaries; and Kapapala Ranch and King's Landing Cooperative Endangered Species Management Areas.

F. Estimated Costs.

Year 1	Year 2	Year 3	Year 4	Year 5	5-yr. Total
$1,971	-0-	$1,526	-0-	$1,520	$5,017

Title: Nongame Facilities Construction
Project 2: Hawaii County - West Hawaii District
Period: 2001-2005

Nongame Facilities Construction - West Hawaii District

A. Need.
Additional infrastructure development is needed within the Puu Waawaa Forest Bird Sanctuary in West Hawaii. Improvements include informational signs, exclosures, paddock fencing, and water development within the Sanctuary.

B. Objectives.
- Protect native plant species and improve forest bird habitat.
- Develop facilities to manage cattle grazing as a means of banana poka control.
- Improve public education opportunities.

C. Expected Results and Benefits.
Non-native plants will be reduced in the Sanctuary by grazing livestock in fenced paddocks. Smaller areas containing important plants utilized by forest birds will be protected from grazing animals by exclosure fencing. Informational signs within the area will promote a better informed public and provide increased public support for wildlife programs.

D. Approach.
Exclosure fencing will be erected around six small plant colonies. One mile of paddock fencing will be constructed in year 2 to divide large existing paddocks into manageable smaller units. Grazing animals will also be manipulated by utilizing strategically placed water troughs.

E. Location.
Puu Waawaa Forest Bird Sanctuary.

F. Estimated Costs.

Year 1	Year 2	Year 3	Year 4	Year 5	5-yr. Total
$2,550	$7,000	$3,000	$1,000	-0-	$13,550

Title: Nongame Facilities Construction
Project 3: Maui County
Period: 2001-2005

Nongame Facilities Construction - Maui County

A. Need.

Signs are needed at Kanaha Pond Wildlife Sanctuary to inform and warn the public to protect the endangered Hawaiian stilt, Hawaiian coot and Hawaiian duck from harassment and human disturbance. Signs are needed at Pauwalu Point Seabird Sanctuary to reduce adverse human impacts and to inform the public about the resources present. Signs will enhance the level of public cooperation in management at these sites. Walk-through openings in the Pauwalu Sanctuary fence will allow for exclusion of general vehicular access, but will not impede traditional foot access by the public.

In order to continue expansion of the lowland distribution of nene in Maui County, informational signs need to be created and construction of open-top release pens, holding pens, and watering units must be done on West Maui, Molokai, and Lanai.

B. Objectives.

- Reduce vandalism, harassment, and human disturbance to nene, endangered waterbirds, and seabirds in Maui County.
- Increase public information about human impacts and the natural resources.
- Increase public cooperation in non-game wildlife conservation
- Expand distribution of the nene (Hawaiian goose) at low and mid-elevation sites in Maui County.

C. Expected Results and Benefits.

The posting of perimeter signs for information, interpretation and guidance at Kanaha Pond Wildlife Sanctuary will help to protect, enhance and recover the three endangered species of waterbirds there. Posting signs and constructing walk-through entrances in the fence at Pauwalu Point Sanctuary should greatly increase public cooperation in management and reduce human adverse impact to the nesting seabirds. Construction of holding pens, release pens, and watering units will enhance the spread and recovery of the nene in Maui County.

D. Approach.

Posting instructional, interpretive and perimeter signs provide information to the public, reduce adverse human impacts, and assist in establishing cooperation in management of the endangered waterbirds, the nene and seabirds at the respective sanctuaries and release locations. Watering units and open-top/holding pens will be constructed to advance the recovery and survival chances of the nene at mid- or low-elevation sites on West Maui, Molokai and Lanai.

E. Location.

Kanaha and Pauwalu Point sanctuaries on Maui and at various nene release or management locations on West Maui, Molokai, and Lanai.

F. Estimated Costs.

Year 1	Year 2	Year 3	Year 4	Year 5	5-yr Total
$1,850	$500	$1,850	$265	$265	$4,730

Title: Nongame Facilities Construction
Project 4: Honolulu County
Period: 2001 - 2005

Nongame Facilities Construction - Oahu

A. Need.
Storage facilities are needed to provide secure storage for wildlife management equipment and supplies required to enhance and maintain wetland habitat areas, coordinate efforts of volunteer laborers, and to provide public education and recreation opportunities. Boundary and paddock fencing are needed at various wetlands to control cattle.

B. Objectives.
Construction of facilities necessary to maximize the efficient management of Oahu's native wildlife.

C. Expected Results and Benefits.
Facilities will provide secure storage of wetlands, watershed and offshore island management equipment and supplies, and will enhance existing and planned management activities.

D. Approach.
Facilities construction will consist of the installation of new storage facilities designed to secure and protect wildlife management equipment and supplies, and additions to existing facilities deemed necessary to enhance their capabilities and capacity.

E. Location.
Kure Atoll State Wildlife Sanctuary; storate facilities at upland sites adjacent to Kawainui, Hamakua and Pouhala Marshes; fencing at Kawainui, Hamakua, and Pouhala Marshes..

F. Estimated Costs.

Year 1	Year 2	Year 3	Year 4	Year 5	5-yr. Total
$3,000	$3,000	$3,000	$3,000	$3,000	$15,000

Title: Non-game Facilities Construction
Project 5: Kauai County
Period: 2001-2005

Nongame Facilities Construction - Kauai County

A. Need.
The final development of Phase II of the Kawaiele Waterbird Sanctuary was delayed because of technical land license issuance problems, but is now ready for completion. The sanctuary has potential for enlargement by 15 acres. It will require planning and administration of sand mining to complete creation of nesting islands, prescribed bottom contours, and construction of fencing, interpretative facilities, walkways, railings and signs to maximize endangered waterbird productivity and protect them from predators and human disturbance, yet allow for public enjoyment.

B. Objectives.
- Complete the Phase II development of the Kawaiele Waterbird Sanctuary.
- Maximize endangered waterbird productivity and provide for controlled public enjoyment and interpretation of endangered wetland species at Kawaiele Waterbird Sanctuary.

C. Expected Results and Benefits.
The completion of Kawaiele Waterbird Sanctuary will provide stable habitat for up to 60 Hawaiian coots, 20 Hawaiian moorhen (gallinules), 30 Hawaiian stilt, and 20 Hawaiian ducks (koloa), in addition to other indigenous and migratory wetland species. Interpretive use of the sanctuary will allow for public enjoyment of the resource, yet provide endangered water birds safety from undesirable human activities.

D. Approach.
During the first two years, 15 additional acres of impoundment and nesting islets will be constructed by the management of commercial sand mining and exposure of the existing water table. Rank vegetation in some sites will need weeding and mowing. The following appurtenances will be constructed: parking lot, 0.1 mi. of trail and walkway, 1.0 mi. of fencing and railings, one observation kiosk, 50 signs, and an irrigation system.

E. Location.
Kawaiele Waterbird Sanctuary, Kauai.

F. Estimated Costs.

Year 1	Year 2	Year 3	Year 4	Year 5	5-yr. Total
$16,000	$16,000	$13,000	$12,000	$11,000	$68,000

Title: Nongame Survey and Inventory
Project 1: Survey and Inventory of Nene
Job 1: Hawaii County - East and West Hawaii Districts
Period: 2001-2005

Nene Surveys - Hawaii County

A. Need.

The nene population on the island of Hawaii will likely continue to decline without continuous management. There is evidence that predation in goslings and in adults, and inadequate nutrition in goslings severely affects survivability in the wild. Continuous monitoring and evaluation of the nene population is needed to further define the significance of known limiting factors and to reveal unknown factors in order to develop the most appropriate management actions to restore nene populations in the wild.

B. Objectives.

- Determine status and distribution of nene.
- Determine the level of predator control activity needed in nene areas.
- Monitor and analyze the effects of habitat and population management actions.
- Continually monitor survival and recruitment of wild and released nene.
- Analyze sightings data to gauge population status, reproductive success, trends and distribution.
- Evaluate new areas for their potential as nene habitat.
- Identify and mitigate limiting factors such as disease and native hawk, I'o, predation.

C. Expected Results and Benefits.

As we continue to develop a better understanding of nene in the wild through population monitoring and evaluation, we can more effectively address the problems associated with their survival. The results of these investigations will assist managers in making the most appropriate decisions regarding nene population and habitat management.

D. Approach.

Nene will be monitored by banding individuals with a USFWS aluminum bands and coded colored plastic leg bands and recording sightings during regular visits to feeding, flocking and nesting areas, other areas nene are known to visit, and occasional visits to areas nene may visit incidentally. Local residents will be encouraged to maintain nene sightings logs. Select nene will be fitted with radio-transmitters and their movements recorded. Sightings data will be analyzed to gauge population status, trends and distribution, survival of wild and released nene, and effectiveness of predator control and habitat improvement programs. Educational materials will be produced to help educate the community about the value of endangered species.

E. Location.

Throughout Hawaii County, where ever nene occur, with particular emphasis on wildlife sanctuaries and cooperative endangered species management areas.

F. Estimated Costs.

	Year 1	Year 2	Year 3	Year 4	Year 5	5-yr Total
Job 1a. East Hawaii	$19,600	$19,600	$20,890	$22,160	$22,160	$104,410
Job 1b. West Hawaii	$3,250	$3,150	$3,250	$4,250	$4,250	$18,150
Total Job Costs	$22,850	$22,750	$24,140	$26,410	$26,410	$122,560

Title: Nongame Survey and Inventory
Project 1: Survey and Inventory of Nene
Job 2: Maui County
Period: 2001 - 2005

Nene Surveys - Maui County

A. Need.
Over the past ten years the nene population in Haleakala has been fluctuating with estimates as low as 140 birds to a high of 240. Studies on Kauai have also indicated that nene appear to prefer and do well in lowland habitats. Recent releases at the mid-elevation site on West Maui and follow-up studies support the indication that nene prefer lowland habitat. Serious consideration and effort need to be made in identifying new lowland release sites in Maui District (Maui, Molokai, and Lanai).

B. Objectives.
- Continue to monitor nene population trends in Maui District (Maui, Molokai, Lanai). Focus attention on low- and mid-elevation release sites.
- Determine distribution and survival of nene in West Maui.
- Monitor movements, nest success, distribution and survival of nene with the use of radio telemetry in Maui District (Maui, Molokai, Lanai).
- Continue to monitor and keep records of habitat preferences of released nene in Maui District.
- Evaluate additional areas as low- or mid-elevation release sites, with particular attention to suitable sites on private lands.

C. Expected Results and Benefits
Continue monitoring mid- to low-elevation releases to determine movements, habitat preference, nest success, and survival in these areas. Continue to monitor current populations in Haleakala Crater to determine the status of the population. These investigations will help us determine distributions and better habitat management for nene in Maui District.

D. Approach
Weekly observations will be conducted at release sites and/or known established areas by foot and vehicle to determine movements and dispersal. Nene will also be monitored by banding individuals, monitoring movements, reproductive success and distributions. Use of telemetry equipment will also help in monitoring movements and breeding success. Nest surveys will be conducted at known locations to determine hatching success.

E. Location.
Maui District (Maui, Molokai & Lanai)

F. Estimated Costs.

Year 1	Year 2	Year 3	Year 4	Year 5	5 Yr Total
$9,000	$10,500	$10,500	$10,500	$10,500	$51,000

Title: Non-game Survey and Inventory
Project 1: Survey and Inventory of Nene
Job 3: Kauai County
Period: 2001-2005

Nene Surveys - Kauai County

A. Need.
Four separate populations of nene on Kauai need to be monitored to assess numbers, nesting success, dispersal, habitat preferences, and mortalities, so that the accomplishment of nene recovery goals can be determined, and limiting factors can be reduced.

B. Objectives.
- Determine the size of four separate nene populations on Kauai.
- Assess nesting success, dispersal, habitat preferences, and causes of mortalities in those populations.

C. Expected Results and Benefits
Accurate assessment of the nene populations on Kauai will enable us to measure the effectiveness of introductions, and evaluate current management practices. It will provide the information necessary to identify limiting factors, and to improve management actions that will result in the down-listing and eventual de-listing of the species from endangered status.

D. Approach
Up to 100 nene will be captured using throw nets, and or herding them into pens adjacent to open water areas, where they will be marked with individually coded colored plastic leg bands and aluminum USFWS numbered leg bands. Populations will be calculated from ratios of banded to unbanded birds.

A database will be maintained, logging the date, time, UTM location codes, and lists of social groups, nests, pairs, and mortalities to evaluate the status of each population.

Up to three ganders in any of the four populations may be fitted with radio transmitters, to locate the nesting location of birds that have expanded their range to new areas.

E. Location.
Island of Kauai

F. Estimated Costs

Year 1	Year 2	Year 3	Year 4	Year 5	5-yr Total
$18,000	$18,000	$18,000	$18,000	$18,000	$90,000

Title: Nongame Survey and Inventory
Project 2: Survey and Inventory of Forest Birds
Job 1: Statewide Forest Bird Surveys
Period: 2001-2005

Statewide Forest Bird Survey

A. Need.

Hawaii is home to one of the most unique and spectacular native bird faunas in the world, but tragically also one the most threatened. Of the 48 endemic taxa that are believed to survive today, 39 (81%) are listed as an endangered, threatened, proposed or candidate species by either the State or Federal Government and 25 (52%) of these are forest birds. Many forest bird populations are restricted to and continue to slowly disappear from their limited range. All populations of native forest birds are being adversely affected by avian disease, predation, habitat modification from feral ungulates and invasive weeds, and competition with alien species. Management programs are needed to halt the decline in these populations and restore them to safe levels. Basic information on forest bird population status, distribution and trend; and condition of habitats is needed to guide management actions and to provide insight on limiting factors and their control. Once management has begun, data on population trends is essential to evaluate effectiveness of management actions.

Statewide forest bird surveys were begun in the 1970's by the U.S. Fish and Wildlife Service to obtain baseline information on population status and distribution for all native and introduced forest birds in the state. The Hawaii Department of Land and Natural Resources (DLNR) participated in those surveys and surveys were completed for Hawaii, Maui, Molokai, Lanai and Kauai (Oahu was not surveyed under this multi-agency study). Multi-agency statewide forest bird surveys were resumed in 1988 with DLNR in the lead as coordinator. Limited surveys have been completed on Molokai (1988, 1995), Kauai (1989, 1994, 2000), Oahu (1991, 1996), Maui (1992, 1998) and Hawaii (1993). Continuation of statewide general surveys is needed to evaluate statewide trends in native forest bird species status and distribution, and identify uniform trends, problems and changes in avian community composition.

In addition to general surveys for all forest birds, many endangered forest birds have declined to such critically low numbers that intensive searches are needed to monitor their status and to locate remnant populations to enable initiation of recovery actions.

B. Objectives.

- To monitor the status and distribution of native and introduced forest bird populations and their characteristics, particularly threatened or endangered species, in selected forest areas throughout the State of Hawaii.
- To conduct rare bird searches for and find populations of rare and endangered species.
- To determine status and condition of forest bird habitat including key components such as presence and abundance of avian disease, predators or food resources.
- Disseminate findings to cooperators and public.

C. Expected Results or Benefits.

Information generated through this study will be utilized by the Department of Land and Natural Resources and other conservation-oriented agencies in monitoring status, distribution and population characteristics of forest birds to develop programs for the preservation, enhancement, and recovery of threatened or endangered birds and their habitats including updating and revising tasks and priorities in recovery plans. Data on population size, characteristics, distribution and trend and the status and condition of habitat will be used to assess biological and ecological requirements and limiting factors and identify key habitat areas where ecosystem management actions will be most effective. General surveys and rare bird searches will be used to locate pockets of rare species and nesting birds so that more

intensive habitat management, nest protection measures and rear and release avicultural techniques can be implemented to manage and recover species on-the-brink.

Surveys conducted in wildlife sanctuaries, Natural Area Reserves and forest reserves where active habitat management programs are being implemented will provide information on population trend and be used to evaluate the effectiveness of management actions. Management actions will be expanded or modified depending on the response in bird populations. Survey information will also provide a data base with which to make assessments and recommendations on potential impacts of proposed land use actions and development projects in areas inhabited by forest birds.

D. Approach.

Forest bird surveys will be conducted on each of the five main islands on a five year rotation basis. The order of the 5-year cycle will begin with East Maui in 00-01, East Hawaii (Kau) in 01-02, Oahu and Hawaii (Puu Waawaa, Lapahoehoe) in 02-03, Molokai and West Maui in 03-04, and Kauai in 04-05. Surveys will be conducted in key native forest bird habitat including those Division or Cooperator lands being actively managed to enhance forest bird habitat. Surveys will use the same transect lines established during the statewide surveys in 1988-2000. New transects will be established where needed to survey additional areas. Transects are laid out following a compass bearing and marked with colored flagging and station tags. Surveying transects or establishing new transects and the periodic maintenance of existing transects involves minimal cutting or clearing of vegetation. Islands with large areas to cover will be surveyed over multiple years such as with East and West Maui and Hawaii.

A variable circular plot census technique and/or other technique to index abundance will be used to survey select areas for status, distribution, and abundance of native and introduced forest birds. Data collected will include date, time and weather condition; species and number, type of observation and distance from observer; plant phenology as appropriate; and ungulate activity index as appropriate. Additional field surveys and observations may be done to collect information on species activity and behavior and reproductive condition. A Variable Circular Plot data analysis computer program will be used to summarize data and calculate population statistics and density estimates. Data entry and analysis may be done by DOFAW staff or contracted out. Survey results and related information on status and management of forest birds will be disseminated to cooperators and the public.

Depending on availability of manpower and funds, additional monitoring may be done to assess habitat status and condition including the presence and abundance of avian diseases, predators, and food resources. Avian diseases will be assessed by monitoring presence and abundance of malaria carrying mosquitoes and/or by surveying resident bird populations for signs of avian disease. Resident birds will be captured in mist nets, sampled for disease (blood and cloacal samples) and released. The presence and abundance of predators will be assessed using snap or live traps. Captured predators will be killed unless marked and released for capture/recapture analysis.

Rare bird searches will be conducted using existing trails and transects or newly established transects. A combination of general reconnaissance, tape call-back, and station counts will be used to locate and determine status and distribution of rare birds. Initial survey contacts will be followed up to locate other resident individuals, delimit territory used, identify key habitat and to search for nests for follow-up habitat and recovery management.

Cooperators in this project include the USGS Biological Resources Division, U.S. Fish and Wildlife Service, National Park Service, The Nature Conservancy of Hawaii and private partners. The Division project leader is the Nongame Staff Biologist in the Honolulu, Administrative Office.

E. Location.

Forest bird habitat on the islands of Kauai, Oahu, Molokai, Maui and Hawaii.

F. Estimated Costs.

Year 1	Year 2	Year 3	Year 4	Year 5	5-yr Total
$30,000	$30,000	$30,000	$30,000	$30,000	$150,000

Title: Nongame Survey and Inventory
Project 3: Survey and Inventory of Waterbirds
Job 1: Statewide Waterbird Database
Period: 2001-2005

Statewide Waterbird Database

A. Need.
The status of four endangered waterbirds, migratory waterfowl and shorebirds needs to continue to be monitored semi-annually to measure the effectiveness of endangered waterbird recovery plan objectives, sanctuary management programs, and to detect catastrophic declines of waterbird numbers. The information is also used to evaluate proposed urban or agricultural development projects that may affect endangered waterbirds or their habitats.

B. Objectives.
- Measure the population status of endangered waterbirds, migratory and resident waterfowl and shorebirds and their habitats semi-annually statewide.
- Disseminate endangered waterbird distribution and numbers to other conservation agencies and planners.

C. Expected Results and Benefits.
The information collected will measure the effectiveness of sanctuary development projects and the population trends of endangered waterbirds, migratory waterfowl, and resident shorebirds. It will provide the information needed to evaluate the progress of recovery actions in the endangered waterbird recovery plan. It will provide baseline information upon which management recommendations are made concerning proposed development projects that may affect endangered waterbirds or their habitats.

D. Approach.
Data from semi-annual waterbird surveys for Kauai, Niihau, Oahu, Maui, Molokai, Lanai, and Hawaii will continue to be collected and entered into a standardized database. Results will be tabulated and analyzed to determine population trends by island, and statewide.

E. Location.
Honolulu

F. Estimated Costs.

Year 1	Year 2	Year 3	Year 4	Year 5	5-yr Total
$5,000	$5,000	$5,000	$5,000	$5,000	$25,000

Title: Nongame Survey and Inventory
Project 3: Survey and Inventory of Waterbirds
Job 2: Hawaii County - East Hawaii District
Period: 2001-2000

Waterbird Surveys - East Hawaii District

A. Need.
The status of Hawaii's four endangered waterbird species, as well as other indigenous waterbird species and migratory waterfowl and shorebirds, needs to be monitored in order to detect trends in species abundance and distribution. These data are necessary both to monitor recovery of native species and to assess trends for migratory species, and can be used to indicate successful habitat management strategies and to make recommendations on proposed land uses.

B. Objectives.
- To determine the abundance, distribution and population trends of waterbird and shorebird species in East Hawaii District.

C. Expected Results and Benefits.
Hawaii data will become part of the state-wide database of waterbird and shorebird species distribution and abundance. This is used to guide habitat management and enhancement efforts, prioritize wetlands acquisition and develop additional refuges and sanctuaries, and to evaluate the potential impacts of changes in land use.

D. Approach.
This program will continue the East Hawaii Segment of the twice-yearly survey of 43 wetland sites on Hawaii. State, Federal, and private agencies, organizations, and individuals assist in the surveys. Each wetland is visited by trained observers who make a complete count of species and individual birds utilizing each wetland, as well as habitat conditions, water levels and weather. These data are entered into a database which is used to determine population trends by species and by wetland.

E. Location.
Island of Hawaii, East Hawaii District

F. Estimated Costs.

Year 1	Year 2	Year 3	Year 4	Year 5	5-yr. Total
$2,000	$2,000	$2,000	$2,000	$2,000	$10,000

Title: Nongame Survey and Inventory
Project 3: Survey and Inventory of Waterbirds
Job 3: Hawaii County - West Hawaii District
Period: 2001-2000

Waterbird Surveys - West Hawaii District

A. Need.
The status of Hawaii's four endangered waterbird species, as well as other indigenous waterbird species and migratory waterfowl and shorebirds, needs to be monitored in order to detect trends in species abundance and distribution. These data are necessary both to monitor recovery of native species and to assess trends for migratory species, and can be used to indicate successful habitat management strategies and to make recommendations on proposed land uses.

B. Objectives.
- To determine the abundance, distribution and population trends of waterbird and shorebird species in West Hawaii District.

C. Expected Results and Benefits.
Hawaii data will become part of the state-wide database of waterbird and shorebird species distribution and abundance. This is used to guide habitat management and enhancement efforts, prioritize wetlands acquisition and develop additional refuges and sanctuaries, and to evaluate the potential impacts of changes in land use.

D. Approach.
This program will continue the West Hawaii Segment of the twice-yearly survey of 43 wetland sites on Hawaii. State, Federal, and private agencies, organizations, and individuals assist in the surveys. Each wetland is visited by trained observers who make a complete count of species and individual birds utilizing each wetland, as well as habitat conditions, water levels and weather. These data are entered into a database which is used to determine population trends by species and by wetland.

E. Location.
Island of Hawaii, West Hawaii District

F. Estimated Costs.

Year 1	Year 2	Year 3	Year 4	Year 5	5-yr. Total
$1,000	$1,000	$1,000	$1,000	$1,000	$5,000

Title: Nongame Survey and Inventory
Project 3: Inventory of Waterbirds
Job 4: Maui County
Period: 2001-2005

Waterbird Surveys - Maui County

A. Need.

The status of endangered waterbird species, other indigenous waterbird species, as well as migrant waterfowl and shorebirds on Maui, Molokai, and Lanai need to be monitored to detect trends in abundance and distribution. Collection of these data are utilized in monitoring of the recovery of endangered species and to assess the status and trends of migratory waterbird species. These data provide the basis for habitat management strategies and recommendations on proposed land uses.

B. Objectives.

- To determine abundance, distribution and population trends of waterbird and shorebird species in Maui County in twice yearly surveys.
- Provide this waterbird survey data on Maui, Molokai, and Lanai to the statewide database

C. Expected Results and Benefits.

These data will become part of the state-wide database of waterbird and shorebird species distributions and abundance records. This information is used in developing habitat management and enhancement strategies, to prioritize wetland acquisitions and development into additional refuges or sanctuaries, and to help evaluate potential impacts of ongoing or proposed land uses.

D. Approach.

This project will entail twice-yearly surveys of 65 wetland sites on Maui, 16 sites on Molokai, and 4 sites on Lanai. State, federal, and private agencies, organizations and individuals assist in the data collection on the surveys. Each site is visited by trained observers who count species and individuals, characterize wetland status, human impacts, water levels, and weather. All data are entered into the statewide database.

E. Location.

Maui County (Maui nui) islands of Maui, Molokai and Lanai.

F. Estimated Costs.

Year 1	Year 2	Year 3	Year 4	Year 5	5-yr Total
$3,344	$3,344	$3,194	$2,744	$2,744	$15,370

Title: Nongame Survey and Inventory
Project 3: Survey and Inventory of Waterbirds
Job 5: Honolulu County
Period: 2001 - 2005

Survey and Inventory of Water Birds - Oahu

A. Need.
The status of Hawaii's four endangered water bird species, as well as other indigenous water bird species and migratory waterfowl and shorebirds, needs to be monitored in order to detect trends in species abundance and distribution. These data are necessary both to monitor recovery of native species and to assess trends for migratory species, and can be used to indicate successful habitat management strategies and to make recommendations on proposed land uses.

B. Objectives.
- To determine the abundance, distribution and population trends of water bird and shorebird species on Oahu.
- Provide water bird data on Oahu to the statewide database.

C. Expected Results and Benefits.
Oahu data will become part of the state-wide database of water bird and shorebird species distribution and abundance. This is used to guide habitat management and enhancement efforts, prioritize wetlands acquisition and develop additional refuges and sanctuaries, and to evaluate the potential impacts of land use proposals.

D. Approach.
This program will continue the twice-yearly survey of 51 wetland sites on Oahu. State, Federal, and private agencies, organizations and individuals assist in the surveys. Each wetland is visited by trained observers who make a complete count of species and individuals utilizing each wetland, as well as habitat conditions, water levels and weather. These data are entered into a data base which is use to determine population trends by species and by wetland.

Other incidental surveys will be performed on selected wetlands to gather data on baseline conditions and the effectiveness of habitat management programs. These areas are surveyed using fixed point count sites and line transects designed to standardize data collection and provide an accurate count of individual birds.

Aerial photography will be used to map and monitor landscape scale habitat conditions, and data gathered will be entered into a GIS data base.

E. Location.
Honolulu County (Island of Oahu).

F. Estimated Costs.

Year 1	Year 2	Year 3	Year 4	Year 5	5-yr. Total
$1,300	$1,300	$1,300	$1,300	$1,300	$6,500

Title: Non-game Survey and Inventory
Project 3: Survey and Inventory of Waterbirds
Job 6: Kauai County
Period: 2001-2005

Waterbird Surveys - Kauai County

A. Need.
The status of four endangered waterbirds, migratory waterfowl and shorebirds needs to be monitored semi-annually to measure the effectiveness of endangered waterbird recovery plan objectives, sanctuary management programs, and to detect catastrophic declines of waterbird numbers. The information is also used to evaluate proposed urban or agricultural developments that may affect endangered waterbirds or their habitats.

B. Objectives.
- Measure the population status of endangered waterbirds, migratory and resident shorebirds and their habitats semi-annually on the islands of Kauai and Niihau.
- Provide waterbird data on Kauai and Niihau to the statewide database.

C. Expected Results and Benefits
The information collected will measure the effectiveness of sanctuary development projects, and the population trends of endangered waterbirds, migratory waterfowl, and resident shorebirds. It will provide the information needed to evaluate the progress of recovery actions in the endangered waterbird recovery plan. It will provide baseline information upon which management recommendations can be made concerning proposed development projects that may affect endangered waterbirds or their habitats.

D. Approach
Semi-annual waterbird surveys will be conducted statewide in January and August, using standardized routes, and times whenever possible. The number of each species will be noted by age class and sex where possible. Habitat and weather conditions will also be noted. Results will be tabulated and analyzed to determine population trends by island. Aerial surveys of habitats not accessible on the ground will be made to obtain as complete a count as possible.

E. Location.
Major wetlands on the islands of Kauai and Niihau

F. Estimated Costs

Year 1	Year 2	Year 3	Year 4	Year 5	5-yr. Total
$2,000	$2,000	$2,000	$2,000	$2,000	$10,000

Title: Nongame Survey and Inventory
Project 4: Seabird Surveys
Job 1: Maui County
Period: 2001-2005

Seabird Surveys - Maui County

A. Need.

Most of Maui County seabird islets are still poorly explored and we have insufficient information on seabird species present, numbers, reproductive status, life histories, and population dynamics. The status and distribution of the seabirds, life histories and population dynamics need to be determined and monitored for the islets off Maui, Molokai, Lanai and Kahoolawe. An assessment of human use patterns, mammalian and avian (owl) predation threats in the seabird colonies needs to be addressed. In addition, of threats to islets from habitat altering non-native vegetation need to be assessed in order to acquire sufficient information to develop the most appropriate management strategies.

B. Objectives.

- Determine the location of seabird colonies in Maui County on the main islands and offshore islets.
- Obtain information on numbers of species and individuals, and other life history information.
- Determine the presence and extent of human disturbance, and predation from introduced mammals (e.g. feral cats, dogs, and rats) and Barn owls.
- Determine the effect of encroachment of non-native vegetation on seabird breeding success.

C. Expected Results and Benefits

This project will provide data on species composition, abundance, nesting habits, and other life history information on seabird colonies on offshore islets and major islands in Maui County. Impacts to the seabirds in the sanctuaries from mammalian predators, owls, and human impact will be determined. Encroachment of habitat-altering non-native vegetation will also be determined. The information gained from this project will enable us to manage the resource better, providing for the continued survival and recovery of seabird colonies in Maui County.

D. Approach.

Visits to the offshore seabird nesting sites to survey and monitor species compositions, population trends, and impacts of disturbances and predation will be made. During the April to May period repeated visits to colonies will allow for population studies and nesting success determinations.

E. Location.

Maui County.

F. Estimated Costs.

Year 1	Year 2	Year 3	Year 4	Year 5	5-yr Total
$5,138	$5,138	$4,538	$4,538	$4,538	$23,890

Title: Nongame Survey and Inventory
Project 4: Survey and Inventory of Seabirds
Job 2: Honolulu County
Period: 2001 - 2005

Seabird Surveys - Oahu

A. Need.
Oahu has 15 offshore islands, 13 of which are part of the State Seabird Sanctuary. Kure Atoll Wildlife Sanctuary is the most remote of the Northwest Hawaiian Islands, located 1200 miles from Honolulu. Seabird colonies also exist at Ulupau Head, Black Point, Kaena Point Natural Area Reserve, Kahuku, Koko Head, and Kuaokala Game Management Area. The threatened Newell's shearwater is believed to have one or more colonies in the south-central Koolau Mountains on Oahu. White (fairy) terns nest in trees in urban Honolulu. These areas provide a series of habitat sites for a wide array of seabirds and wintering migratory bird species. Very little information is available for the seabirds on most of these sites. In order to manage them effectively, and determine the status of the populations (i.e. increasing, declining, or stable), information on current abundance, distribution, habitat limitations, and other limiting factors is needed.

B. Objectives.
- Obtain information on seabird abundance, distribution, population trends, breeding status, and limiting factors of various species of seabirds within the County of Honolulu in order to manage them most effectively.
- Determine the presence and/or extent of human disturbances on seabird colonies in order to develop the most effective public education methods.

C. Expected Results and Benefits.
This project will provide information on distribution and abundance of seabirds and migratory birds in each area, nesting effort and success trends for each species, habitat trends and limiting factors for seabird populations, and management actions needed to protect and maintain suitable habitat conditions.

D. Approach.
Seabird nesting areas will be surveyed on a quarterly basis, timed to coincide with nesting seasons for different species. Monitoring methods will be a combination of aerial fixed-wing photo survey, helicopter photo monitoring, ground-based colony count plots and line transects, and mark/recapture analysis of banding data.
Colonies of seabirds, where burrows are likely to be trampled by surveyors, or nesting birds will be disturbed, will be monitored only from the air.

E. Location.
County of Honolulu (Island of Oahu and offshore islands; Kure Atoll)

F. Estimated Costs.

Year 1	Year 2	Year 3	Year 4	Year 5	5-yr. Total
$9,000	$9,000	$9,000	$9,000	$9,000	$45,000

Title: Non-game Survey and Inventory
Project 4: Survey and Inventory of Seabirds
Job 3: Kauai County
Period: 2001-2005

Seabird Surveys - Kauai County

A. Need.
Annually up to 2,000 threatened Newell's Shearwaters and endangered Dark-rumped Petrels are attracted to bright lights during the autumn fledging season on Kauai and fall to the ground in urban areas and are unable to fly out to sea without assistance. This phenomenon affords a unique opportunity to band and monitor the status of the species. Since Hurricane Iniki in 1992, the numbers of these birds has been on a steady decline. Collection of data on the dates and locations of these fallen birds in the process of banding them provides critical information on their status and enables an assessment of population trends, and may help to identify causes of decline. The results of this data collection may result in finding a means to mitigate the losses.

B. Objectives.
- Obtain information on threatened and endangered seabird abundance on Kauai in order to manage them most effectively.
- Collect, band, and release threatened and endangered seabirds that have been attracted to urban lights on the Island of Kauai, to increase their chances of survival.
- Analyze fallout data, to identify key areas that need special management efforts in alleviating losses of these threatened and endangered seabirds.

C. Expected Results and Benefits.
The collection and analysis of seabird fallout data will aid in the management of these threatened and endangered species. The annual population monitoring afforded by this job assists in determining the status of these birds, and helps to identify areas of heavy fallout, that may be critical in reversing the downward trends recently noted.

D. Approach.
Collect, band, and release threatened and endangered seabirds. Maintain a database on fallout records annually. Analyze results to determine population trends, distribution, seasonality, age classes and identify areas where management actions are needed to mitigate losses.

E. Location. Island of Kauai

F. Estimated Costs.

Year 1	Year 2	Year 3	Year 4	Year 5	5 yr. Total
$10,000	$10,000	$10,000	$10,000	$10,000	$50,000

Title: Non-game Survey and Inventory
Project 5: Special Non-game Wildlife Surveillance
Job 1: Kauai County
Period: 2001-2005

Non-game Surveillance - Kauai County

A. Need.
Several threatened and endangered birds found on Kauai are particularly vulnerable to the potential establishment of new alien predators or competitors not yet on the island, such as the mongoose, brown tree snake, red-vented bulbul or other recent introductions to the islands. Disease organisms too periodically pose threats to threatened, endangered and indigenous birds that require the collection and handling of diagnostic samples for submission to laboratories and the recording of etiologic circumstances. Reports of these negative factors are often reported by the public and require investigation. In many cases they require follow-up, surveillance, confirmation , trapping and/or eradication attempts. Early detection and resolution are keys to the prevention of the establishment of these undesirable newcomers, and in the long run, will help prevent the extinction or further endangerment of native non-game species.

B. Objectives
- Increase public awareness of the dangers presented to native wildlife that may result from establishment of alien animals on Kauai.
- Prevent the establishment of new alien animals on Kauai by early detection, confirmation and eradication.

C. Expected Results and Benefits.
The performance of this job will reduce the risk of catastrophic losses, or expensive eradication projects of new alien species that could adversely affect threatened and endangered species on Kauai. It may assist in the early detection and diagnosis of catastrophic losses that could occur as a result of disease outbreaks affecting threatened and endangered wildlife. Early detection and control will reduce more costly long term eradication control actions that might otherwise be necessary.

D. Approach.
Established protocols will be followed for the detection, confirmation, surveillance and documentation of potentially established new alien pest animals or disease problems that may affect non-game and endangered wildlife on Kauai. Activities may include the use of the media, surveillance, trapping, follow-up of alleged sightings, shooting, tissue collection, diagnostic testing and cooperative actions with other agencies to reduce the likelihood of catastrophic alien predator or disease establishment on Kauai.

E. Location. Island of Kauai

F. Estimated Costs.

Year 1	Year 2	Year 3	Year 4	Year 5	5 yr. Total
$5,000	$5,000	$5,000	$5,000	$5,000	$25,000

Section D. Summary of Activities and Costs