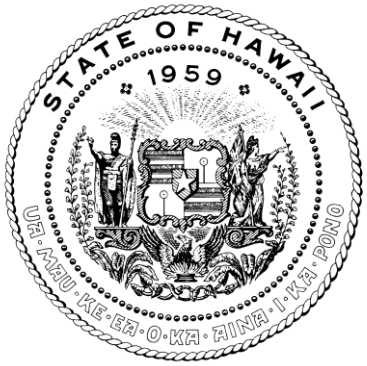
REPORT TO THE TWENTY-SIXTH LEGISLATURE
REGULAR SESSION OF 2011

RELATING TO THE NATURAL AREA RESERVES SYSTEM, NATURAL AREA PARTNERSHIP PROGRAM, AND THE FINANCIAL CONDITION OF THE NATURAL AREA RESERVE FUND



PREPARED BY

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF FORESTRY AND WILDLIFE

IN RESPONSE TO SECTION 195-6.6, HAWAII REVISED STATUTES

HONOLULU, HAWAII

DECEMBER 2010

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LIST OF ACRONYMS

ARRA American Recovery and Reinvestment Act
BLNR Board of Land and Natural Resources
DLNR Department of Land and Natural Resources
DAR Division of Aquatic Resources
DHHL Department of Hawaiian Homelands
DOE Department of Education
DOFAW Division of Forestry and Wildlife
EMWP East Maui Watershed Partnership
EMoWP East Molokai Watershed Partnership
ESA Endangered Species Act
FSP Forest Stewardship Program
FY Fiscal Year
GIS Geographic Information System
HAWP Hawaii Association of Watershed Partnerships
HDOA Hawaii Department of Agriculture
HISC Hawaii Invasive Species Committee
HRPRG Hawaii Rare Plant Restoration Group
HRS Hawaii Revised Statutes
ICS Invertebrate Conservation Strategy
ISC Invasive Species Committee
KWA Kauai Watershed Alliance
KWP Kohala Watershed Partnership
KMWP Koolau Mountains Watershed Partnership
LHWRP Leeward Haleakala Watershed Restoration Partnership
MISC Maui Invasive Species Committee
MoMISC Molokai Invasive Species Committee
NPS National Park Service
NARF Natural Area Reserve Fund
NAR Natural Area Reserve
NARS Natural Area Reserves System
NAPP Natural Area Partnership Program
OISC Oahu Invasive Species Committee
OANRP Oahu Army Natural Resources Program
PEP Plant Extinction Prevention
SHPD State Historic Preservation Division
T&E Threatened and Endangered
TMA Three Mountain Alliance
TNC the Nature Conservancy
UH University of Hawaii
USDA United States Department of Agriculture
USFWS United States Fish and Wildlife Service
USGS United States Geological Survey
WMMWP West Maui Mountains Watershed Partnership
YCC Youth Conservation Corps

RELATING TO THE NATURAL AREA RESERVES SYSTEM,
NATURAL AREA PARTNERSHIP PROGRAM,
AND
THE FINANCIAL CONDITION OF THE
NATURAL AREA RESERVE FUND

Section 195-6.6, Hawaii Revised Statutes (HRS), requires an annual comprehensive status report on the Natural Area Reserves System (NARS), the Natural Area Partnership Program (NAPP) and the financial condition of the Natural Area Reserve Fund (NARF). This report will include, but is not limited to, a description of activities and accomplishments, compliance with Chapter 42F, HRS, analysis of the problems and issues encountered in meeting or failing to meet the objectives set forth in the management plans, status of public hunting opportunities, financial report, and plans and management objectives for the next fiscal year for the NARS Program and NAPP, an overview of the financial condition of NARF, including receipts and expenditures from NARF for the previous fiscal year, and a brief discussion of activities and goals for other programs funded through NARF.

NATURAL AREA RESERVES SYSTEM (NARS)

1. DESCRIPTION OF ACTIVITIES AND ACCOMPLISHMENTS

The statewide NARS currently consists of 19 reserves comprised of approximately 115,449 acres on five islands. NARS was established to protect the best remaining examples of native ecosystems and geological sites in the State. Annual program activities are based primarily on the long-term integrated management plans developed for each reserve and adaptive management principles, to enable effective response to changing conditions and new threats. Management policies approved by the NARS Commission and the Board of Land and Natural Resources (BLNR) continue to be the general guide for rule-making and development of management plans for NARS. While NARS is based on the concept of protecting native ecosystems, as opposed to single species, many threatened and endangered (T&E) plants and animals benefit from the protection efforts through NARS. Major management activities involve control of alien species, including ungulates, weeds, coqui frogs, and small predators, fire prevention and control, rare plant outplanting, monitoring, public outreach, and maintenance of existing infrastructure, such as trails and signs. Large-scale management actions, such as fences, typically go through the Chapter 343, HRS, environmental impact process.

NARS Commission

The NARS Commission (NARSC) (http://hawaii.gov/dlnr/dofaw/nars/nars-commission) was established by statute as an advisory body to the Department of Land and Natural Resources (DLNR) under §195-6, HRS.

- The full NARSC met four times in Fiscal Year (FY) 10; the NARSC Enhancement Subcommittee met four times during FY10; the NARSC National Ecological Observatory Subcommittee met two times during FY10, and the Joint NARSC/Forest Stewardship Subcommittee met once in FY10
- BLNR or its authorized representative, with the approval of the NARSC, recommended the issue of 60 Special Use Permits for research, education, large

group hikes, educational and commercial filming (also working with the Hawaii Film Office).

- Experimental Tropical Forest permits for Laupahoehoe NAR (Hawaii) are issued through the United States Forest Service, as authorized.

NARC discussed and recommended areas to BLNR as reserves, and advised management of existing reserves, such as for Ahihi Kinau Reserve on Maui. NARC also made recommendations on permitted activities in reserves, such as approving the Kaena Point Ecosystem Restoration Project on Oahu.

Another responsibility of NARSC and staff is to prioritize and nominate areas to be designated as reserves, and justify the management resources to be dedicated to each reserve. In FY10, NARS staff continued implementation of a state-wide analysis of the biological resources of Hawaii, using the most comprehensive compilation of scientific data, to fulfill NARS' responsibility to preserve representative samples of Hawaiian biological ecosystems and geological formations. In FY10, NARSC recommended four areas for designation as reserves – an extension of Kahaualea NAR, an extension of Puu Makaala NAR, both on Hawaii, and two new reserves: Nakula NAR (Maui), and Ilio Point NAR (Molokai). Public hearings have been held for all recommended reserves, and the extension of Kahaulea NAR was officially designated in April 2010 following approval from BLNR and the Governor. Nominating priority areas helps to ensure that a complete NARS is developed and maintained, and that a wide spectrum of unique natural areas is preserved for Hawaii's future generations.

Statewide activities and accomplishments

In FY10, NARS continued to implement the Strategic Plan for NARS (http://hawaii.gov/dlnr/dofaw/nars/SP9.4.08.pdf). Operational management plans were drafted for each island program to prioritize and coordinate future activities to meet NARS' statutory mandates.

NARS staff conducted ground and aerial surveys for ungulates (hooved animals, including sheep, mouflon sheep, deer, goats, and pigs). Fencing continues to be an important tool to facilitate the reduction in animal populations. Existing fences were inspected and maintained, and 4.75 miles of new fences were constructed. Public hunting, control by NARS staff by means of trapping, snaring (in remote/fenced areas), and aerial shooting were used to reduce non-native ungulate populations. The type of control measure implemented depends on the resources available, the reserve location, the effectiveness of public hunting, terrain features, and the relative abundances of ungulates. NARS staff continues to work with hunting organizations such as the Molokai Hunting Working Group, the Molokai Pig Hunters Association, DLNR's Division of Forestry and Wildlife (DOFAW) Wildlife Program, and others to accomplish control goals while minimizing conflict with the recreational hunting community.

Invasive weed control is ongoing in nearly every reserve, and priority weeds have been identified for each reserve (and sometimes for units within reserves). Volunteers provide significant manual labor to assist in weed control efforts. NARS staff also communicates

with the respective Island Invasive Species Committee (ISC) to prevent duplication and coordinate efforts where possible. However, because ISC's efforts are directed towards incipient species, this coordination is most effective when responding to new weed outbreaks in NARS and less so when controlling the established species that threaten native ecosystems. Monitoring of rare plant populations, collection of seeds and propagules, and outplanting of T&E plants are ongoing efforts to protect and enhance the rare plants found within NARs. Additional information about the accomplishments of the State's Rare Plant Program in FY10 follows the island descriptions below.

NARS staff worked to prevent fires in and around reserves, by controlling invasive species to reduce fuel loads, constructing fuel breaks, and creating water-holding infrastructure. NARS staff also worked to control forest fires, as part of the DLNR-DOFAW Fire Response Team.

Maintenance of infrastructure is also an ongoing activity. NARS staff maintained over 500 signs throughout NARS. Information and boundary signs were installed or replaced in several reserves. Approximately 125 miles of existing trails and boardwalks were maintained in various reserves, primarily for management purposes. Trail maintenance includes alien plant control along the trails to minimize the spread of weeds to new areas. Over 151 miles of existing ungulate control fence were maintained with regularly scheduled inspections, and immediate repairs were made to prevent ungulate ingress and subsequent damage to the resource. Existing helipads were maintained to facilitate management and monitoring and to provide access for emergencies. Over 15 management shelters were maintained for long-term management actions. Over 70 miles of roads, mostly on Hawaii and Oahu, were maintained to provide hunter and management access. Road barriers continue to be maintained in the Manuka NAR on Hawaii to prevent dumping and illegal logging activities. Vehicle barriers continue to be maintained on both sides of Kaena Point (Oahu) to protect the fragile dune ecosystem and cultural sites by prohibiting off-road vehicle use.

Staff training for needed skills remains important. Training during FY10 included first aid, wilderness first aid, cardiopulmonary resuscitation (CPR), fire response, all terrain vehicle (ATV) operation, helicopter safety/crew member training, herbicide and pesticide use, ungulate control methods, procurement procedures, ArcGIS, leadership, negotiation, and mediation skills. In addition, NARS staff attended the Hawaii Conservation Conference, an annual three-day conference attended by nearly 1,000 resource management professionals in the State. Finally, NARS staff continued the successful "exchange program" between districts where natural resource managers share field methods and develop new skills. Three week-long exchanges took place with Maui, Kauai and Hawaii District NARS staff assisting each other with fence construction and invasive species control.

Outreach and coordination of volunteers has increased the public's appreciation of the NARS and Hawaii's unique natural resources. Staff led volunteer trips, outreach presentations, and guided hikes and field visits for numerous groups, including visiting dignitaries, visiting (mainland) staff from cooperating agencies (e.g., United States

Department of Agriculture Forest Service (USDA-FS), United States Fish and Wildlife Service (USFWS), the Pacific Century Fellows, school groups and service groups, and the University of Hawaii (UH) Law School. NARS admin. staff responded to multiple requests for information from the public (as forwarded by the DLNR Public Information Officer) and created multiple press releases for news media published statewide. NARS admin. staff continued participation with the national Natural Areas Association, the Wekiu Bug Working Group, the Hawaii Conservation Alliance (DOFAW Representative), the Pacific Island Climate Change Co-operative (DOFAW Representative), the Forest Stewardship Advisory Committee, the Hawaii Conservation Conference (primary organizer), the Bioprospecting Commission (DLNR Representative), Statewide Assessment and Resource Strategy biodiversity working group and provided assistance to other DOFAW programs on an ongoing basis.

Finally, NARS staff continues to leverage resources and increase effectiveness by working with a variety of watershed partnerships and other conservation partners. These partnerships provide additional funding for NARS from federal and private sources, as well as in-kind staff and operational support to NARS. Partners include the: Kauai Watershed Alliance, East Maui Watershed Partnership, West Maui Mountains Watershed Partnership (WMMWP), Leeward Haleakala Watershed Restoration Partnership, East Molokai Watershed Partnership, Three Mountain Alliance, Kohala Watershed Partnership, Mauna Kea Watershed Alliance, the Plant Extinction Prevention Program, the Maui Forest Bird project, the Kauai ISC, the Oahu ISC, the Maui ISC, Big Island ISC, the Office of Mauna Kea Management, the United States Forest Service (Hawaii Experimental Tropical Forest), USFWS, the National Park Service (NPS), the National Oceanic and Atmospheric Administration (NOAA), The Nature Conservancy (TNC), the Wildlife Society, Oahu Army Natural Resources Program and more.

Reserve activities and accomplishments by island
Major accomplishments within individual reserves during the past year include the following:

Kauai
Management in Kauai NARS included constructing additional fences and maintaining existing fences, conducting intensive weed control within protected areas, collecting and propagating T&E plants, and monitoring reserves for invasive plants and animals. In addition to work inside NARS, staff controlled wildfires and worked to conserve other important biological areas in Kauai. Efforts included habitat protection of rare bog ecosystems in the Alakai Wilderness Preserve with partner agencies such as TNC, USFWS, the Kauai Plant Extinction Prevention Program (PEP), the Kokee Resource Conservation Program, and other partners of the Kauai Watershed Alliance. Additionally, the Kauai NARS Program trained and mentored three Youth Conservation Corps (YCC) interns, led and supervised other youth service trips, and coordinated community outreach events.

Kuia (1,636 acres; dry and mesic forest with perennial streams): Completed the second of five large fenced exclosures protecting four acres of rare mesic forest habitat; began

construction on the third and fourth large exclosures which will protect 80 and 20 acres respectively; constructed a total of .7 miles of fence; conducted intensive weed control within all fenced units killing 975 karaka nut, 247 silk oak, 1,737 lantana, 22,733 guava, and 4,360 blackberry; maintained and repaired 2.25 miles of fence line; outplanted 765 plants of 31 different species (including eight listed T&E species and four species on the PEP list). Hunters reported 1,956 trips in Unit H (which includes Kuia), resulting in 169 pigs, 54 goats, and six blacktail deer removed.

Hono O Na Pali (3,579 acres; mesic and wet forest with perennial streams): Conducted ungulate monitoring in select locations; collected seeds from four species of rare plants; initiated an updated management plan and environmental assessment for the protection of approximately 1,731 acres of upper elevation wet forest. Hunters reported 251 hunting trips in Unit G (which includes Hono O Na Pali), resulting in 147 goats and 12 pigs removed.

Oahu

Ongoing management on Oahu includes weed control, ungulate monitoring and removal, fence maintenance, rare plant propagation and outplanting, habitat protection, and supervising the Oahu Army Natural Resource Program (OANRP) Makua Implementation Plan actions in the three Oahu reserves. Staff also worked to conserve and survey new areas proposed as NARS and led public hearings to designate the proposed Poamoho NAR. NARS staff also contributed expertise and manpower in other DOFAW lands on Oahu and offshore islands by conducting surveys, controlling invasive species, outplanting, and responding to wildfires. Staff provided environmental outreach by presenting at special events and leading and coordinating multiple volunteer service trips to each reserve. Specific accomplishments within individual reserves include:

Pahole (658 acres; dry and mesic forest): Maintained 319 acres of the NAR feral pig free and continued to implement ungulate control measures in order to eventually remove feral pigs from the remaining 339 acres; conducted regularly scheduled inspections and maintenance on approximately 9.3 miles of fenceline; conducted 17 staff escorted hunts (176 Oahu NARS staff hours) within newly fenced area with volunteer hunters contributing approximately 900 to 1,000 hours and removing 28 pigs; controlled 1,254 *Toona ciliata* (Australian red cedar), and continued the *Grevillea robusta* removal project; initiated herbicide field trials under the supervision of Dr. James Leary, College of Tropical Agriculture and Human Resources Specialist; assisted the DOFAW Entomologist with the first Invertebrate Conservation Strategy (ICS) Bioblitz; developed 2 additional service trails for management purposes.

Kaala (1,100 acres; dryland to wet shrub forest): monitored for ungulate activity and conducted control when necessary; monitored and removed feral goats in the upper Mokuleia Forest Reserve adjacent to the NAR to reduce the potential for goat ingress into the NAR; maintained lower Kaala access road; assisted OANRP with sphagnum moss eradication; scoped a strategic ungulate barrier as part of Waianae Watershed Partnership; began the first phase of the Kaala boardwalk replacement.

Kaena Point (12 acres; coastal dune ecosystem): continued planning for the proposed construction of a predator-proof fence as well as the subsequent predator removal effort. installed and updated signage regarding resource issues and rules; conducted wedge-tailed shearwater census; increased use of new and more effective predator control techniques (including spotlighting and leghold traps); USDA/Wildlife Services provided 612 hours of predator control service; controlled priority invasive weeds; removed 11,000 *Leucaena lecocephala* (koa haole) from six acres of the NAR.

Maui

Management of Maui District NARS (9 Reserves, 20,073 acres) includes fence construction, ungulate control, people/human impact management, invasive weed control, rare plant and animal protection and monitoring, and public outreach. Facilities and infrastructure improvements were a large part of Maui District NARS FY10 activities and accomplishments including an on-going Capital Improvement Program (CIP) Project for Ahihi-Kinau NAR Ranger Station. Staff maintained the continuance of a two-year closure for portions of Ahihi-Kinau NAR which began in August 2008 in order to protect natural and cultural resources, and necessitated hiring of five full-time rangers dedicated to the Reserve. In addition to conservation management within NARS, the 10 full-time staff of Maui NARS participated in activities with a variety of watershed partnerships and other conservation partners. For example, NARS staff assisted East Molokai Watershed Partnership (EMoWP) in conducting aerial shooting missions that removed 3,068 goats from the south slope of Molokai. Staff coordinated with TNC on Molokai, Kalaupapa National Historic Park, and the Molokai Pig Hunters Association to conduct three, two day aerial shooting missions along the North Shore of Molokai (removing 196 goats, 55 pigs, and 29 deer) and finished .75 miles of Phase II fencing in Puu Alii NAR. Staff worked with East and West Maui Watershed Partnerships to inspect and maintain 6.2 miles of existing fences and conducted animal control. TNC of Hawaii's Marine Program continued to partner with NARS to work with the Ahihi-Kinau NAR/Keoneoio Advisory Council to develop a management plan for the Reserve. NARS helped develop and implement an opihi monitoring project with DLNR's Division of Aquatic Resources (DAR), Hawaii Institute of Marine Biology (HIMB), Kahoolawe Island Reserve Commission, TNC, and the Hana community. Hana, Kahoolawe, and Ahihi-Kinau NAR were baseline sites for opihi surveying statewide. Specific accomplishments within individual reserves include:

Ahihi-Kinau (2,045 acres; recent lava flows, anchialine ponds, and nearshore marine ecosystem): a staff of five rangers provided an everyday, 14 hour/day on-site management presence at this accessible and most-visited reserve (average 700 people/day); continued to implement access restrictions and actions planned for the first two-year closure meant to prevent damage to resources due to recreational overuse; increased public awareness of closure and public support by distributing over 10,000 pamphlets in the Reserve, hotels, car rental companies, and other visitor industry locations; continued to demarcate the closed area boundary by maintaining over 800 feet of yellow rope barriers and over 60 signs; deterred and addressed many incidents of illegal activity including poaching, theft, and illegal entry into closed areas with DLNR's Division of Conservation and Resources Enforcement (DOCARE), the Maui Police

Department, and the Maui Citizens Patrol; controlled invasive pickleweed in anchialine ponds and kiawe along roadway (to increase visibility in high incidence illegal activity areas); maintained contract for the maintenance of two portable toilets; initiated contract to open and close parking area gate and emptied trash on a daily basis; continued CIP improvements to the Kanahena visitor parking area (aka "dumps") by issuing a Invitation to Bid on the Americans with Disabilities Act of 1990 (ADA) improvements to the on-site ranger station/office trailer to better facilitate on-site management; partnered with TNC to finish the process of developing a long-term management plan of Ahihi-Kinau NAR with completion of the plan now scheduled for winter of 2010; held one Advisory Group and one public meeting to gather public input on need to continue access restrictions for at least another two years or until the implementation of the management plan; designed and implemented resource surveys to monitor anchialine pools statewide with USFWS, NPS, UH, DAR, and private citizens; provided data and photographs of pond species to NPS for the printing of an anchialine pond informational booklet; began comprehensive baseline surveys to monitor geologic (mapping trails/impacts to geology), marine (% coral cover, fish and invertebrate species, invasive species, disease and substrate condition) and anchialine pond resources; gathered human use monitoring data in five different areas of the Reserve twice a day; continued to monitor possible new fish disease in the species known locally as "Kole"; detected coral disease prompting great interest and concern and a potential new research topic for the HIMB and DAR; constructed .5 acre exclosure around endangered plant species (awikiwiki); controlled pickleweed in two acres in anchialine ponds.

Hanawi (7,500 acres; ohia wet and cloud forest, alpine grassland, and perennial streams): kept pigs out of 2,000 acres which required maintenance of over 10 miles of fence, and replacement of .3 miles of old fence. Improvements were made to a new fence construction camp shelter constructed last year to better provide for management in the remote area, and staff maintained existing shelters. Staff constructed 1.1 miles of additional new fence of an estimated three miles of mid-elevation fence meant to protect a larger region of core habitat for endangered wildlife and plants. Removed four pigs from mid-elevation unit during two staff led volunteer trips.

Kanaio (876 acres; halapepe and lama dry forest): finished archeological survey of fence route completed by contractor and accepted by DLNR's State Historic Preservation Division (SHPD); worked on procurement for Phase II fence construction (remaining 3.8 miles). Staff controlled and performed weed management in 242 acres of reserve this year as follows: wattle control total area managed 140 acres, Christmasberry control in eight acres, bocconia control in 93 acres. Cleared weeds and prepared a one acre site for outplanting of native species in addition to current 3.5 acre plant enclosure where weed control and maintenance was performed by staff and a volunteer group from Maui Nui Botanical Garden.

West Maui (6,702 acres; pili grassland, mesic, wet, and cloud forest, montane bogs, and perennial streams): Kahakuloa section: staff inspected, maintained and repaired 3.5 miles of lower boundary fence six times throughout the year and conducted two community volunteer hunts that removed four pigs from above/within fenced areas; and controlled

strawberry guava and Christmasberry along boundary fence. Panaewa and Honokowai sections: staff inspected and maintained boundary fence and continued monitoring the area above to ensure status as pig free in cooperation with WMMWP, and maintained helicopter landing zones. Lihau section: Archaeological survey for firebreak completed and accepted by SHPD; staff monitored the post-fire pili grass ecosystem recovery and the highly endangered *Gouania* population; and controlled populations of incipient weeds in the upper reserve (ironwood, silk oak, and Java plum).

Puu Alii (1,330 acres; wet shrubland and forest with perennial streams): to prevent ungulate damage, staff finished constructing an additional .75 miles of deer-proof fence along Pelekunu rim and inspected the four miles of existing fence; staff led five community volunteer hunts in cooperation with Molokai Pig Hunter's Association that removed ten pigs from within the upper 550-acre fenced area.

Olokui (1,620 acres; mesic forest, wet shrubland and forest with perennial streams): protected the remote and near-pristine Olokui by aerial shooting and surveying conducted along the north shore of Molokai from Wailau to Waikolu Valleys during the three – two day missions removed 196 goats, 55 pigs, and 29 deer; used aerial surveys to monitor the summit region for the presence/absence of ungulates and ungulate signs.

Hawaii

NARS Big Island staff continued management of eight reserves (88,330 acres) on the Island and participation in a number of cooperative partnerships, including the Kohala Watershed Partnership, Olaa-Kilauea Partnership/Three Mountain Alliance, the Mauna Kea Watershed Alliance, the Big Island Invasive Species Committee, the United States Geological Survey (USGS) Hawaiian Volcano Observatory, the Office of Mauna Kea Management, the United States Forest Service, and numerous informal partnerships with neighboring landowners. In addition, NARS staff participated in the management and continued development of the Hawaii Experimental Tropical Forest, coordinated ungulate removal at the Puu Waawaa Forest Bird Sanctuary, and hosted both YCC summer teams and year-round AmeriCorps interns. Ongoing management island-wide includes: ungulate control through public hunting, trapping and snaring, invasive weed and small animal control, rare plant protection (reintroducing almost 7,000 plants of T&E and common native species), and contracting for surveys needed for appropriate management (archaeological inventories, boundary surveys, etc.). During FY10, the NARS Hawaii Island Program built an additional 2.2 miles of fencing and monitored over 50 km of transects to support the protection of Hawaii Island's native ecosystems. For outreach and education the Hawaii Island NARS Program conducted a number of volunteer trips and developed and distributed multiple outreach materials during numerous special events such as Astro Day and the Hawaii County Fair; hosted of the Hawaii Nei Art contest featuring native species artwork in cooperation with the Volcano Art Center, the National Park and the Three Mountain Alliance; assisted with the coordination of the annual "Run for the Dry Forest" event at Puu Waawaa including 5 km and 10 km trails runs; and provided school children with educational opportunities both inside and outside the classroom. Specific accomplishments within individual reserves include:

Mauna Kea Ice Age (3,894 acres; alpine community): continued coordination with the Office of Mauna Kea Management on protection of the unique natural and cultural features on the summit through meetings with Office of Mauna Kea Management Rangers and funding an archaeological inventory and a cultural resources management plan; reviewed permit requests to access the NAR for research and for educational opportunities; maintained a 9.9 acre fenced unit for the protection of habitat for the endangered silversword and other rare alpine species found on Mauna Kea; monitored six monitoring transects inside and outside of the fenced unit. The Hawaii Island NARS Manager continued to participate as a member on the Mauna Kea Management Board/Environment Subcommittee reviewing and assisting with the development of sub-plans for the Mauna Kea Comprehensive Management Plan. The Cooperative Agreement between UH and DLNR was reviewed and finalized.

Puu O Umi (10,142 acres; wet forest, montane bog, and perennial streams): continued to support the Kohala Watershed Partnership coordinator to implement the Kohala Watershed Management Plan; maintained existing fenced units and constructed 1.4 miles of new fenclines in the remote portions of the Reserve to protect watershed areas and native species habitat. A new population of Hawaiian petrel was discovered in Puu O Umi that was previously thought to be extinct from the area; maintained over 8.7 miles of trails and transects; controlled key weeds and ungulates in sensitive areas; and outplanted T&E species.

Laupahoehoe (7,894 acres; wet forest with perennial streams): continued to participate in the planning and implementation of the Hawaii Experimental Tropical Forest (http://www.hetf.us/) including review of and distribution of permits, monthly planning meetings, etc.; commented on National Ecological Observatory Network draft Environmental Assessment for placement of a site at Laupahoehoe; fence maintenance; rare plant monitoring and outplanting; ungulate control (15 feral pigs); invasive species control; and installation and collection of data for six vegetation monitoring plots. Approximately 0.8 miles of new fence was built to enclose 9.9 acres of windward wet montane forest to provide more areas for rare plant protection and monitoring.

Kahaualea (22,521 acres; wet forest with volcanic activity): continued to monitor the eruptive activity at Kilauea Volcano (commencing July 21, 2007) by coordinating with USGS Hawaiian Volcano Observatory, Hawaii Civil Defense, DOCARE, and other agencies, adding and maintaining signage, and closing the NAR to public use due to safety concerns; BLNR decided to continue the closure of Kahaualea, for an additional term of up to two years until July 24, 2011. Special Animal Control permits were issued to hunters to access the safe areas of the NAR and assist with feral animal removal. A partnership with the neighboring landowner was forged to assist with a boundary fenceline along a portion of the NAR near Volcano.

Waiakea 1942 Flow (640 acres; developing wet forest): due to the remoteness and small size of this NAR and its establishment to act as a baseline for change, active management was not necessary in FY10.

Puu Makaala (12,106 acres; wet forest): maintained fencing; continued to remove feral pigs from adjacent portions of the Wright Road Unit of the NAR using volunteers; conducted a field trip to the Army Road area with Hawaii County Council members to educate them about native forests and the impacts of invasive species to them; continued to treat weed control blocks in the Wright Road Unit; scouted areas for new conservation units and further revised the draft Puu Makaala NAR Management Plan and draft environmental assessment; cooperated with the Three Mountain Alliance (TMA, formerly the Olaa-Kilauea Partnership) in conducting rare plant outplanting, invasive weed control; and supervised volunteers. NARS staff recommended that the NARS Commission consider the Kulani area as an addition to Puu Makaala NAR.

Manuka (25,550 acres; coastal to subalpine forest): continued to work with the Coqui Coordinator to monitor and contain coqui frog populations at Manuka, (eradication of the coqui population in the NAR is not currently feasible); collared one feral goat and two feral sheep to monitor feral ungulate activity across the NAR; removed feral pigs and goats in cooperation with adjacent landowners; removed invasive species (fountain grass) over 12,000 acres; cleaned tons of trash from the coastal areas and illegal dumping sites; completed the contract with a professional surveyor to determine the boundary of the NAR; conducted rare plant outplanting; maintained existing fence units, roads, and trails, upgraded two miles of upper boundary fence to prevent the ingress of mouflon sheep, partnered with TNC to assist with control of remnant mouflon sheep in the upper portion of the NAR; monitored fenced units in the coastal area for native coastal vegetation recovery; conducted coastal anchialine pond surveys and monitoring in cooperation with DAR; continued to update draft Manuka NAR Management Plan and commence development of a draft environmental assessment.

Kipahoehoe (5,583 acres; mesic to wet forest): maintained fenced enclosure of 1,500 acres; coordinated animal control; conducted rare plant protection through seed collection and outplanting; invasive species control; upgraded water holding capacity to 5,000 gallons to facilitate fire suppression and invasive species control; continued road and trail maintenance. Constructed protective fences around isolated endangered plants in the lower portion of the NAR.

Other Areas: The Hawaii Island NARS Program assisted with management of other protected areas outside of the eight Reserves. These activities included assisting with invasive weed control, fire break maintenance, rare species outplanting, and the removal of feral ungulates from the Puu Waawaa Forest Bird Sanctuary (over 1,300 feral pigs removed) and the Puu Waawaa Cone Unit.

For detailed information on the NARS, please go to http://hawaii.gov/dlnr/dofaw/nars.

Rare Plant Species Restoration and Protection FY10

The focus of NARF support of the Rare Plant Program for FY10 has been to provide matching funds required for federal grant programs, mainly Section 6 of the federal Endangered Species Act (ESA). The $110,000 received by the Rare Plant Program provided a portion of the state match needed for a $680,000 grant from USFWS for T&E

plant species. The projects receiving the state support included habitat protection and enhancement projects within NARS on the Island of Hawaii; support for the propagation efforts of Volcano, Pahole (Hawaii), Olinda (Maui) and Kokee (Kauai) rare plant facilities; Lyon Arboretum (Oahu) micropropagation/seed storage facilities; the statewide Plant Extinction Prevention Program, and development of a comprehensive statewide rare plant database for all of the above programs.

The core focus of the *Hawaii District NAR Rare Plant Program* has been the protection of large areas of endangered plant habitat. The major threats being managed for rare species protection and restoration are feral ungulates control (goats, pigs, mouflon sheep) and noxious weed control (mainly fountain grass). This year, much of the Island of Hawaii was under extreme drought. Much of the staff efforts for this project were spent in survival mode, trying to maintain past years efforts by increased maintenance of recently planted species. Increased watering of plants and fire pre-suppression efforts were elevated as top priorities. Despite the drought, NARS staff planted over 1,400 outplants from Volcano Rare Plant Facility and 5,600 plants from the State Tree Nursery. Staff uses common species koa, mamane, ohia, koaia, and kolea to rehabilitate sites, improve existing sites and install infrastructure for future rare plant introductions.

Volcano, Pahole, Kokee, and Olinda Rare Plant Facilities; Lyon Arboretum Micropropagation Laboratory and Seed Storage Facility are all propagation facilities for rare plants for the State of Hawaii and their partners and are wholly or partially supported by Section 6 grants with NARF serving as state match. These nurseries are a part of a coordinated effort to increase plant numbers for reintroduction into their natural habitat by various methods of plant propagation. The nurseries work from a list of approximately 600 rare plant species (approximately half of Hawaii's native flora) with a minimal staff of one to two positions per island facility. Through various methods of plant propagation and by maintaining a gene bank of plants and seeds, these facilities work to increase these plant numbers and to preserve genetic diversity. Research at the rare plant facilities included developing propagation and cultural treatments while studying the phenology of plant species that have not been investigated. Working closely with collectors from PEP, DOFAW's NARS and Forestry staff, and numerous cooperators from the Hawaii Rare Plant Restoration Group (HRPRG), plant populations are tracked and new founders to added plantings, maximizing founder representation.

Collaboration with numerous federal, state and private land managers to restore T&E plants to their appropriate habitat is the focus of *Volcano Rare Plant Facility*, demonstrated by the large plant inventory this fiscal year -- 86 species (50 endangered, 11 candidate, and 24 species of concern). In addition, this facility produced 6,023 T&E plants for outplanting to protected sites on the Island of Hawaii. An additional 890 unlisted native plants were produced to provide more diverse and robust native communities to enhance restoration projects.

The plant inventory at *Pahole Rare Plant Facility* for FY10 represented 39 T&E taxa with a total of 2,674 plants. These plants are grown for on island restoration efforts and as a living genetic bank. The largest cooperators for Oahu are PEP and the United States

Army, who focuses their restoration efforts on endangered plant species at risk from fire from Makua.

Efforts at the *Rare Plant Facility at Olinda*, Maui has concentrated on protection of nursery stock from deer browsing by fencing the perimeter of the facility. Olinda produced 440 individuals of T&E plants for out planting to protected sites on Maui. An additional 1,160 unlisted native plants were produced to provide more diverse and robust native communities to enhance future restoration projects.

The focus of the *Lyon Arboretum Micropropagation Laboratory* is to prevent further extinction of Hawaii's native plant species, mainly through the use of in vitro propagation (tissue culture) of plant species that are not easily propagated via traditional methods (seeds, cuttings, air layers). The two main activities accomplished within the laboratory are propagation of all submitted plant samples for restoration/reintroduction and maintaining a sufficient representation of "living" plant germplasm in test tubes. Between the period of July 1, 2009 and June 30, 2010, the Lyon Arboretum Micropropagation Laboratory received 390 submissions representing 75 native Hawaiian species; 41 (55%) are listed by the State and USFWS as "Endangered" and nine (12%) are "Species of Concern". The Micropropagation Laboratory currently has a total of 11,246 plants in inventory and 218 native plant taxa at various stages of propagation and consists of 132 Endangered (61%), 26 (12%) Species of Concern, 8 (3.5%) Candidate, and 52 (23.5%) Common Taxa. Submissions of eight new native species have been made into the lab of which two are endangered. A total of 1,028 plants from this lab were used in restoration efforts across the State.

Hawaii's *Plant Extinction Prevention (PEP)* Program leads the largest endangered plant protection effort in the State, spanning the main Hawaiian Islands and is supported with federal, state (NARF), and private funding. In FY10, the PEP Program implemented protection actions for 101 federally listed T&E plant species. One Proposed Endangered, 25 Candidate, and 13 Species of Concern were also protected. The PEP Program is dedicated to implementing the "Interim Criteria" identified in recovery plans as well as the endangered plant protection actions outlined in the State of Hawaii's Comprehensive Wildlife Conservation Strategy (October 2005) for their respective islands. To address the extinction crisis and focus efforts on the most critically rare plant species, the PEP Program implements recovery actions for species that have fewer than 50 individuals remaining, which may or may not be federally listed species. These are coined "PEP" species or taxa.

FY10 was the first year that the PEP Program has had a full complement of island coordinators in all five islands and as a result, an unprecedented number of PEP species have been protected. Recovery actions were implemented for a total of 116 PEP species, a 13% increase from last year (from 103). Population monitoring was implemented for 109 PEP species (plus 41 other rare plant taxa), placing 74 of these into *ex situ* cultivation at either a cooperating rare plant nursery or botanical garden, tissue culture at the Lyon Arboretum's Micropropagation Lab, or in the Center for Conservation Research and Training's Seed Storage Lab. Additional collections were made for 29 other critically

rare plant taxa. Surveys were conducted for 50 PEP species, of which 24 species were either rediscovered or new populations were found. To protect the founders in the wild, the non-native animal and plant threats were managed for 46 species. Threat management entailed alien plant control, ungulate-proof fence construction and maintenance, rat trapping, and bagging fruits to protection from invertebrate and rodent pests. Noteworthy projects include the outplanting of 24 rare species in the wild.

In FY10, the PEP Program also focused on reevaluating the PEP Species List and as a result, the number of PEP species increased from 173 in FY09 to 200 in FY10. The increase is primarily attributed to the addition of "possibly extinct" species, a new category of PEP designations, and updated population numbers. Island PEP Coordinators also input monitoring data into the statewide database and to date, the core data from Kauai, Oahu, Molokai, Maui, and Lanai have been entered with the completion of all data entry expected within two years. Target deadline for entry of the core data for Hawaii Island is FY11.

The first step in developing a statewide rare plant database was the entry of the rare plant monitoring data collected by the PEP Program. The development of the database has been partially funded by funds from NARF. Detailed demographic information provided by the PEP Program is serving as a template for database development. The information will expand to include data from members of the HRPRG as funds become available to support a web-based information query and data entry.

Invertebrate Conservation Program

The DLNR-DOFAW Invertebrate Conservation Program was initiated in June 2010. The objective of this program is to expand the knowledge and resources available, to effectively direct resource management, monitoring, research, conservation, and policy decisions relating to federally listed T&E Hawaiian invertebrate species, as well as other native invertebrate species.

Hawaiian ecosystems are dependent upon the ecological services completed by a diverse array of native invertebrates. Hawaiian tree and plant species could not exist without the pollination services and nutrient cycling which native invertebrate communities provide, and native invertebrates are essential food resources for populations of native birds and bats. Consequently, conservation and management efforts which protect native invertebrate communities inherently protect the native plants and animals which depend upon them in perpetuity.

The need to effectively manage native invertebrate species on state owned and managed lands is great. To date, USFWS has conferred endangered species status on a variety of unique native Hawaiian invertebrates at risk of extinction (including one moth, one wolf spider, 40 tree snails, one amphipod, 11 fruit flies, and two damselflies), and additional listings are imminent. The hiring of a DOFAW Entomologist at the end of FY09 was the first step towards developing that Invertebrate Conservation Program, and addressing what has been a longtime management deficit.

Threats to native invertebrates include [but are not limited to] habitat destruction or alteration, loss of host plants, and the invasion and establishment of non-native species. It is therefore necessary for the staff Entomologist to collaborate frequently with other DOFAW staff and partners to address the multitude of issues affecting native invertebrate conservation.

FY10 DOFAW Invertebrate Conservation Program accomplishments:

- Developed and implemented a statewide Invertebrate Conservation Strategy (ICS) with the objective of establishing cooperative relationships with relevant stakeholders at agencies, institutions, and organizations which participate in, or benefit from, invertebrate research, management or conservation (Hawaii Department of Agriculture (HDOA), UH, USDA, USGS, USFWS, United States Army Environmental, Hawaii Wildlife Fund, Bishop Museum, TNC, Hawaii Invasive Species Committee (HISC), DAR, University of California Berkeley, Cornell University). Four meetings have been held (two in both Hilo and Honolulu).
- Conducted monitoring of native wiliwili trees (*Erythrina sandwicensis*), to assess the impacts of the invasive erythrina gall wasp and the introduced biological control agent released to control it. Monitoring was completed in conjunction with the HDOA Plant Pest Control (HDOA-PPC) staff at 13 field sites across Oahu, Maui and Hawaii islands. Entomologist completed a total of 19 surveys on Oahu, nine surveys trips to Maui, and nine survey trips to Hawaii.
- Applied for and received nationally competitive grant from the USDA-FS to survey and monitor naio thrips infestation on Hawaii Island in FY11 - FY13 (funds totaling $128,647).
- Initiated surveys of the endangered Blackburn Sphinx moth in Puu Waawaa Experimental Forest, to observe larval ecology and determine if sequential sampling may be used to estimate population densities for mitigation purposes.
- Assisted HDOA-PPC with initial response to, and delimiting surveys of, incipient little fire ant (*Wasmannia auropunctata*) infestation in Waihee, Maui.
- Provided technical support to DAR Stream Survey Program by completing surveys of native and T&E damselfly (*Megalagrion* spp.) along five streams corridors in Maui County. (Total of two survey trips.)
- Reviewed and issued 37 Native Invertebrate Scientific Research and Collecting permits.
- Provided comments regarding the candidate T&E Weiku bug (*Nysius wekiuicola*) avoidance, conservation, and habitat mitigation and protection for the Office of Mauna Kea Management Mauna Kea Management Plan and the Thirty-Meter-Telescope Environmental Impact Statement.
- Attended the Office of Mauna Kea Management Wekiu Bug Working Group.
- Coordinated a rapid invertebrate inventory of Pahole NAR with ICS partners. A total of 40 agency staff, researchers, graduate/undergraduate students participated in the event. The species list produced by the event will be used by DOFAW managers for future planning and resource assessments.
- Assisted with invertebrate inventory of Kaena Point NAR, with the objective of obtaining baseline data on species presence and abundance prior to construction

of a predator-proof fence which is currently proposed for the area.
- Conducted outreach for program at a Hawaiian Entomological Society meeting, and the Hawaiian Conservation Conference.
- Supervised and trained a summer intern from UH Manoa on standard field survey protocols, ant taxonomy/identification, and current issues in invertebrate conservation in Hawaii.

While the DOFAW Invertebrate Conservation Program staff is limited to one temporary full-time Entomologist, the Program has the opportunity to facilitate excellent collaboration, research and management in the State. The staff entomologist has submitted grant proposals to obtain federal funds to address specific invertebrate, research, management and conservation needs, and will continue to do so in FY11.

2. COMPLIANCE WITH CHAPTER 42F, HRS, REQUIREMENTS FOR GRANTS AND SUBSIDIES

No grants or subsidies were issued pursuant to Chapter 42F, HRS.

3. ANALYSIS OF THE PROBLEMS AND ISSUES ENCOUNTERED

Protecting natural areas and ensuring the future of rare native ecosystems and species requires sustained management actions as described above. Actions such as weed and feral animal control and fire prevention must be conducted over the landscape as feral goats, pigs, deer, and sheep, invasive weeds, and fires do not recognize ownership boundaries. The emergence of watershed partnerships on every island has contributed greatly to state, federal and private partners' ability to appropriately manage these large forested areas. However, coordinating and assisting the conservation efforts of these partners presents challenges and adds additional responsibilities on the already understaffed NARS crews.

Still, with short-term federal and state funding, the NARS Program has been able to partner with the Pacific Cooperative Studies Unit of UH to supplement important NARS management work and to assist in the coordination of watershed management actions, including invasive species control, fence construction, field surveys, and rare plant collection, propagation, and outplanting. This partnership with UH is critical, providing learning opportunities to young professionals in the biological sciences, and giving the State much-needed assistance with on-the-ground conservation. In addition, partnerships with other landowners and volunteers provide another method by which the NARS Program is working to meet conservation needs.

In FY10, DOFAW's NARF budget for NAR management was decreased by approximately 50%. Fortunately, funding continued for 22 temporary positions, and one permanent state position, to support needed on-the-ground fieldwork in NARS and increase coordination with the watershed partnerships. These positions significantly increased the capacity of NARS to conduct on-the-ground management. In addition, temporary infusion of $1.0 million in USDA-FS economic recovery (American Recovery and Reinvestment Act of 2009 - ARRA) funds helped to sustain some NARS actions in

FY 10 and FY11, however, additional federal recovery funds will not be available in FY12.

Controlling the threats of invasive weeds and feral animals remains a challenge. Feral animals damage native vegetation, destroy habitat for endangered species, contribute to erosion, and damage watershed capacity. At the landscape level, control of feral animals is possible using a combination of public hunting, exclusion by fences, staff control, and aerial shooting. Building and maintaining fences, although effective, is very expensive. Unfortunately, some members of the public do not understand the connection between feral ungulates and damage to native forest and watershed – raising objections to both fencing and animal control as unnecessary. Invasive weeds modify habitat and require constant effort and vigilance to combat effectively. With the dedicated funding provided by NARF, it is anticipated that many of the management needs of NARS can begin to be addressed on a consistent, ongoing basis.

4. STATUS OF PUBLIC HUNTING OPPORTUNITIES

Under the NARS Management Policies, strategies to reduce populations of non-native animals to the lowest possible level are to be employed. Public hunting continues to be the primary control option in many areas within NARS, although hunting is not managed on a sustained-yield basis. Animal control methods (including fencing, trapping, staff hunting, snaring, and aerial shooting) are used as needed in specified areas where public hunting is not able to reduce population/activity to the lowest possible level.

5. FINANCIAL REPORT

NARS is financially supported partly through the (State) General Fund under the LNR-407 Program. (see Table A). In FY10, general fund expenditures were $717,936 in personnel costs and $48,448 in operational costs, totaling $766,384. This funding was supplemented by federal grants on a project-by-project basis and from NARF, which is reported on page 29 and 41.

6. PLANS AND MANAGEMENT OBJECTIVES FOR THE NEXT FISCAL YEAR

Where appropriate, reserve management activities will be guided by management plans. Plan implementation will focus on preventing, eliminating or controlling the spread of non-native plants and animals that have a detrimental effect on native ecosystems. Other management considerations will include monitoring, research, public education, and volunteer support. Statewide, partnerships (particularly watershed partnerships) will continue to play an important role in the management of the reserves, with resources shared to manage across property boundaries.

Plans and management objectives for the next fiscal year include continued work on pending fencing projects; continued collaboration with watershed partnerships to cooperatively manage areas on a landscape level; continued control and removal of feral animals; continued control of habitat-modifying invasive species; update of individual reserve management plans, and the implementation of the BLNR approved strategic plan. Due to the economic downturn, and associated reduction in general and special funds,

staff will generally focus on completing existing initiatives and maintaining regular management activities.

Realizing the budgetary challenges expected due to the slow economic recovery, staff has, and will continue to aggressively pursue alternate funding via grant opportunities. Fortunately they have been successful in obtaining minor state and federal grants. These grants should partially offset the reduction in funding from traditional sources and allow staff to partially maintain the conservation progress made the last few years due to Act 156, Session Laws of Hawaii (SLH) 2005 (Legacy Land Conservation Act).

Other actions by staff to address the shortfall in State funding support from the Conveyance Tax (41% reduction) and the General Fund (26 % reduction):

- Successfully requested several federal granting agencies to reduce or wave match requirements;
- Increase use of in-kind match;
- Increase collaboration and integration of the different programs to improve the effectiveness and benefits of these programs and further the objective of protecting Hawaii's natural resources;
- Increase cooperative efforts among multiple agencies, non-governmental organizations, landowners, and private citizens to maximize conservation efforts while increasing available match;
- Structure personnel cuts strategically to retain the maximum functionality of programs as they downsize, mainly by retaining highly trained state civil service and contract staff;

Specific Plans and Objectives by Branch (FY11):
Hawaii: The NARS Program on the Island of Hawaii will continue the process to update the management plan for Manuka NAR, including collaboration with other interested DLNR divisions; continue cooperation with USGS Hawaiian Volcano Observatory to monitor the current lava flow within Kahaualea NAR; continue to work with the Three Mountain Alliance to advance management goals in Puu Makaala NAR including invasive species control, rare plant work, and protection of native habitat; continue to work with the Kohala Watershed Partnership to implement the partnership management plan; continue participation in the Hawaii Experimental Tropical Forest, particularly as it overlaps with Laupahoehoe NAR; and continue collaboration with the Office of Mauna Kea Management to address management needs there; continue an active outreach and education program; continue an active rare plant restoration program; and repair and maintain existing infrastructure (management cabins).

Maui:
The NARS Program on Maui will continue working to protect Hanawi NAR through fence construction, inspection, maintenance, and cyclic replacement, ungulate control, weed control, and rare species monitoring, in cooperation with East Maui Watershed Area (EMWP) and the Maui Forest Bird Recovery Project; continue construction of fencing at Kanaio NAR and initiate update of the management plan; conduct fence

inspection and maintenance of the boundary fence at Kahakuloa NAR and removal of animals, in cooperation with WMMWP; continue to work with the Molokai Pig Hunters Association to remove animals from the fenced mauka unit in Puu Alii NAR and to finish construction of the next phase of fencing; continue aerial shooting of large feral animal (particularly goat) populations on the north shore of Molokai; continue implementation of access restrictions for Ahihi-Kinau (maintaining closed areas, conduct monitoring surveys, finish the management plan in coordination with the Ahihi-Kinau Advisory Group and TNC, Marine Program; complete CIP project at Kanahena/Ahihi-Kinau NAR; install radio repeater to improve radio communications at Ahihi-Kinau NAR; get power pole installed and power-up ranger station trailer at Ahihi-Kinau NAR.

Oahu:
The NARS Program on Oahu will complete ungulate removal from all fenced units within Pahole NAR; develop a material list and budget for the boardwalk replacement at Kaala NAR; construct a predator-proof fence at Kaena Point NAR (http://www.state.hi.us/dlnr/dofaw/kaena/index.htm) and continue monitoring for small predators; continue the process for formally adding the upper portion of Poamoho section of Ewa Forest Reserve into NARS; continue to work with United States Army in the Makua mitigation process; continue implementation of the successful rare plant program; and continue monitoring of seabird populations at Kaena Point.

Kauai:
The NARS Program on Kauai will initiate the update of management plans for Kuia and Hono O Na Pali NAR; complete fencing in Kuia NAR; conduct weed and rare plant monitoring in Kuia and Hono O Na Pali NAR; continue implementation of the successful rare plant program; continue the process for formally adding a portion of the Na Pali-Kona Forest Reserve into NARS; collaborate to support activities by the Kauai Watershed Alliance; and expand an outreach and education program.

NATURAL AREA PARTNERSHIP PROGRAM (NAPP)
1. DESCRIPTION OF ACTIVITIES AND ACCOMPLISHMENTS

This innovative program, established by the Legislature in 1991 through Act 326, provides state-matching funds on a 2:1 basis with private funds for the management of natural resources on private lands permanently dedicated to conservation. NAPP complements the existing NARS by providing long-term protection and management of unique natural resources on private lands.

NAPP provides financial support for a full range of management activities to protect, restore and enhance significant native resources and geological features. NARS staff administers NAPP, although the private applicant actually carries out all on-the-ground activities. Six-year, long-range management plans provide funding and direction for each NAPP Preserve. Since 1993, a portion of the Conveyance Tax, which is levied each time real estate property in Hawaii is bought or sold, has funded the Program. For more information on NAPP, see http://hawaii.gov/dlnr/dofaw/napp.

PUU KUKUI WATERSHED PRESERVE
Landowner: Maui Land & Pineapple Co.
Managing Partner: Maui Land & Pineapple Co.
Entered NAPP: FY94

With over 8,304 acres, the Pu‘u Kukui Watershed Preserve forms the core of regional protection efforts of the WMMWP’s 48,000 contiguous acres. 14 native natural communities, two of them rare, are found in the Preserve along with over 40 rare plant species and six endemic species of land snails. In FY10, accomplishments included maintaining 60 percent of the Preserve as ungulate-free for five or more years, continuing ungulate control where ungulates remain (15 pigs were removed by public hunters, 27 by staff), installing .4 miles of 8 ft fencing with WMMWP and DLNR-NARS crews, inspecting and maintaining 5.6 miles of existing fencing, monitoring of alien threats, invasive weed control, and rare species protection and restoration out-plantings in cooperation with the PEP Program.

Goals for FY11 include adding an additional 3,032 acres of conservation lands to the Preserve, increasing the existing level of management, continuing to increase the acreage in the Preserve that can be considered ungulate-free by installing an additional one mile of eight ft fences for axis deer exclusion in partnership with WMMWP, continuing to offer monthly volunteer service trips for the Maui community, and continuing to participate and provide leadership in WMMWP.

KANEPUU PRESERVE
Landowner: Castle and Cooke Resorts, LLC
Managing Partner: TNC
Entered NAPP: FY92

The Kanepuu Preserve on Lanai comprises 590 acres in seven distinct units and was created to protect and enhance the olopua/lama (*Nestegis/Diospyros*) dryland forest that once covered large portions of the lowlands on Maui, Molokai, Kahoolawe, and Lanai. 11 rare plants, six of them federally listed as endangered, have been reported from the Preserve. Major management activities are conducted through a sub-award, though TNC Maui-based staff also assisted with work in Kanepuu during FY10. Protection from axis deer, control of non-native plant species, and fire prevention are the primary management activities. The primary management accomplishments in Kanepuu Preserve during FY10 included: 1) 57 contractor and volunteer hunts were conducted with 121 deer and two mouflon sheep removed; 2) Regular monthly fence maintenance, repair and inspections of Kanepu‘u and Kahue boundary fences were completed; 3) Intensive weed removal inside and around the two small enclosures in Kanepu‘u unit (Lapaiki iki and Kanepuu iki) was conducted - weeds removed include Christmasberry, lantana, guinea grass, koa haole and other invasive species; 4) A new interpretive trail with informative signs was established and dedicated; and 5) Several miles of fire breaks were routinely mowed and maintained to prevent potential fire damage.

In FY11, TNC plans to continue granting funds through a sub-award for ungulate control, fence maintenance, weed control, and fire control.

KAPUNAKEA PRESERVE
Landowner: Kāʻanapali Land Management Corp.
Managing Partner TNC
Entered NAPP: FY92
Kapunakea Preserve is a 1,264-acre preserve that is a component of regional protection efforts for the important watershed and native ecosystems found in the West Maui Mountains. Kapunakea Preserve's upper elevations are recognized as among the highest quality native areas in the State, containing 11 native communities, 34 rare species of plants (10 federally listed), and four rare snail species.

In 2008, TNC began sub-awarding to Tri-Isle RC&D Council, Inc. to accomplish essential stewardship activities in the Kapunakea Preserve through the West Maui Mountains Watershed Partnership (WMMWP). In FY10, WMMWP conducted animal control and monitoring, selectively removed *Tibouchina herbacea* and strawberry guava (*Psidium cattleianum),* maintained infrastructure, and provided occasional access to researchers. The primary management accomplishments for Kapunakea Preserve in FY10 were: 1) 23 pigs were removed from lower, less native habitat (likely the result of a gap in the fence which is now repaired); 2) Ungulate activity transects were monitored with small amounts of damage reported; 3) Fences were inspected monthly with minor improvements and enforcements added to increase barrier efficacy; 4) Aerial surveys were conducted to locate strawberry guava (*Psidium cattleianum)* outliers and to monitor any pig activity; 5) 201 *P. cattleianum* were treated or pulled to prevent expansion into pristine areas, while a new upper elevational outlier was found at 4,200 ft elevation; 6) 112 *Tibouchina herbacea* individuals were detected and manually removed; 7) 11 *Clidemia hirta* individuals were detected and removed in an eight-acre area; 8) Locations of rare species *Alectryon macrococcus*, *Cyanea lobata* subsp. *lobata*, and *Colubrina oppositifolia* were re-visited, and outplantings of *C. oppositifolia* watered; 9) An endangered Uau was heard at Mud Camp; and 10) TNC served on the WMMWP Executive Committee and supported funding and watershed activities.

In FY11, TNC plans to continue granting funds through a sub-award for WMMWP to carry out ungulate control, fence maintenance, weed control, threat monitoring and other routine management activities.

PELEKUNU PRESERVE
Landowner: TNC
Managing Partner: TNC
Entered NAPP: FY92
The Pelekunu Preserve, located on the north shore of Molokai, is a 5,759-acre preserve established to protect the free-flowing Pelekunu Valley stream system, one of the best in the State, on Molokai's remote north shore. It is also part of a larger regional management effort that provides protection to over 22,000 contiguous acres on Molokai. Pelekunu Stream contains nearly all the native Hawaiian freshwater fish, crustacean, and mollusk species. In addition, 28 rare plants, six endemic forest birds, and two endemic land snail species have been reported from the area. Protection of the watershed by

reducing ungulate damage, reducing the spread of non-native plants, and monitoring native stream life for changes in species densities are the primary management activities.

Due to the high cost of helicopter access to the Valley, and reduced staff and budget, access to the Valley in FY10 was minimal. Weed control activities were not conducted. Stream monitoring this fiscal year showed encouragingly higher numbers of *hihiwai*, a native aquatic snail, than the previous monitoring in FY08, when densities were at levels less than half that noted in prior years. In FY10, TNC's primary means of ungulate control in Pelekunu was to support NARS continued aerial shooting of Molokai's north shore with mapping, spotting and flight-following services. Aerial shooting of pigs, goats and deer is conducted in areas of steep terrain that are unsafe for hunters and dogs.

In FY11, management efforts will continue to focus on support of NARS aerial shooting efforts. Weed control efforts will focus on surveying for newly established weeds to prevent their movement into intact areas. Community outreach efforts will continue with public lectures, preserve overlook hikes, and summer youth programs.

KAMAKOU PRESERVE
Landowner: Molokai Ranch, Ltd.
Managing Partner: TNC
Entered NAPP: FY95

The 2,774-acre Kamakou Preserve helps increase regional protection efforts for the important watershed and native communities found in East Molokai. Kamakou Preserve protects 40 rare plant species, 23 of which are listed as federally endangered. In addition, the Preserve protects habitat for five native forest bird and five rare native land snail species. The primary management focus is to prevent degradation of the native forest by reducing feral ungulate damage, limiting the spread of non-native habitat-modifying plants and preventing wildfire.

In August 2009, a wildfire broke out in Kaunakakai with light, dry fuels. Gusting winds quickly spread the fire east, west, and upslope. In spite of that, a total of only 44 acres burned within Kamakou Preserve, most of which (>95%) was non-native (molasses grassland or eucalyptus/pine/silk oak plantation). Trained TNC staff was deployed to the fireline to assist DOFAW with fire suppression. It was estimated that less than three acres of native mesic forest in the Preserve was impacted, and the fire was declared contained a week later.

Staff and volunteers also control non-native plant and animal species by conducting systematic Global Positioning System (GPS)-documented animal control "sweeps" of priority areas. In FY10, feral ungulate control activities focused on development of a set of dogs capable of hunting in a one hunter/one dog method. 19 staff hunt sweeps were conducted in priority wet forest areas using this set of dogs. Staff and volunteer groups also removed *Clidemia*, passionfruit, strawberry guava, New Zealand flax, black wattle, Christmasberry, rose, ginger, karakanut, and blackberry in the preserve. Over 60 plants of four critically rare species (< 50 individuals in the wild) were outplanted in the preserve to support the PEP Program. TNC staff provided logistical support for several research

projects conducted in the preserve. Public outreach programs continued to be important both on- and off-site.

For FY11, priority wet forest sweeps will be the focus of ungulate and weed control efforts. Other activities will include supporting researchers and conducting community outreach.

MOOMOMI PRESERVE
Landowner: TNC
Managing Partner: TNC
Entered NAP Program: FY95
This 921-acre preserve on the northwest shore of Molokai contains one of the largest and best remaining dune ecosystems in Hawaii. Moomomi contains eight rare plant species and one rare native plant community. Green sea turtles, wedge-tailed shearwaters, Laysan albatrosses, and Hawaiian monk seals are known to use the area. In addition, Moomomi contains significant archaeological, paleontological, and cultural resources.

In FY10, trapping of feral cats, mongoose, and rats provided for safer nesting grounds for the steadily increasing population of wedge-tailed shearwaters. Preliminary results from an on-going monitoring project to measure the impact of deer in the preserve suggest that deer may be preferentially browsing or grazing on non-native species. Non-native plant control focused on removing kiawe, which can form dense stands in the otherwise intact dune system. In FY10, over 2.1 acres of kiawe were removed from the Preserve as part of a training project with the neighboring landowner, Molokai Land Trust, to develop its capacity to conduct passive coastal restoration. Community outreach programs included preserve hikes and off-site activities.

In FY11, TNC will continue with kiawe removal efforts, continue the monitoring project to measure the impact of deer in the Preserve, and continue to conduct predator control and monitoring of the wedge-tailed shearwaters' nesting colony. Community outreach and support of research projects will also continue.

WAIKAMOI PRESERVE
Landowner: Haleakala Ranch Company
Managing Partner: TNC
Entered NAP Program: FY95
The 5,230-acre Waikamoi Preserve helps increase regional protection efforts for an important watershed and the native species found in the East Maui Watershed Area. 13 bird species have been reported from Waikamoi, including seven federally endangered species. 14 native natural communities, two of them rare, are found in the Preserve along with 35 rare plant species. Management activities during FY10 were primarily focused on maintaining low to zero levels of ungulates in Waikamoi Preserve following the completion of a joint three-year project (termed "Go Deep") with the East Maui Watershed Partnership (EMWP) aimed to reduce ungulates to near zero throughout a 12,000 acre area.

Major accomplishments for FY10 included: 1) Approximately 217 acres in a key forest and watershed area were intensively surveyed with all found ginger mapped and controlled. An additional 63 acres were surveyed in densely infested areas with all found ginger mapped and controlled; 2) 15 rare plants, including *Cyanea horrida*, were documented in new locations throughout Waikamoi and the East Maui Watershed area; 3) One forest bird and three invertebrate research studies were conducted and supported by TNC; 4) 32 hunts were conducted in the Preserve by TNC staff; 5) 10 pigs were removed within the Preserve; 6) Four deer were removed from the Waikamoi Preserve buffer zone area to prevent expansion into Waikamoi; 7) 18 miles of fences in the Preserve were inspected and maintained at least quarterly; 8) Nine fence improvements and repairs were made to preserve fences, including the Deer Management Unit; 9) Ungulate transects in Units 1A, 1B and 2 were annually monitored with zero percent ungulate damage detected; and 10) TNC actively participated in the EMWP and supported additional funding for several EMWP key projects.

In FY11, TNC plans to initiate a sub-award to Tri-Isle RC&D Council, Inc. to complete a portion of the stewardship activities in the Waikamoi Preserve through the EMWP. Management activities will focus on minimizing all ungulate damage in Waikamoi Preserve through regular control efforts and rigorous fence inspections, and controlling habitat-modifying weeds. This is expected to support a more efficient use of funds over the long term.

KAʻŪ PRESERVE
Landowner: TNC
Managing Partner: TNC
Entered NAP Program: FY07
TNC's 3,511-acre Kaʻū Preserve on Hawaiʻi Island protects biologically rich and intact native forest in and near the 68,500-acre Kaʻū Forest Reserve on Mauna Loa's southeast flank, one of the largest areas of intact forest land in the State. These forest ecosystems provide sanctuary to 153 endemic plant species (many rare or endangered) and support one of Hawaii's richest remaining assemblages of endangered forest birds. In FY10, through diligent monitoring and regular fence checks, the Kaʻū Preserve's 1,200 acre fenced unit remained ungulate-free. Fence rust, accelerated by the high concentrations of volcanic emissions or VOG, was mitigated, and improvements to the fence were made at drainage crossings. TNC staff worked to enhance public hunting in the adjacent Kaʻū Forest Reserve by coordinating access through the preserve, maintaining roads and providing fence step-overs. Infrastructure on the Preserve was improved with the installation of a rain shed. Control work on kahili ginger was completed in the Kāhilipali Unit, with 37 acres removed. Survey and control work was initiated on the kahili ginger population in the Kīʻolokū Unit with 23 acres surveyed so far. Weed survey and control work to remove all high priority weeds was conducted on 87 acres within the Kaiholena Unit, where the targeted removal of an isolated three-acre patch of night-blooming jasmine was also completed. Monitoring and seed collection of rare species continued within the ungulate-free unit. Community outreach and environmental education programs continued with volunteer work days, service learning trips for students, a

teachers' workshop, informational booths at events, and Christmas bird count coordination.

In FY11, TNC staff will continue to maintain the fence, monitor for ingress animals and remove them whenever detected. Strategies to enhance hunter access to the Kaʻū Forest will be implemented, including construction of additional fence step-overs and a hunter shelter at Kaiholena, and securing funding to implement a plan to increase public access along the forest edge. The kahili ginger population in the Kīʻolokū Unit will be eliminated, and high priority weeds within the Kaiholena Unit will be controlled. In addition, high-resolution aerial photos will be analyzed to map weeds in the Preserve and surrounding forest, and TNC staff will assist partners with the implementation of the Three Mountains Alliance's Weed Management Plan. Efforts to build Ka`ū community understanding and support for the preservation of Ka`ū's native forests, and enlist volunteer assistance for preserve management will continue with outreach and education activities.

2. COMPLIANCE WITH CHAPTER 42F, HRS, REQUIREMENTS FOR GRANTS AND SUBSIDIES

Due to statutory changes, Chapter 42F, HRS, is no longer applicable to the types of grants issued under NAPP. All grants awarded as part of NAPP are compliant with the State Procurement Code, Chapter 103D, HRS.

3. ANALYSIS OF THE PROBLEMS AND ISSUES ENCOUNTERED

Natural resource protection and management are long-term efforts requiring time and energy commitments not often found in other projects. Restoration projects often take years before results are discernable. Several of the projects funded this year under NAPP could take years to achieve the desired objectives. It is important to note that management and protection of natural areas, watersheds and native ecosystems need to continue for the long term.

Partnership and community-based management programs have proven to be an effective tool for leveraging funds and securing stakeholder participation and commitment. Such initiatives also require a concerted effort and often take a long time to establish and implement. NAPP-funded preserves typically form the core of conservation partnerships, in part due to the dedicated state funding. To help with organization, facilitation, and implementation, partnership steering committees, community advisory councils, and facilitated working groups have been established to help management partners address local concerns now and in the coming years.

4. STATUS OF PUBLIC HUNTING OPPORTUNITIES

On Molokai, the status of public hunting opportunities varies depending on the preserve. Due to safety concerns and the limited resources for administration and enforcement, TNC does not offer a public hunting program at the Moomomi Preserve. In the event studies indicate that major control work needs to be conducted on the deer population, TNC will pursue management in the best interest of the resources. Kamakou Preserve is open for public hunting when it is compatible with management programs and in

accordance with the regulations of the adjoining Puu Alii NAR. At this time, the NAR and the Preserve are open year-round to hunting of pigs, goats, and axis deer, without a bag limit. During times of extreme fire hazard, unsafe road conditions, or herbicide spraying in areas accessible to the public, portions or all of the Preserve may be closed. The Pelekunu Preserve continues to utilize staff-organized volunteer ground hunts through the Molokai Hunting Working Group.

On Maui, the status of public hunting opportunities also varies depending on the preserve. At Puu Kukui, the Preserve is open to public hunters by permit 365 days a year, with no bag limit. Limited volunteer hunting opportunities are available at the Waikamoi Preserve. The conservation easement between TNC and Haleakala Ranch allows ranch employees to hunt. Public hunters willing to follow TNC guidelines will be allowed to hunt in Unit 1A of the Preserve on a limited basis (when hunting will not interfere with ongoing management activities, planned guided hikes, and hunting by ranch employees). However, it should be understood that the goal is to remove all ungulates in the Preserve, and no area within Waikamoi Preserve will be considered a sustained yield hunting area. In addition, there are approximately 50,000 acres available to public hunters below the Preserve to meet public hunting needs. The conservation easement between TNC and Amfac/JMB Hawaii, L.L.C. requires that there be no unaccompanied public hunting in the Kapunakea Preserve. Kapunakea Preserve is closed to hunting with dogs due to an increased snaring effort in the Preserve due to dramatic increases of pigs in previously hunted areas. However, TNC staff may accompany public hunters hunting without dogs upon request, on a case-by-case basis. Limited public hunting opportunities that will not interfere with other management are available in coordination with scheduled work trips.

On Lanai, TNC utilized volunteer hunts as a method to remove remnant deer from the fence exclosure units.

On Hawaii Island, TNC will continue to utilize volunteer hunters to reduce animal numbers within the Kau Preserve and will continue to investigate ways to enhance hunter access into the Kau Forest.

For additional information on NAPP, please go to http://hawaii.gov/dlnr/dofaw/napp.

5. FINANCIAL REPORT

NAPP is supported primarily through NARF. In FY10, state expenditures were $637,391. As NAPP provides matching funds on a 2:1 basis, these state funds were matched by at least $318,696 in private funds. In actuality, NAPP participants typically provide additional matching dollars for conservation, through additional private funds or through acquisition of federal grants.

6. PLANS AND MANAGEMENT OBJECTIVES FOR THE NEXT FISCAL YEAR

NAPP preserve management activities in FY11 will be guided by completed, BLNR-approved management plans. Plan implementation will focus on eliminating or controlling the spread of non-native plants and animals that have a detrimental effect on

native ecosystems. Other management considerations will include rare and endangered species protection, monitoring, research, public education and generating community support. Goals for individual preserves are discussed above.

FINANCIAL CONDITION OF NARF

NARF received revenues from the Conveyance Tax (20% of total Conveyance Tax revenues) on real estate transactions. The cash balance of NARF at the beginning of FY10 was $8,411,637 with prior year's encumbrances of $4,971,039. FY10 NARF revenues were $8,234,145 with $8,152,087 from the Conveyance Tax, $80,348 from the investment pool and $1,710 from miscellaneous (See Table B). Although the real estate market is recovering, FY10 revenues were only 59% of the record FY06 revenues of $13,893,045.

FY10 expenditures totaled $7,765,759, representing expenditures of approximately $4,409,344 of FY09 encumbrances, $2,840,251 of FY10 encumbrances, and $516,164 central services fees. Of the FY10 $5,643,931 allowed spending cap, all operating funds were encumbered. Outstanding FY10 encumbrances totaled $2,818,656.

The cash balance of NARF at the beginning of FY11 was $6,382,806 with $3,564,150 as the available cash balance. Projections are for revenues to remain flat in FY11 due to an uncertain real estate market. Actual Conveyance Tax revenues for the first two months of FY11 were $1,484,065, up from FY10 revenues of $755,976 during the same period. Of note is Act 59, SLH 2009, which temporarily reduces Conveyance Tax revenues transferred to NARF from 25% to 20% until June 30, 2012 while increasing the rates charged to high end properties.

NARF also supports other programs and projects, some of which are administered by DOFAW:

FY10 transfers totaled $3,367,464 which were: $1,360,801 to the Forest Stewardship Special Fund through direct transfers that included Forest Stewardship Program ($600,000) pursuant to §247-7, HRS, and forest reserve management ($760,801); Hawaii ISC ($1,900,000); $4,626 to the Department of Accounting and General Services (DAGS) Risk Management for insurance premiums and $102,037 to DLNR's Administrative Services Office (ASO) for an accountant and partial funding of an account clerk and data processing analyst. These expenditures are reported in their respective legislative reports.

FY11 transfers are expected to total $3,525,000 and include: $500,000 to the General Fund, pursuant to Act 192, SLH, 2010; Forest Stewardship Program ($600,000) through direct transfers pursuant to §247-7, HRS; forest reserve management ($900,000); Hawaii Invasive Species Council ($1,400,000); $5,000 to DAGS Risk Management for insurance premiums; and DLNR's ASO for an accountant and for clerical support ($120,000). Please see Table C on page 41 for summary of NARF combined drawdown.

OTHER PROJECTS FUNDED BY THE NATURAL AREA RESERVE FUND (NARF) PURSUANT TO §247-7, HRS: WATERSHED PARTNERSHIPS PROJECTS & HAWAII YOUTH CONSERVATION CORPS

1. WATERSHED PARTNERSHIPS PROJECTS

Watershed Partnerships Program

The Watershed Partnerships Program is a successful public-private venture responsible for protecting the most important watershed forests of every major mountain on all six main Hawaiian Islands. These forests form the living sponge that allows billions of gallons of fresh water to soak into the ground instead of running off directly into the ocean, which would carry sediment and pollutants onto our beaches and reefs. Along with preventing erosion, this forested sponge slowly releases the water to refill our aquifers, providing the fresh water supplies upon which all residents, tourists, agriculture and industry depends. The Program began in East Maui in 1991 and has now grown to 11 partnerships encompassing over two million acres of public and private lands (one half of the total land mass of the Hawaiian Islands).

In 2001, the Hawaii State Legislature authorized the use of NARF to support projects undertaken in accordance with watershed management plans negotiated with private landowners. This allowed partnerships to pursue other federal, county, and private funds by using state funds as leverage. In FY10, approximately $1.0 million was allocated from NARF for grants to watershed partnerships, down over 50% from previous years due to the decrease in real estate sales. A temporary infusion of $1.2 million in USDA-FS economic recovery (ARRA) funds helped to sustain some partnership actions in FY10 and FY11, however, additional federal recovery funds will not be available in FY12. Including over $2 million in ARRA funding from NOAA to the Kohala Watershed Partnership, the partnerships leveraged an additional $6 million in 2010 from non-state sources. Matching state funds are crucial to this ability to leverage these monies.

The benefits of managing our most mauka lands as partnerships are many:

- Threats are addressed more economically across landownership boundaries
- Limited state funds are leveraged to obtain federal, county and private funds
- Resources and expertise are pooled to reduce redundancy
- Private landowners increase their capacity and desire to protect their forests
- Other ecosystem services are provided such as cultural resources, recreation, education, native species preservation, and rural jobs.

The 11 partnerships are:

Kauai:	Kauai Watershed Alliance (144,000 acres)
Oahu:	Waianae Mountains Watershed Partnership (59,762 acres)
	Koolau Mountains Watershed Partnership (98,737 acres)

Molokai:	East Molokai Watershed Partnership (19,000 acres)
Maui:	West Maui Mountains Watershed Partnership (48,000 acres) East Maui Watershed Partnership (100,000 acres) Leeward Haleakala Watershed Restoration Partnership (43,000 acres)
Lanai:	Lanai Forest and Watershed Partnership (20,000 acres)
Hawaii:	Kohala Watershed Partnership (65,500 acres) Three Mountain Alliance (Mauna Loa, Hualalai, Kilauea- 1,160,000 acres Mauna Kea Watershed Alliance (484,000 acres)

There are over 60 private landowners and 24 public agencies currently involved in partnerships. This past year, 12 new partners signed memorandums of understanding (MOU) for Mauna Kea and Waianae Mountains partnerships. All partnerships have management plans approved by their members which guide their actions, providing clear objectives and measurable outcomes.

The **main threats to watershed health** are**:**

- **Destructive Animals**: feral ungulates like pigs, goats, sheep, mouflon sheep, and deer trample and kill plants, tear up the ground with their hooves, & increase erosion
- **Destructive Weeds**: habitat-modifying invasive species that shade out natives, especially those that are shallow rooted and contribute to erosion.

The **most important management actions** include:

- Fencing priority watershed areas
- Removing ungulates
- Controlling invasive species
- Monitoring forest health
- Outplanting, restoration and rare species management
- Education and community outreach.

Highlights of Watershed Partnership Activities, Accomplishments, and Challenges in FY10, Plans and Management Objectives for FY11

Conveyance Tax transfers to NARF allowed DOFAW to award $965,000 in grants to the Watershed Partnerships in FY10. A one-time infusion from the USDA-FS of $1,215,000 through ARRA saved 20 watershed staff positions and provided crucial operational funds for fence materials and invasive species control work. These federal funds are expected to be stretched through FY11 but will only partially help make up for reductions in conveyance tax revenues (and hence NARF income). A request for proposals from partnerships for FY11 funds has not been completed; hence, reports below indicate an interim status of expenditures and work still in progress utilizing 2010 and ARRA grant funds only.

Kauai Watershed Alliance-144,004 total acres

FY09 Watershed Partnership Program Grant Funds: $260,368
FY10 Watershed Partnership Program Grant Funds: $125,000
FY10-11 ARRA Funds: $182,000
Other leveraged funds: $193,926

FY10 Accomplishments:

- Construction of the East Alakai Protective Fence (2,000 acres) near complete
- Completed environmental assessment for the Wainiha Conservation Project
- Approved Conservation District Use Permit for Wainiha Conservation Project
- Alakai Plateau Weed Control (100 acres)-Removed 33,349 kahili ginger, 18,932 strawberry guava, 96 Australian tree ferns
- Wainiha Valley Weed Control- (31 acres) Removed 79,807 kahili ginger, 15 guava, 140 Australian tree ferns
- Controlled and monitored feral animals in 3,700 acres of Wainiha Valley and 1,850 acres of the Alakaʻi Plateau
- Conducted trials of six pig traps equipped with automatic feeders and game cameras in Wainiha Valley and three in the Alakai Plateau
- Conduct intensive trapping in Alakai
- Installed infrastructure on Alakai Plateau- weatherport, radio repeaters, trails
- Installed ungulate monitoring transects and game cameras in both units
- Surveyed four Wainiha transects three times, two Alakai transects one time to establish baseline data prior to ungulate removal
- Utilized 14 motion-activated game cameras near pig traps, game trails, and wallows to provide information on resident pig population structure

Waianae Mountains Watershed Partnership- 144,000 acres

FY09 Watershed Partnership Program Grant Funds: $34,000
FY10 ARRA funds: $64,000

FY10 Accomplishments:

- Hired a part-time watershed coordinator starting July 2009
- Facilitated discussions with potential partners and established a working group
- A watershed partnership MOU was signed in April 2010 with the following partners: Gill-Olson Joint Venture, Board of Water Supply, United States Navy, United States Army Garrison, Hawaii, Kaala Farm, MAO Organic Farms, and DLNR
- Identified the vision, mission, and goals of the partnership
- Began the draft watershed management plan to be completed in FY11

Koolau Mountains Watershed Partnership – 98,737 total acres

FY09 Watershed Partnership Program Grant Funds: $227,514
FY10 Watershed Partnership Program Grant Funds: $100,000
FY10-11 ARRA Funds: $120,000
Other leveraged funds: $277,264

FY10 Accomplishments:

- Removed approximately 12,000 weeds from priority summit control areas
- Aerial imagery produced for 32,484 acres, 16,000 acres processed, analysis for priority weed species underway.
- Ground surveys of 651 acres along Koolau summit areas for invasive weeds
- Partnered 640 hours with Oahu ISC on *Miconia calvescens* surveys, NARS and fish and wildlife surveys
- Removed invasive weeds within priority and transition areas at Laie, Manana, Kipapa and Poamoho, and transition areas at Kalauao, Kualoa, Niu Valley
- Maintained helicopter landing zones
- Improved corral trap design on partner lands
- Placed GPS collars on one goat from each herd at Kaaawa
- Removed 55 goats, 26 pigs in 23 partnership hunts, utilized 60 volunteer hunters
- Surveyed 51,000 meters of ungulate transects to determine pig activity
- Monitored 282 acres in fenced exclosure
- Constructed 300 meters of fence
- Conducted stream monitoring in Kipapa and Waikakalaua

East Molokai Watershed Partnership – 32,983 total acres

FY09 Watershed Partnership Program Grant Funds: $124,740
FY10 Watershed Partnership Program Grant Funds: $107,528
FY10 ARRA Funds: $0
Other leveraged funds: $440,598

FY10 Accomplishments:

- Maintained seven miles of fence
- Conducted hunts above fence- 473 goats, 132 pigs, 56 deer
- Conducted three days of goat hunts below the fence- removed 2,343 goats
- Conducted live trapping in Kamakou Preserve
- Collared three goats, created three one-man, one-trained dog teams, GPS all hunts
- Surveyed and controlled all priority weeds (strawberry guava, blackberry and clidemia) in 1,054 forested acres, GPS tracking of all sweeps
- Assist ISCs with weed early detection surveys and rapid response (miconia and Australian tree fern)- 100 hours
- Coordinated Molokai Earth Day celebration with 1200+ participants
- Engaged volunteers in 2,907 hours of ungulate and weed removal.

West Maui Mountains Watershed Partnership – 48,000 total acres

FY09 Watershed Partnership Program Grant Funds: $217,500
FY10 Watershed Partnership Program Grant Funds: $117,000
FY10 ARRA Funds: $170,000
Other leveraged funds: $400,000

FY10 Accomplishments:

- Inspection of 12.5 miles of fences
- Extensive maintenance on 8,700 feet of fence (line brushing, patched stream curtains, extended aprons and other repairs)
- Monitored vandalism to dirt bike and ungulate fences, however this remains a challenge
- Project fences protect 12,000 acres of a total of 21,000 acres protected by all partnership fences
- Ground based feral animal control resulted in 55 captures
- From 2007 through 2009 number of captures and activity levels decreased
- Controlled pampas grass and strawberry guava in Hanaula
- Monitored five existing weed and ungulate transects and updated 23 photopoints
- Created six new weed and ungulate monitoring transects
- Led five interpretive hikes and first volunteer fence maintenance day
- Reached 213 people through public outreach events
- Completed updates of Fire Infrastructure datasets, shared with county
- Maintained the weed and ungulate database to direct future management
- Conducted aerial surveys and ground scouting
- Aerial photography and weed mapping under partner funding began
- Collaborated with the PEP Program - found plants, did outplantings, updated Rare Species List, increased from 173 from 126
- As ungulate disturbance decreased over three years, ground cover increased from 30 to 98%, reducing potential erosion sites.

East Maui Watershed Partnership– 100,000 total acres
FY09 Watershed Partnership Program Grant Funds: $441,900
FY10 Watershed Partnership Program Grant Funds: $100,000
FY 10-11 ARRA Funds: $220,000
Other leveraged funds: $258,000

FY10 Accomplishments:

- Completed three years of aggressive ungulate control in 7,000 acres core fenced watershed area in cooperation with another 5,000 acres managed by TNC
- Achieved a dramatic decline in ungulate activity along 21 transects
- Inspected and maintained 9,970 meters of fence
- Cooperated with other land managers to begin installation of six miles of fence to protect 3,500 acres in Hana Forest Reserve
- 4,500 meters of fence route delineated

- Completed Waiho`i Valley fence - 2,240 meters
- Installed stream curtains and hog panels at all stream crossings
- Installed four one-way gates along fence for ungulates to move into hunting areas
- Installed new infrastructure for fence construction- landing zone, camp platforms, trails and transects
- Assisted partners- ISC, TNC, NARS, Haleakala National Park, Kipahulu Ohana, Leeward Haleakala Watershed Restoration Partnership with field projects
- Assisted DOFAW with construction of Kula Forest Reserve exclosure, Polipoli Springs restoration, Kahikinui Forest Reserve
- Conducted interpretive hikes, informational presentations, fund raisers, and community events reaching over 1,800 Maui residents
- Monitored seven weed and ungulate transects in 7,000 acres of the Koolau Forest Reserve
- Analyzed data to guide volunteer hunters (Koolau Volunteer Hunters Group)
- Improved and maintained 10 hunter check stations in Koʻolau and Makawao Forest Reserves (1,416 hunter trips over 9,679 hours, harvested 274 pigs)
- Began construction of more hunter check stations
- Constructed a pig trap in the Koolau Forest Reserve for tag and release to monitor pig movements

Leeward Haleakala Watershed Restoration Partnership – 43,175 total acres

FY09 Watershed Partnership Program Grant Funds: $343,830
FY10 Watershed Partnership Program Grant Funds: $100,000
FY10-11 ARRA Funds: $170,000
Other leveraged funds: $403,562

FY10 Accomplishments:

- Archeological survey reports for Department of Hawaiian Home Lands (DHHL) Kahikinui and Kaupo-Nuu fences completed
- Secured funding for Phase 2 (1.1) miles of fence at Kaupo-Nuu
- Conducted outreach meetings with Kahikinui residents regarding feral cattle removal and ranchers to discuss possible cooperative cattle round-ups
- Initiated an intense gorse control effort with DHHL
- Cleared all mature bocconia trees from 184 acres Auwahi III exclosure
- Working with UH on control methods for fireweed that will not affect kikuyu
- Inspected and repaired existing watershed fences
- Collaborated with DOFAW work on biocontrol and monitoring of banana poka
- Collaborated with Australian Biological Control Lab on a weevil for control of Australian tree fern
- Initial attempts at aerial control of silk oak and Christmasberry was only 5% effective, other herbicide mixtures are being employed
- Four demonstration exclosures were constructed and experimental plots established to compare results in bare ground versus grass cover
- Seed balls of ohia, koa and aalii inoculated with an nitrogen fixing bacteria were distributed inside and outside exclosures

- Seedlings of these species are being established in the nursery for comparative outplantings in the remaining two exclosures
- Trained nine AmeriCorps summer interns and hosted 20 YCC
- Made presentations at nine events
- Hired a part-time Community Outreach Coordinator
- Held 26 volunteer work days with 747 volunteers over 5,508 hours. Removed 62 bags of weeds and planted 20,881 seedlings at Auwahi forest exclosures
- Completed fence construction for 155 acre Auwahi III exclosure, began planting
- Completed planting of Auwahi II (23 acre exclosure)

Three Mountain Alliance (TMA) – 1,116,300 acres

FY09 Watershed Partnership Program Grant Funds: $448,320
FY10 Watershed Partnership Program Grant Funds: $165,000
FY10-11 ARRA Funds: $175,000
Other leveraged funds: $1,498,000

FY10 Accomplishments:

- Inspected and maintained 10,900 acres fenced ungulate-free units-Olaa/Kilauea
- Conducted feral animal control on 24,300 acres
- Keauhou Unit (20,000 acres) now free of goats and feral sheep. 163 pigs removed.
- South Boundary Unit (2,000 acres) now ungulate free.
- Wright Rd. Unit (2,300 acres) ungulate free.
- Controlled 1,247 acres of weeds- removed 1900 faya, 600 strawberry guava, 200 yellow Himalayan raspberry
- Assisted reforestation at Keauhou Ranch and other TMA lands (5,478 plants)
- Reintroduced 150 *Clermontia peleana* plants at Kilauea
- Completed annual forest bird surveys in Kulani and Keauhou/Kilauea
- Inspected and maintained Puu Waawaa Forest Bird Sanctuary fences protecting a total of 4140 acres, baited pig traps
- Controlled priority weeds at Puu Waawaa- 66 acres fountain grass, Maui pamakani (1050 plants), fireweed (~100,000), lantana (6,600), silk oak (8,800) plus another 20,000 plants of 10 species.
- Outplanted 529 plants with volunteers at Puu Waawaa
- Maintained 16 miles of access roads
- Collected over 800,000 seeds
- Began development of planting access trails and constructed a trailhead kiosk
- Completed marking and clearing of fence alignment at Lupea Phase I (10.3 miles)
- Completed and submitted the archeological inventory survey for Lupea
- Signed a contract to construct 6.84 miles of the fence, work began in June 2010
- Collared five feral cattle, removed 371 animals from Honuaula, Kau, Kapapala Forest Reserve
- Conducted 10 standards-based teacher workshops for 125 participants
- Conducted four air assisted hunts/reconnaissance in Kapapala Forest Reserve
- Held four secondary environmental education programs during school breaks with

53 students
- Participated in 15 educational events
- Held 26 volunteer trips with 818 participants
- Constructed two miles of fencing at the Kapapala Forest Reserve boundary fence
- Purchased materials for Puu Makaala and Manuka NAR fences 16 + 5 miles)

Kohala Watershed Partnership – 68,000 total acres
FY09 Watershed Partnership Program Grant Funds: $235,500
FY10 Watershed Partnership Program Grant Funds: $100,482
FY 10 ARRA Funds: $96,500
Other leveraged funds: $164,600 plus $2,695,000 ARRA Pelekane Bay Watershed Restoration Project
FY10 Accomplishments:

- Constructed a six acre fenced enclosure at Puu O Umi NAR, outplanted rare species, controlled ginger
- Surveyed 2.5 miles of fenceline, delineated 1.3 miles of new fenceline, and constructed one mile of fence from Waimanu Pali to Kaimu Stream in Pu'u o Umi
- *Waimanu Bog Plateau:* Upgraded the fence to be an ungulate barrier, kahili ginger control
- *Kaneaa-Ponoholo:* upgraded four miles of fence, controlled strawberry guava over 10 acres, kahili ginger sweeps over 50 acres, eradicated feral cattle, initiated pig trapping (removed 24 pigs), discovered more native snails and gardenia
- *Puu Pili:* Flagged and cleared 2.5 miles of fenceline, reduced cape ivy infestation 90%, controlled four acres of kahili ginger, found rare and endangered species, conducted 2 volunteer work days
- *Koaia Corridor:* constructed nine miles of fence, spot sprayed fountain grass over 300 acres, outplanted 4,000 plants, in cooperation with NARS, State Tree Nursery and volunteers
- *Waimea Nature Camp:* more than 150 children educated over nine weeks

Mauna Kea Watershed Alliance

FY09 Watershed Partnership Program Grant Funds: $34,000
FY10 Watershed Partnership Program Grant Funds: $0

FY10 Accomplishments:
- A MOU has been signed by Kamehameha Schools, Kukaiau Ranch, TNC, DHHL, DLNR, and USFWS
- Completed the draft management plan
- Applied for coordination funding through the Hawaii Restoration and Conservation Initiative and USFWS

Support for Watershed related positions at DOFAW branches
In FY10, an additional $35,000 from NARF was allocated to support existing temporary positions to assist with coordination and watershed management on forest reserve, NARS

and partnership lands. $37,500 of ARRA funding was allocated for DOFAW administration of the program and other overhead costs.

FY10 Challenges

Partnerships are depending more heavily on federal funds but these funds require a non-federal match. Without available state funds, these federal funds are not available. Many of the partnerships have already down-sized.

The reduction of conveyance tax income threatens to leave partnerships without key funds that have helped to leverage over $6 million in funds for the protection of Hawaii's watershed forests. Due to the current economic conditions the state funding has been reduced by 60% since FY08. If special funds are further reduced by legislative action, watershed partnerships will lose the significant ground that has been gained by this important, nationally-recognized program. Forest protection is key to the continued sustainability of our water supplies. Watershed protection through partnerships deserves continued investment through NARF.

2. YOUTH CONSERVATION CORPS (YCC)

Information and Education Program

The mission statement of the DLNR is to "Enhance, protect, conserve and manage Hawaii's unique and limited natural, cultural and historic resources held in public trust for current and future generations of visitors and the people of Hawaii nei in partnership with others from the public and private sectors." DOFAW information and education staff communicates the mission and vision of DOFAW's programs with the public. In order to be effective, staff uses a broad variety of methods to connect with communities across demographics and islands including: website management, press release development, public outreach event participation and coordination, Project Learning Tree educator workshop facilitation, field trip interpretation, classroom visits, and the YCC Program. The summary below details the FY10 statewide education and outreach initiatives coordinated and staffed primarily by the DLNR-DOFAW information and education coordinator and AmeriCorps education and outreach intern located in the DOFAW Administration Office.

YCC Program

YCC is funded by NARF and the Corporation for National and Community Service. In 2007, DLNR received a nationally competitive grant from the Corporation for National and Community Service to support the YCC for FY08 - FY10. In FY10, DLNR received ARRA funding to support the match required by the Corporation for National and Community Service for the FY10 year-round program in addition to match and base funding for an additional 45 year-round AmeriCorps interns

The summer YCC and Hana Hou (second year) programs provide training and hands-on learning opportunities for high school and college-aged youth. Summer YCC participants

work in small teams with multiple natural resource managers throughout the State. The 2010 YCC Summer Program consisted of 13 teams on five islands including Oahu, Kauai, Maui, Molokai and Hawaii. A total of 142 youth participated: 115 as summer members and 27 as team leaders. The Hana Hou Program consisted of 28 youth who worked in a more focused setting assisting one or two natural resource organizations. The Summer Program lasts six weeks for program participants, and seven weeks for team leaders and Hana Hou participants. Hana Hou and team leaders receive an educational award, and all participants earn a cash stipend in addition to the opportunity to earn college credits through the UH Manoa. Some Hana Hou Program participants follow an alternative schedule and complete their hours during the school year. In FY10, YCC Summer Program participants assisted with: endangered species restoration, trail maintenance, out-planting, species monitoring, and invasive plant removal.

The year-round component to YCC is operated as an AmeriCorps program. The Program enables young adults to gain entry-level experience as they work alongside natural resource professionals. The Program was developed with the intent to provide in-depth training for local youth interested in pursuing a career working in natural resource conservation and management. YCC supports conservation organizations and increases local resource knowledge for Hawaii's youth. In FY10, DOFAW enrolled 25 full-time members each committing 1,700 hours of service toward conservation efforts in the State. The scope of conservation projects include but are not limited to: invasive species management and removal, fencing, information and education, dry forest management, and native species out-planting.

In addition to the summer and year round programs, the YCC Program was awarded 75 AmeriCorps CAP (education award only) minimum time slots.

In FY09, DLNR-DOFAW applied for ARRA funding based on anticipated NARF reductions in FY10. DOFAW was awarded ARRA funds totaling $1,150,293 to: 1) Waive the federal match requirement for the existing YCC Program in FY10; 2) Provide additional federal support ($239,319) for YCC in FY10; and 3) Fully federally fund the State of Hawaii Recovery YCC for 45 interns in full-time conservation positions for 42 weeks ($863,451), the affiliated administrative overhead ($45,523) and required travel to the annual Corporation for National and Community Service meeting ($2,000). To view an article with more information about the program, please visit: http://hawaii.gov/gov/news/enewsletters/2009/august/August23-28.

YCC has grown far beyond the breadth and scope of the original intent – to the benefit of the local youth and the perpetuation of local knowledge in conservation. However, with the growth and the development of the Program as it is, DLNR-DOFAW has decided to contract services through local providers rather than draft grant proposals and then contract out services. The first attempt of this Program modification will take place in FY11 with continuation subject to satisfactory performance on the part of the selected contractor.

Project Learning Tree
DLNR-DOFAW serves as the state coordinator for the national Project Learning Tree Education Program – a program of the American Forest Foundation. This Program strives to "teach students how to think not what to think about complex environmental issues". DOFAW staff coordinates and facilitates educator workshops to provide Hawaii's traditional and non-traditional educators with locally and nationally relevant resources so they can more effectively incorporate environmental education across disciplines.

In FY10, outreach staff coordinated and facilitated five Project Learning Tree educator workshops and certified 100 Hawaii educators and two facilitators in Project Learning Tree on Kauai, Maui, Hawaii Island, and Oahu. Staff also presented information about Project Learning Tree and other locally relevant place-based curriculum to three groups of pre-service and continuing education professionals.

Outreach events, school visits, interpretive site visits, and community meetings
DOFAW staff in the Administrative Office participated in 17 outreach events in FY10 and shared its mission and vision with over 13 thousand community members; provided interpretive services to more than 400 students/residents in various field/service trips on DOFAW lands; and presented to 13 classes to students ranging in age from elementary through college age.

The DOFAW Oahu Branch and Administration Office facilitated five fire awareness presentations at schools on the west side of Oahu. The presentations featured Smokey Bear and the "Rangerettes" and the message of fire-wise attitudes and natural resource protection was shared with an estimated 3,000.

Hawaii Environmental Education Alliance
DOFAW outreach staff successfully applied for Competitive State and Private Forestry funds to coordinate conservation education materials throughout the state and improve cooperation, efficiency, and effectiveness between conservation education partners. Funding for the proposed projects will be awarded by the USDA-FS in January of FY10. Through these funds, DLNR-DOFAW Outreach and Education Coordinator has worked to improve environmental literacy in the state through developing the Hawaii Environmental Education Alliance. The working group consists of approximately 25 individuals from various sectors of work: government, non-profit and for-profit. Quarterly meetings were held in February and May with FY11 meetings scheduled for July and October.

Hawaii Environmental Education Alliance's mission is to promote and develop high quality environmental education by building relationships to improve networking and professionalism throughout Hawaii. The vision is an informed and engaged island community that values Hawaii's uniqueness and lives sustainably. Through collaborative teamwork, Hawaii Environmental Education Alliance is accomplishing these goals. The Group has built a searchable web-based database of resources accessible to all without membership or password – heea.org. Hawaii Environmental Education Alliance's also taken the initiative to draft a state of Hawaii Environmental Literacy Plan in cooperation

with the state Department of Education and DLNR. The bipartisan reform of the Elementary and Secondary Education Act currently includes the No Child Left Inside Act, which awards funding for the implementation of Hawaii Environmental Literacy Plan to qualifying states.

Web, Social Networking, and Traditional Media

DOFAW information and technology staff maintain the DOFAW website: http://hawaii.gov/dlnr/dofaw and continue to facilitate transitions that staff host on other websites as appropriate in addition to maintaining the environmental education blog: http://www.eeinhawaii.blogspot.com/.

Staff develops press releases; coordinate media support (b-roll, photos, etc.) as necessary and maintain a social networking presence by addressing the DLNR's Public Information Office with of-interest details to be "tweeted" via Twitter.

Conclusion

DOFAW's information and education staff is limited to one permanent full-time Outreach Coordinator and one YCC AmeriCorps intern. Additional support is provided by the branch staff when appropriate and a four month contract hire through the Research Corporation of UH. Despite these challenges, DOFAW continues to improve and augment outreach efforts by securing grants and implementing programs that have demonstrated success nationally and resonate with local needs and thereby improves environmental literacy contributing to a more environmentally conscious and sustainable island community.

CONCLUSION

Detailed project plans and accomplishment reports for the NARS, NAPP, Watershed Partnership Program, Rare Plant Program and YCC are available through links from DOFAW website http://hawaii.gov/dlnr/dofaw or from the:

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LNR 407 NATURAL AREAS MANAGEMENT BUDGET SUMMARY FY10

Table A: **FY10 NARS Expenditures (General Fund Appropriation G-10-047)**

Total = $766,384

NARS 'A' Personnel Expenditures FY10 (22* positions) = $717,936
NARS 'B' Operating Expenditures FY10 = $ 48,448

FY11 NARS Allocation (General Fund Appropriation G-11-047)

Total = $ 719,642

NARS 'A' Personnel Allocation FY11 (19* positions) = $651,070
NARS 'B' Operating Allocations FY11 = $ 68,572

* Source of funding changed from General to NARF

Table B: **NAR Fund Revenues FY10 (S-10-342)**

Source	**Timeframe**	**Amount**
FY 10 Conveyance Tax transfers	7/1/2009 – 6/30/2010	$8,152,087
Investment pool revenues	7/1/2009 – 6/30/2010	$ 80,348
Other	7/1/2009 – 6/30/2010	$ 1,710
Total Revenues =		**$8,234,145**

Table C: **FY10 NAR Fund Drawdown (Special Fund Appropriation S-10-342)**

Total = $11,133,223

NARF 'A' Personnel Expenditures (24* positions) = $ 912,000
NARF Operational Expenditures/Encumberances = $6,853,759
Transfers Out = $3,367,464

FY11 NAR Fund Allocation (Special Fund Appropriation S-11-342)

Total = $9,690,398

NARF 'A' Personnel Allocation (27* positions) = $1,200,000
NARF Operational Allocation = $4,965,398
Transfers Out = $3,525,000
* Source of funding changed from General to NARF