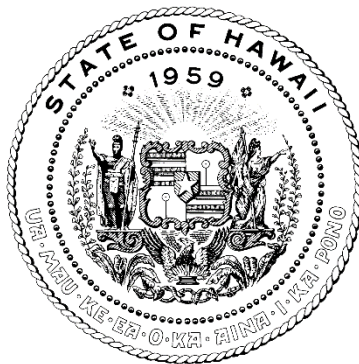


**REPORT TO THE THIRTIETH LEGISLATURE
STATE OF HAWAI‘I
2019 REGULAR SESSION**

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



Prepared by

**THE STATE OF HAWAI‘I
DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF FORESTRY AND WILDLIFE**






In Response to Section 195-6.6, Hawai‘i Revised Statutes

Honolulu, Hawai‘i
December 2018

**REPORT TO THE THIRTIETH LEGISLATURE
2019 REGULAR SESSION
RELATING TO THE NATURAL AREA RESERVES SYSTEM,
NATURAL AREA PARTNERSHIP PROGRAM, AND
THE FINANCIAL CONDITION OF THE
NATURAL AREA RESERVE FUND**

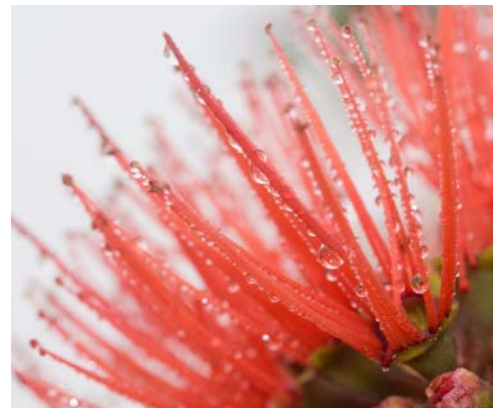
Section 195-6.6, Hawai‘i Revised Statutes (HRS), requires the Department of Land and Natural Resources (Department) to prepare an annual comprehensive status report on the Natural Area Reserves System (NARS), the Natural Area Partnership Program (NAPP) and the financial condition of the Natural Area Reserve Fund (NARF). This report also covers other programs within LNR 407 and a portion of 402, including the Watershed Partnership Program, Hawai‘i Invertebrate Program, Rare Plant Program, and the Information and Education Program.

FY 18 Accomplishments at a glance:

				
\$6.89m	56,746	76,200	15,151	22,553
Federal, County, and private funds leveraged	Trees and shrubs planted	Hours of youth intern service contributed	Acres of invasive plant control	Volunteer hours donated

Sustainable Hawai‘i Initiative: 30x30 Watershed Protection Goal

Hawaii’s forests have lasted millions of years on these dynamic islands, but now face growing threats to their future. Straightforward, attainable steps exist to protect them, like fencing out hooved animals, removing noxious weeds, and preventing fires. These actions keep forests healthy so they can withstand long term climate changes or episodic threats like Rapid 'Ōhi'a Death (ROD). Indeed, preliminary studies are finding significantly fewer dead 'Ōhi'a trees in areas fenced from hooved animals in ROD hotspots on Hawai‘i island.



A central sustainability goal for the State is to protect 30% of priority watershed forests by 2030. To reach the goal of 30% (253,000 acres), the Department will need an average of \$5 million per year in capital improvement project funding to build approximately 202 miles of fence. Currently, 17% of priority forests are protected, and the Department needs additional capital improvement project funding to stay on track. Protecting native forests is a critical tool for adapting to climate change’s drying effects, and will make Hawai‘i more resilient in extreme weather events by reducing drought, landslides, flooding, and runoff.

Rapid 'Ōhi'a Death Resilience:
Removing hooved animals makes forests more resilient to diseases and better able to recover.

FY18 Island Highlights



Hawai'i: Finished the largest dryland forest project in the State that protects over 26,000 acres at Manuka, Ka'u!



Maui: The Hōkule'a crew and students visited Pu'u Kuku'i Preserve to plant 4,000 koa trees and thousands of other natives.



Moloka'i: Record numbers of wedge-tailed shearwater nests - 1,385 - at Mo'omomi, due to the predator proof fence.



Lāna'i: Located critically endangered populations of native snail *Partulina variabilis* - one of many exciting snail discoveries in FY18.



O'ahu: Found new populations of Wahine noho kula – a plant not seen on O'ahu since the 1800s and only surviving on vertical cliffs.



Kaua'i: Provided multiple trips to teach Kawaikini charter students about invasive plant removal, planting, and other biology lessons.

1. Programs

The main activities of the programs supported by LNR 407 are: fencing and control of hooved animals such as cattle, sheep, deer and pigs; control of other invasive species (weeds, non-native predators); reforestation; rare plant and wildlife monitoring, propagation, and reintroduction; fire prevention and suppression; maintenance of infrastructure; and public outreach. These programs also provide emergency response by responding to wildfires and natural disasters like the Kīlauea eruption, and maintaining roads, shelters, signs, and helipads.

Natural Area Reserves: State lands that preserve in perpetuity specific land and water areas which support communities, as relatively unmodified as possible, of the natural flora and fauna, as well as geological sites, of Hawai‘i.

Watershed Partnerships: Voluntary alliances of public and private landowners committed to protecting over 2 million acres of the most important watershed lands in Hawai‘i. Organizations and agencies compete for funding, and State funds leverage Federal, County, and private monies on a 1:1 basis, doubling the impact of the State’s investment.



Ko‘olau Mountains Watershed Partnership building fence mauka of Wahiawā, O‘ahu.

Natural Area Partnerships: Private lands permanently dedicated to conservation. State funds are matched with private funds, providing long-term protection, financial support and management to protect, restore and enhance unique natural resources.

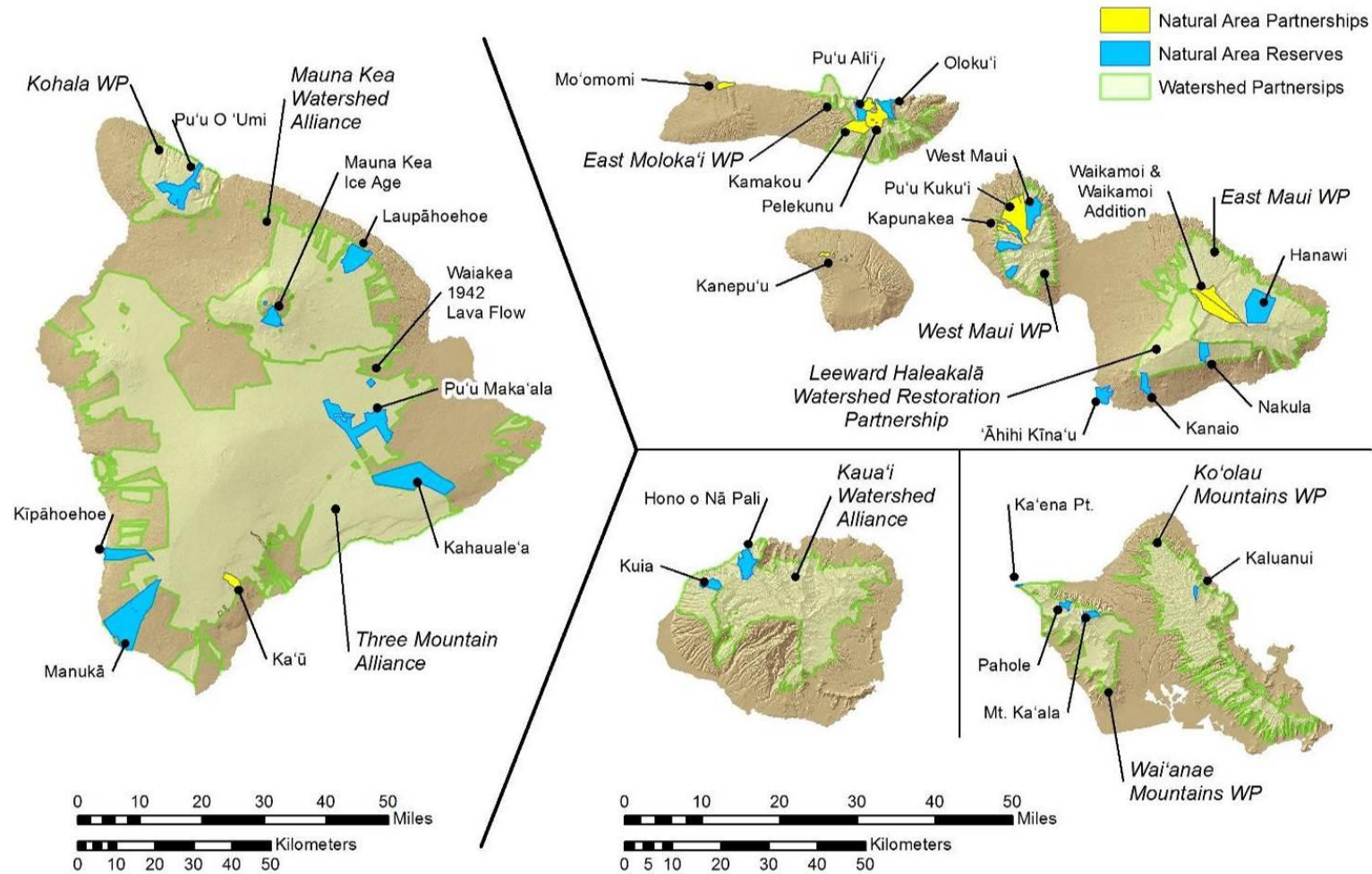
Rare Plant Program: Perpetuates the native flora of Hawai‘i. In FY 18, State funds were matched 3:1 by Federal dollars. This program includes nurseries and seed storage facilities to prevent extinction by propagating and storing plants for reintroduction into protected habitats. The Program also includes the Plant Extinction Prevention Program that protects the 237 species that number fewer than 50 individuals remaining in the wild.

Hawai‘i Invertebrate Program: Directs resource management, monitoring, research, conservation, and policy relating to rare and Federally listed threatened and endangered native invertebrate species. In FY 18, State funds were matched 5:1 by Federal and private funds. This year, HIP got a National Recovery Champion Award from the US Fish and Wildlife Service for excellence in conservation. This program includes the Snail Extinction Prevention Program, a partnership with the U.S. Fish and Wildlife Service to prevent the extinction of rare Hawaiian land snail species, and preserve the ecosystems upon which they depend.

Information and Education Program: Connects with communities through press releases, community events, presentations, websites, social media, field trips, classroom visits, volunteer trips, educator workshops, and Youth Conservation Corps internships. The Youth Conservation Corps Program enables young adults to gain entry-level experience as they work with natural resource professionals. The program mentored 42 year-round interns in addition to 15 weeks of project service learning for summer teams, providing approximately 76,200 hours of service.

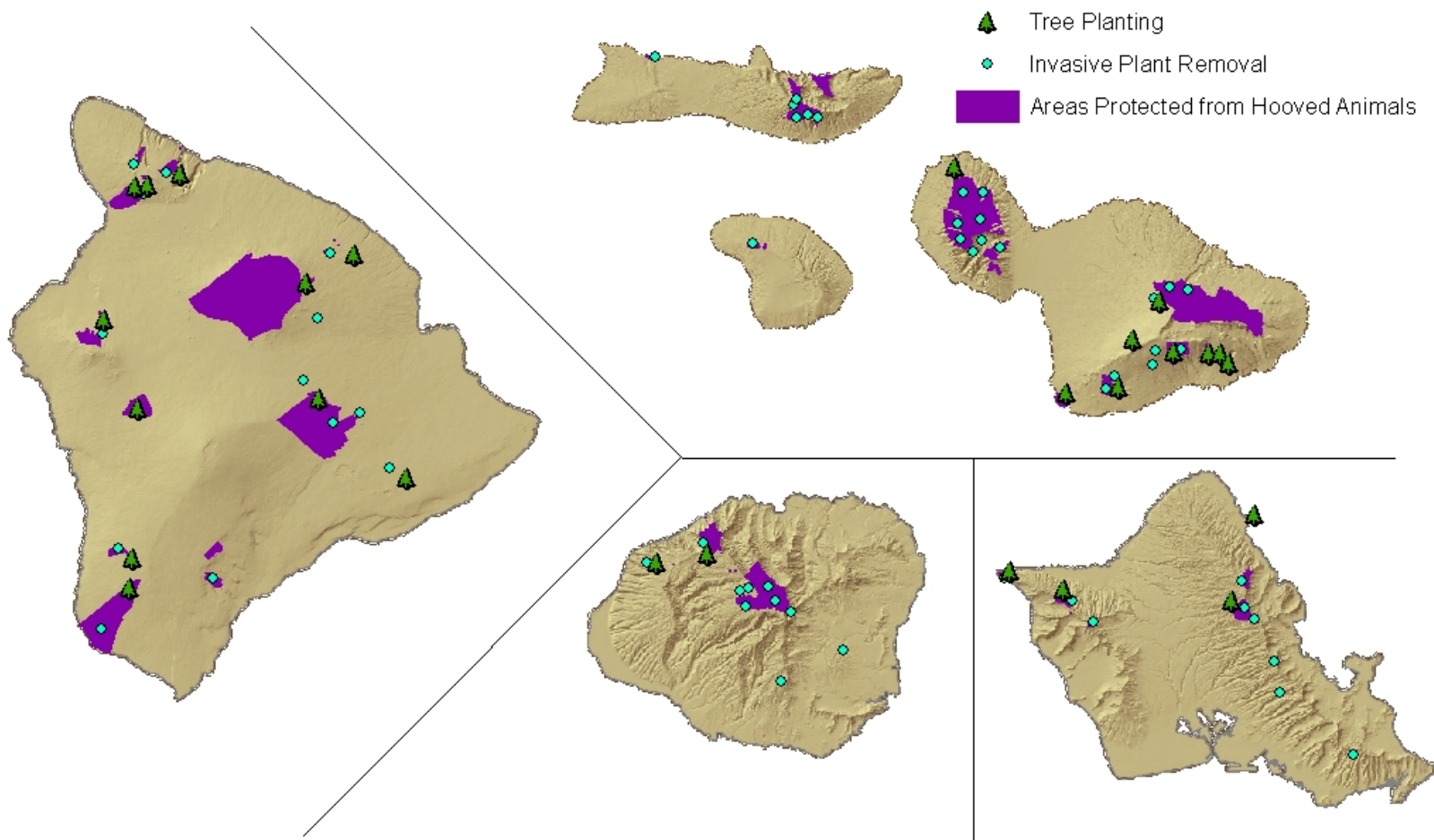


Natural Area Reserves, Natural Area Partnerships, and Watershed Partnerships



Locations of project sites detailed in this report. WP: Watershed Partnership

FY18 Accomplishment Locations



Locations approximate. DOFAW (808) 587-4170. August 2018.

Fence construction in the Mauna Kea unit is not complete; incremental construction supports ongoing hooved animal removal.

Not shown in map are rare plant, snail, invertebrate, and outreach project sites.

FY 18 Accomplishments		Prog.	Invasive plants search & control	Protected from hooved animals	Planting common and T&E species	Volunteer Contributions	Fence (new constructed)	Fence (maintained)
Location			Acres	Acres	Number	Hours	Miles	Miles
Kaua'i	Hono O Nā Pali	NAR	46	-	63	2,000	0.57	3.37
	Kuia	NAR	70	127	1,093	313	-	4.10
	Līhue Kōloa Forest Reserve	NAR	-	17	-	-	-	0.12
	Kauai Invasive Species Comm.	WP	554	-	-	-	-	-
	Kaua'i Watershed Alliance	WP	271	6,571	-	-	-	14.20
O'ahu	Pahole	NAR	8	650	1,610	1,207	-	7.00
	Ka'ena Point	NAR	5	65	140	629	-	0.40
	Mt. Ka'ala	NAR	6	51	-	231	0.30	3.00
	Poamoho (Ewa Forest Reserve)	NAR	151	1,300	56	-	-	8.00
	Kaluanui	NAR	5	540	-	-	-	4.00
	Various other locations	NAR	1	-	1,199	-	-	-
	O'ahu Invasive Species Comm.	WP	1,022	-	-	-	-	-
	Ko'olau Mountains	WP	409	2,187	-	2,131	0.37	28.53
Maui, Moloka'i, and Lana'i	Āhihi-Kīna'u	NAR	20	626	358	154	-	4.40
	Hanawī	NAR	-	6,411	-	-	-	14.30
	Nakula	NAR	300	1,500	15,792	40	-	8.90
	Kanaio	NAR	244	1,450	90	-	-	7.60
	West Maui	NAR	-	5,461	-	-	-	3.60
	Pu'u Ali'i & Oloku'i	NAR	-	2,950	-	-	-	6.60
	West Maui Mountains	WP	45	8,963	-	443	-	4.30
	Leeward Haleakalā Restoration	WP	2,153	1,238	22,825		1.15	13.85
	East Maui	WP	245	7,201	-	340	-	6.42
	East Moloka'i	WP	497	3,290	-	1,825	0.70	15.00
	Kamakou	NAP	165	7,736	-	233	-	1.30
	Mo'omomi	NAP	28	175	-	834	-	3.70
	Pelekunu	NAP	11	11,900	-	68	-	-
	Pu'u Kukui	NAP	230	8,824	1,724	8,082	-	7.00
	Waikamoi & Addition	NAP	236	6,923	20	889	0	14.20
	Kapunakea	NAP	50	1,232	-	100	0	6.00
	Kānepu'u	NAP	25	346	-	1,353	0	8.10

(Continued from previous page)

FY 18 Accomplishments		Prog.	Invasive plants search & control	Protected from hooved animals	Planting common and T&E species	Volunteer Contributions	Fence (new constructed)	Fence (maintained)
Hawai'i	Mauna Kea Ice Age	NAR	-	3,894	-	160	-	0.81
	Pu'u O 'Umi	NAR	168	2,422	265	40	1.61	13.08
	Laupāhoehoe	NAR	13	17	157	-	-	1.12
	Kahauale'a	NAR	6	154	51	-	-	2.76
	Kīpāhoehoe	NAR	96	1,331	1,125	120	-	9.17
	Pu'u Maka'ala	NAR	80	13,213	7,734	-	2.42	57.3
	Manukā	NAR	6,501	26,638	337	24	-	29.46
	Pu'u Wa'awa'a Sanctuary	NAR	211	3,749	2,127	-	-	18.97
	Koai'a Corridor Sanctuary	NAR	222	222	-	8	-	2.9
	Various other locations	NAR	-	36	-	-	4.8	1.55
	Three Mountain Alliance	WP	1,116	31,383	-	-	-	35
	Kohala	WP	49	1,508	-	2,998	-	16
	Mauna Kea Watershed Alliance	WP	203	1,625	-	-	-	27.6
	Ka'ū	NAP	522	2,000	-	673	-	8.6
TOTAL			15,151	175,926	56,746	22,553	12	408

Acronyms: T&E: Threatened and Endangered. NAR: Natural Area Reserve. NAP: Natural Area Partnership. WP: Watershed Partnership.

Acres protected from hooved animals include both areas within the watershed priority areas that are in wet and mesic climates, as well as ecosystems important for other reasons, such as native dryland forests.

Locating a wawae'iole plant (Huperzia nutans), one of only eight individual plants known to exist in the world. Northern Ko'olau mountains, O'ahu.



Additional statewide accomplishments include:

Hawaiian Mid-Elevation Rare Plant Facilities:

- Hawaii's four mid-elevation nurseries provided 9,801 native plants for rare plant and wildlife habitat restoration projects on State and Watershed Partnership lands.

Plant Extinction Prevention Program:

- In the last year, the Plant Extinction Prevention Program (PEPP), protected 210 Threatened and Endangered plant species, a 16% increase from last year.
- Surveys in remote areas found several new populations of critically rare plants. Now, collections are being grown and replicated in State nurseries to be eventually returned to protected areas.
- PEPP staff out-planted 3,267 plants of 39 target species to create new populations in protected habitat on Kaua'i, O'ahu, Moloka'i, Maui, and Hawai'i Island. These new populations greatly reduce the extinction risk for these native plants.
- Together with its partners, the PEPP has effectively halted plant extinctions in Hawai'i since its inception in 2003. In the decade before this partnership began, Hawai'i had been experiencing approximately one plant extinction per year.



The Mauna Kea Silversword is part of an iconic group of plants found only in Hawai'i. It is one of 424 plants listed as Threatened or Endangered by the U.S. Fish and Wildlife Service and the State of Hawai'i.

Hawai'i Invertebrate Program (HIP):

- HIP staff continue efforts to propagate and release our State insect, the Kamehameha butterfly, back into areas of O'ahu where it has disappeared. The project aims to conserve species diversity and ecosystem function in priority watershed forests, as well as increase public awareness and restore habitat for the species across communities. A total of 3,070 Kamehameha butterflies were released, and 300 māmakī plants out-planted.
- Thanks to a new partnership with the City and County, native Hawaiian invertebrates are now being exhibited in the Honolulu Zoo Ectotherm Complex. HIP has provided the Zoo with rare insect and snail species and trained staff on captive propagation techniques. In return, the Zoo is educating Hawaii's families and youth about our unique invertebrates, the threats they face, and the importance of conserving them.
- HIP has received competitive federal grants to continue work on additional rare and endangered species, including the orange-black damselfly, yellow-faced bees, Blackburn's sphinx moth, Kaua'i stag beetle and the Kaua'i green sphinx moth.

Snail Extinction Prevention Program (SEPP):

- In the last year SEPP has continued to manage approximately 50 species of rare and endangered snails, all on the very brink of extinction. Management activities include invasive predator control, habitat enhancement, construction and maintenance of predator-proof fencing, translocation, captive propagation and reintroduction.
- SEPP has expanded captive propagation efforts to aid in recovery of rare and endangered snail species. Currently, 24 species from five islands are being actively reared for reintroduction back into the wild.
- SEPP received funding from the United States Fish and Wildlife Service to construct a predator-proof fence in the Ko‘olau Mountains.



Thought to be long extinct, Laminella venusta was recently rediscovered in the Pu‘u Ali‘i NAR in Moloka‘i. The SEPP captive rearing lab has grown a thriving population which will be reintroduced back into the wild.

2. STATUS OF PUBLIC HUNTING OPPORTUNITIES

Under Natural Area Reserves System (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 a control option in many areas within NARS, with most lands now open to hunting every day with no bag limit. Staff animal control (including fencing, trapping, staff hunting, snaring, and aerial shooting) are used as needed in specified areas where public hunting is not able to reduce hooved animal impacts to low levels. Staff continues to work with hunting organizations and others to find ways that the animal control goals of the program can provide opportunities for the hunting community.

In Natural Area Partnership Preserves on private land, the public hunting opportunities vary:

- Kamakou and Pu‘u Kukui Preserves are open for public hunting 365 days/year, with no bag limit. During extreme fire hazard or unsafe road conditions, all or portions of the Preserve may be closed. Kanepu‘u and Ka‘ū Preserves also have volunteer hunt programs.
- Waikamoi Preserve’s conservation easement allows ranch employees to hunt. Public hunters are permitted to hunt in portions of the Preserve when it does not interfere with management, guided hikes, and ranch employee hunting.
- Kapunakea Preserve’s conservation easement requires that there be no unaccompanied public hunting. The Preserve is closed to hunting with dogs due to snaring.
- Mo‘omomi Preserve does not have public hunting due to safety concerns and limited resources for administration and enforcement.

3. ANALYSIS OF THE PROBLEMS AND ISSUES ENCOUNTERED

These programs are highly reliant on steady sources of funding. Even a single year of budget cuts can undo decades of progress if fences and firebreaks are not maintained, invasive weeds are allowed to spread, etc. Budget cuts can even result in extinction of native Hawaiian species, which rely on active and sustained management. Many of these programs rely primarily on

Federal funding and are anticipating significant cuts with the proposed President's budget. To prevent extinctions and major losses to the programs, State funding will need to be maintained or increase.

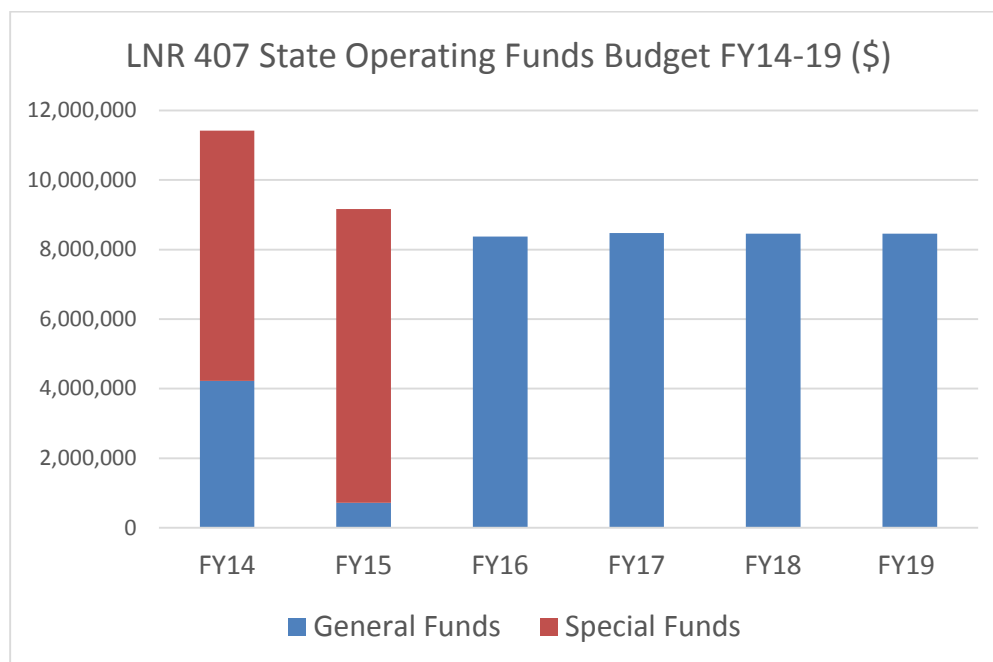
Establishing civil service staff positions is often more cost-effective and high-quality than contracted labor. The specialized conservation work requires extensive training in wilderness safety and knowledge of remote landscapes and plants and wildlife. DOFAW would like to reduce reliance on contracted work, by establishing civil service positions, saving State overhead costs and decreasing disruptive turnover rates.

4. FINANCIAL CONDITION OF THE NATURAL AREA RESERVE FUND (NARF)

Since FY 16, the NARF's spending ceiling and conveyance tax funding source have been eliminated and replaced by general funds, pursuant to Act 84, SLH 2015. However, the Department will begin to raise revenues into the NARF through parking fees at 'Ahihi Kina'ū NAR. Assessing a fee was justified by the management plan as a way to collect revenues to support management of the NARS. The spending ceiling will need to be increased to enable the Department to use those parking fee revenues.



*Extensive training in specialized skills, such as rappelling, is needed for conservation work. Retaining these trained staff through long-term civil service jobs greatly improves efficiency. Here, a botanist is finding the last known O'ahu population of wahine noho kula (*Isodendron pyriform*). This plant only grows on steep cliffs where goats cannot climb.*



This figure does not include funding specifically allocated for the 2016 IUCN World Conservation Congress (\$100,000 general funds and \$3.9m special funds in FY 15).

5. CONCLUSION

Detailed project plans and accomplishment reports are available at <http://dlnr.hawaii.gov/ecosystems> or from the Department/DOFAW Native Ecosystem Section Manager at Emma.Yuen@hawaii.gov or (808) 587-4170.

Notes:

This legislative report does not contain a section on the compliance with Chapter 42F, HRS, since Chapter 42F, HRS, is no longer applicable to the types of grants issued under NAPP.

Due to the time required for contracting, this report summarizes Watershed Partnership activities that were carried out using FY16 funds, which largely occurred during FY 17. This report includes only actions funded by the State Watershed Partnerships Program Grants; additional partnership work is funded by federal, county and private funds.



Building fence at Poamoho in the Ko'olau Mountains, O'ahu.



Guest speakers joined hundreds of community members to plant trees in the Pu'u Kukui Preserve region in August 2017, celebrating the arrival of the Hōkule'a into Honolulu Bay. Pictured: Nainoa Thompson of the Polynesian Voyaging Society speaking with Pōmaika'i Kaniaupio-Crozier, manager of the Pu'u Kukui Preserve, Maui.

**Department of Land and Natural Resources
Division of Forestry and Wildlife
Act 100, Session Laws of Hawaii 1999
Report to the 2019 Legislature**

I. GOALS:

- Protect and manage:
 - 30% of watershed forests by 2030;
 - native ecosystems, including native flora and fauna through a system of forest reserves, wildlife sanctuaries, and natural area reserves; and
 - cultural resources.
- Promote healthy diverse forest ecosystems throughout Hawai‘i that provide clean air and water, habitat to support healthy populations of native plants and animals, recreational opportunities, and sustainable forest products, while facilitating partnerships, community involvement, and education.
- Minimize adverse effects on Hawaii’s forests from insects, disease, invasive species, storm events, and wildfire.
- Maintain commitment to landowner assistance programs, including the Forest Stewardship, Forest Legacy, Conservation Reserve Enhancement, and Urban and Community Forestry Programs. These federally supported programs allow the State to engage private landowners, who promote sustainable forest management, smart urban forest planning, and opportunities to acquire fee simple title and conservation easements on important forest lands statewide.
- Promote the use of incentives, the collection and sharing of information, cultural sensitivity, and appropriate regulations to foster a climate for responsible forest stewardship.

II. POLICIES, OBJECTIVES, AND ESTIMATED TIME FRAME:

Policy A: To protect, restore, and enhance Hawaii’s natural areas, forested watersheds, native ecosystems, unique native plant and animal species, and cultural and geological features for their inherent cultural, scientific, educational, and economic values for the enrichment of present and future generations.

Objectives and Estimated Time Frame:

- A.1. Promote, encourage, and advocate for incentives to encourage the maintenance and enhancement of key watersheds on public and private lands and expand participation in public and private watershed partnerships on each island. Provide funding in Fiscal Year (FY) 2018 under the competitive Watershed Partnerships Program grant to statewide watershed partnership initiatives and leverage additional funding support from non-state sources. (1 year)
- A.2. Expand funding and logistical support for the network of 10 watershed partnerships, including land in every major watershed and mountain range in the State (except currently Lāna‘i). Seek federal, state, county, and private funds to support a major water sustainability and watershed restoration initiative to replenish Hawaii’s source of water and continue ongoing management activities to protect watershed forests. (ongoing)

- A.3. Control livestock and non-native animal populations in state forest and natural area reserves, sanctuaries, and watersheds at levels non-damaging for native species and ecosystems. Control wild cattle, goats, sheep, pigs, deer, and introduced small mammal predators on all state forest and natural area reserve lands. (ongoing)
- A.4. Support invasive species control efforts throughout the State, including control of coqui frog, little fire ant, *Miconia*, and mongooses on Kauaʻi. Support county agencies, communities, and island invasive species committees on Kauaʻi, Oʻahu, Molokaʻi, Maui, and Hawaiʻi Island. Continue supporting biocontrol efforts for invasive species and seek new agents to control priority weeds and pests. (ongoing)
- A.5. Survey, monitor, and control noxious plants, forest insects, and diseases that can damage watershed integrity and native ecosystems. (ongoing)
- A.6. Continue restoration projects on Mauna Kea (Hawaiʻi Island) and Haleakalā (Maui) to reforest degraded land to expand ranges of native forest birds while mitigating climate change impacts. Finish construction of a boundary fence on Mauna Kea by 2018 and complete the removal of feral sheep and goats. (2 years) Explore a reforestation project financed through carbon offset credits in various areas throughout the State. (2 year)
- A.7. Provide guidance, as requested, to the Office of Hawaiian Affairs (OHA) on management of Wao Kele O Puna Forest Reserve on Hawaiʻi Island. (ongoing)
- A.8. Develop forest management plans for lands in the Forest Reserve System to promote effective long term land management, including watershed and biodiversity protection and sustainable forest product development. (ongoing)
- A.9. Develop or update management plans for natural area reserves and watershed partnerships to maintain and restore watersheds and protect and enhance native species habitats. (ongoing)
- A.10. Administer the Natural Area Partnership Program (NAPP) and Forest Stewardship Program (FSP) to encourage private forest owners to sustainably manage their natural resources and provide sufficient funds to continue NAPP and FSP contracts. Monitor NAPP agreements and coordinate management initiatives within existing watershed partnership areas. (ongoing)
- A.11. Manage grant solicitation and award process for land acquisitions under the Legacy Land Conservation Program (LLCP). Manage completion of previously approved land acquisition projects. Coordinate within the Department and with partner agencies to identify and acquire important conservation lands. (ongoing)
- A.12. Continue administering research projects and permitting in the Laupāhoehoe and Puʻu Waʻawaʻa Units of the Hawaiʻi Experimental Tropical Forest on Hawaiʻi Island. (ongoing)
- A.13. Develop and implement appropriate management for coastal area recreational activities, including the South Kona Wilderness Area – Manukā Natural Area Reserve (NAR) (Hawaiʻi Island), ʻĀhihi-Kīnaʻu NAR (Maui), and Kaʻena Point NAR (Oʻahu), including protection of natural and cultural resources and water quality. (ongoing)
- A.14. Nominate areas to be added to the Natural Area Reserve System to preserve representative samples of Hawaii's unique ecosystems and geological formations. (ongoing)
- A.15. Implement conservation and management of invertebrate species in the State with particular emphasis on federally-listed endangered species. (ongoing)
- A.16. Reintroduce the State Insect, the Kamehameha butterfly, and the mamaki plants on which it depends, to areas it has disappeared from across its native range. (ongoing)

- A.17. Restore populations of yellow-faced bees, ecologically important pollinator species, by creating nest habitat and controlling predators on O‘ahu, Maui nui, and Hawai‘i Island. (2 years)
- A.18. Continue captive rearing and release of rare, federally protected invertebrate species. (ongoing)
- A.19. Survey existing populations of Blackburn’s sphinx moth on Maui and Hawai‘i Island to assess whether the species is a viable candidate for delisting under the Endangered Species Act. (1 year)
- A.20. Survey and monitor to detect rare invertebrate species which may be deserving of conservation or management efforts. (ongoing)
- A.21. Continue reintroduction efforts of *Achatinella lila*, an endangered tree snail species endemic to O‘ahu. (ongoing)
- A.22. Reintroduce *Achatinella fuscobasis*, a nearly extinct tree snail endemic to O‘ahu, back into the wild from captive propagation. (2 years)
- A.23. Establish captive populations of 30 species of rare and endangered terrestrial snails to prevent imminent extinction. (2 years)
- A.24. Construct 10 additional predator-proof fence structures across O‘ahu, Moloka‘i, Lāna‘i, Maui, and Hawai‘i Island to protect wild populations of rare and endangered terrestrial snails from extinction. (ongoing)
- A.25. Rebuild an aging predator-proof fence structure in the Pahole NAR to protect one of the last endangered tree snail populations in the reserve. (1 year)
- A.26. Complete watershed Capital Improvement Projects to fence and protect forests from damage from hooved animals in order to reach the goal to have 30% of priority watershed forests protected by 2030. (ongoing)

Policy B: Manage habitats to protect, maintain, and enhance the biological integrity of native ecosystems. Reduce the impacts of wildfires on native ecosystems and watersheds. Reduce the impacts of invasive species on native resources. Protect, maintain, and enhance native species populations, and recover threatened and endangered species. Conduct monitoring and evaluation to guide the development of recovery and management plans, and ensure cost effective adaptive management of implementation actions and tasks.

Objectives and Estimated Time Frame:

- B.1. Ensure viable populations of native species and increase populations of endangered species by protecting and managing their natural habitats via a system of state-owned and managed sanctuaries, forest reserves, and natural area reserves, and cooperative management areas. Expand habitat restoration efforts and predator and invasive species removal. (ongoing)
- B.2. Ensure maintenance and habitat enhancements at the Kawainui Habitat Restoration Project in accordance with the Department’s Division of Forestry and Wildlife’s (DOFAW) partnership agreement with the United States Army Corps of Engineers. (ongoing)
- B.3. Prevent and suppress wildfires across the State, including forest reserves, wildlife sanctuaries, and natural area reserves. Cooperate with other fire agencies not within departmental protection areas to the extent needed to provide for public safety and environmental protection. (ongoing)
- B.4. Seek federal funding to help communities with wildland urban interface planning and wildfire prevention. (ongoing)

- B.5. Collaborate with partners to develop cross-boundary hazardous fuel reduction priorities, maps, and projects statewide through a grant pursuant to Chapter 42F, Hawaii Revised Statutes (HRS). (1 year)
- B.6. Continue to harvest burned wood and sell to the local biomass plant on Kaua'i to reimburse costs for fire damage mitigation and reduce hazardous conditions created by wildfires. (ongoing)
- B.7. Implement fuel reduction through a grazing plan for the Pu'u Wa'awa'a Forest Reserve on Hawai'i Island which includes some of Hawaii's most endangered tropical dry forest species. (ongoing)
- B.8. Provide administrative support to implement the objectives of the Hawai'i Invasive Species Council (HISC). (ongoing)
- B.9. Maintain support for a coordinated approach for invasive species management and control through an integrated program of prevention, response, control, and public outreach. Expand invasive species management capacity on each island through increasing numbers of invasive species technicians, as described in the Hawai'i Interagency Biosecurity Plan. (1 year)
- B.10. Develop conservation incentives, such as safe harbor agreements and habitat conservation plans to provide regulatory protections to state and private landowners that reintroduce endangered species or improve habitats for endangered species on their lands. Develop and/or provide technical assistance for habitat conservation plans throughout the State where take of threatened or endangered species is anticipated. Provide technical assistance for major amendments to existing habitat conservation plans throughout the State. (ongoing)
- B.11. Develop administrative rules to standardize the implementation of Hawaii's endangered species law, Chapter 195D, HRS. (5 years)
- B.12. Conduct an aggressive propagation and re-introduction program for threatened and endangered (T&E) species at the Maui Bird Conservation Center (Olinda, Maui), Keauhou Bird Conservation Center (Volcano, Hawai'i Island), and at mid-elevation plant nurseries throughout the State. (5 years)
- B.13. Pursue an adaptive strategy to reintroduce the 'alalā to Hawai'i Island in collaboration with federal and private partners. (ongoing)
- B.14. Implement the Hawai'i Plant Extinction Prevention Program to prevent the disappearance of Hawaii's rarest plant species, now estimated at 238 species that are in danger of extinction within five years, through management actions to monitor plant health/fruit production, collect seeds/cuttings/air layers, cross pollinate between isolated populations, contain insect outbreaks, establish small ungulate exclosures, control rats and slugs, eliminate alien weeds, and outplant additional individual at-risk plants. (ongoing)
- B.15. Continue to support rapid response efforts for brown tree snake and other alien species control, such as mongoose on Kaua'i, by expanding the network of volunteers working on invasive species programs and updating training and equipment for effective rapid response capacity. (ongoing)
- B.16. Manage the State Seabird Sanctuary System and other seabird nesting colonies by controlling predators, enhancing nesting habitat, salvaging and rehabilitating grounded seabirds, and enforcing wildlife sanctuary rules. (ongoing)
- B.17. Maintain a predator proof fence at Ka'ena Point NAR (O'ahu) to protect nesting seabird and plant populations and implement a monitoring project to document the recovery of the flora and fauna. (ongoing)

- B.18. Develop a new series of ponds at the wildlife sanctuary and wetland habitat complex at Mānā Plains (Kaua‘i). (5 years)
- B.19. Design, implement, and maintain a predator proof fence at Kanahā Pond Wildlife Sanctuary (Maui). (5 years)
- B.20. Design, implement, and maintain conservation fencing at NARs statewide, Alaka‘i Wilderness Preserve (Kaua‘i), West Maui Forest Reserve (Maui), Kīpahulu Forest Reserve (Maui), Mauna Kea Forest Reserve (Hawai‘i Island), and Moloka‘i Forest Reserve for the protection of the full range of Hawaii's biodiversity, including forest birds, native invertebrates, and rare plants. (ongoing)
- B.21. Establish and maintain release sites for nēnē on Kaua‘i, Maui, Moloka‘i, and Hawai‘i Island. (ongoing)
- B.22. Conserve the remaining native forest birds, which are in imminent danger of extinction due to avian disease, habitat degradation, and introduced predators, through management actions to monitor populations, collect research data on breeding and survival, control rats, mongoose, and feral cats, eliminate alien weeds, and develop solutions to control disease vectors. (ongoing)
- B.23. Continue statewide surveys and sampling for Rapid Ōhi‘a Death (ROD) for early detection and support implementation of the Rapid Ōhi‘a Death Strategic Response Plan that outlines inter-agency research, prevention, outreach, and control efforts. (ongoing)

Policy C: To provide managed opportunities and facilities for the public to engage in multiple-use outdoor recreation activities, such as hiking, biking, equestrian riding, off-highway vehicle (OHV) use, hunting, and camping, while also providing access for resource management. To maintain and enhance a public hunting program to provide a source of food and outdoor recreation for the public and as a means to control introduced game animals in watershed areas. To inventory, document ownership, and restore specific historic trails and non-vehicular old government roads for public use where it is feasible and culturally appropriate.

Objectives and Estimated Time Frame:

- C.1. Maintain and construct roads and trails to allow managed public use of recreational areas. Work with off-highway vehicle clubs to develop and manage new off-highway vehicle recreational areas statewide. Continue to maintain the Upper Waiakea Forest Reserve (Hawai‘i Island), Mauna Kea Access Roads (Hawai‘i Island), and the Kahuku Motocross Park (O‘ahu) as off-highway vehicle recreational riding areas. Identify additional off-highway vehicle park locations statewide. (ongoing)
- C.2. Protect ancient and historic trails and accesses. Expand historic trails to link adjoining ahupuaa to the Kealahou Bay State Historical Park (Hawai‘i Island). Work with United States National Park Service staff to develop a plan to restore the Ala Kahakai National Historic Trail (Hawai‘i Island). (ongoing)
- C.3. Conduct public hunting seasons, inventory, and surveys of game birds and mammals, evaluate hunter harvest, and manage public hunts. (ongoing)
- C.4. Operate and maintain forest and wildlife recreational facilities, such as trail shelters, arboreta, picnic grounds, viewpoints, signs, bridges, and campgrounds. Maintain camping fees in forest reserves and for backcountry camping along Nā Ala Hele (NAH) trails. (ongoing)

- C.5. Improve gamebird populations and habitat by planting food crops, controlling noxious vegetation, conducting predator control, and restocking game birds where appropriate. (ongoing)
- C.6. Construct and maintain hunter checking stations, wildlife water units, game feeding sites, and hunter informational boundary and safety zone signs. (ongoing)
- C.7. Investigate and take appropriate action to control wildlife causing a nuisance, risk to human health, or damage to agricultural crops. (ongoing)
- C.8. Provide hiking safety information and resources to the public. Improve trail program website by adding GPS directional tools, mobile-responsiveness, and trail closure message management. Update website content, including providing links to online permits, online incident reporting system, and current weather. Respond to trail hazard reports and post trail closures and weather warnings via social media. (ongoing)
- C.9. Provide additional hunting opportunities by developing new public hunting areas and creating incentive programs to encourage more hunting on private lands, and provide administrative support to the Game Management Advisory Commission. (ongoing)
- C.10. Plan and complete legal and environmental requirements to acquire new public land and develop and maintain access agreements and permitting systems. (ongoing)
- C.11. Pursue and update cooperative game management agreements with state agencies and private partners statewide. (ongoing)
- C.12. Develop a game management area in Kanaio (Maui). (ongoing)
- C.13. Work with the hunting and shooting clubs and the Department's Hunter Education Program to develop and open recreational public shooting ranges on Hawai'i Island and Kaua'i for hunter safety training and recreation. (ongoing)
- C.14. Develop responsible mechanisms to manage commercial uses of DOFAW lands, such as encouraging ecotourism in ways that sustain the natural resources and provide benefits to the local community. Establish commercial use fees similar to NAH Program in forest reserves and wildlife sanctuaries where authorized by rule. (ongoing)
- C.15. Collaborate with the state Game Management Advisory Commission to update administrative rules for hunting and develop outreach strategies and tools to promote hunting. (ongoing)
- C.16. Develop new statewide and island youth hunting initiatives to provide opportunities and experience for young people in outdoor recreation; safe firearms attitude, approach, handling, and use; hunting skills, ethics, knowledge, and practices; the butchering, care, processing, curing, storing, use, and cooking of wild game animals and meat; survival under difficult or extreme conditions in the wild; CPR, first aid, defensive off-road driving; and other skills and experiences important and necessary to become well-balanced hunters, outdoors persons, conservationists, and contributors to the best management practices of all of Hawaii's natural resources. (ongoing)
- C.17. Develop new partnerships and support mechanisms to improve operations, maintenance, access, public safety, and user experience and enjoyment at high-use visitor facilities on each island. (ongoing)
- C.18. Install warning signs on departmental trails and recreational areas that present hazards to the public to reduce risk and provide the Department with immunity from unavoidable hazards where appropriate. (ongoing)
- C.19. Develop, operate, and maintain new nature trails along the Saddle Road (Hawai'i Island) at Kīpuka 21 (Hawai'i Island), Ka'ena Point (O'ahu), Moanalua Valley Forest

- Reserve (O‘ahu), and Kawainui (O‘ahu), and maintain signs on all trails statewide. (5 years)
- C.20. Develop new, and improve existing, camping facilities at wilderness camp grounds and cabins on Hawai‘i Island and O‘ahu. (5 years)
 - C.21. Develop or improve vehicle access and parking at recreational facilities on Kaua‘i, O‘ahu, and Hawai‘i Island. (5 years)
 - C.22. Develop and maintain a user-friendly suite of tools (website, apps, etc.) to facilitate public access to hunter education, license application, hunting lotteries, hunting rules, real-time maps, notices, and outreach materials. (ongoing)

Policy D: Strengthen the State’s economy through forest resource management and promote the sustainable production of forest products and services from forest reserves and other public and private lands. Promote resource restoration and conservation through outreach and education.

Objectives and Estimated Time Frame:

- D.1. Encourage private investment for commercial forest development. (ongoing)
- D.2. Plan and administer commercial forest management activities on state land, which includes resource inventories, management and environmental impact planning, forest product sales, and the issuance of permits and licenses. (ongoing)
- D.3. Solicit a request for proposals for the State’s largest commercial forest, the Waiakea Timber Management Area on Hawai‘i Island for the commercial use of forest products under a land license. (1 year)
- D.4. Conduct resource inventories and management and environmental impact planning for the designation of a new Timber Management Area for timber plantation stands on East Kaua‘i for the commercial use of forest products under a land license. (2 years)
- D.5. Plan and administer commercial forest activities to address other management needs and reduce costs for activities, such as salvage and clearing of hazardous materials, protection of fences, and maintenance of utility and road right-of-ways and public-use facilities. (ongoing)
- D.6. Provide private landowners and processors of forest products with technical forestry assistance. (ongoing)
- D.7. Administer state and federal cost sharing programs, such as the Urban and Community Forestry, Forest Legacy, and Forest Stewardship Programs. (ongoing)
- D.8. Coordinate the Hawai‘i Conservation Reserve Enhancement Program with the United States Department of Agriculture (USDA) Farm Services Agency and implement new private landowner projects. (ongoing)
- D.9. Operate the Central Tree Nursery in Kamuela (Hawai‘i Island) and branch nurseries on each island for distribution of high quality tree seedlings for reforestation, special use plantings, such as windbreaks, and propagation of native plants for out-planting. (ongoing)
- D.10. Cooperate and coordinate with the Forest Inventory and Analysis (FIA) program of the United States Forest Service to establish a permanent network of FIA field plots on all forested lands in Hawai‘i. (ongoing)
- D.11. Coordinate a Pacific Islands Forestry Committee regional meeting to address Pacific-wide issues. (ongoing)
- D.12. Support the development of a biomass-to-energy industry to help Hawai‘i reach its renewable energy goals. Explore opportunities of wood-based biofuel production in Hawai‘i by supporting research and local industry networks. (ongoing)

- D.13. Enter and create new markets for Hawaiian grown hardwoods in local, mainland, or foreign markets. (ongoing)
- D.14. Develop new income streams through non-traditional forest products, such as biomass production and payments for ecosystem services (e.g., carbon sequestration, water replenishment, and biodiversity protection). (ongoing)
- D.15. Work with partners on tree improvement and forestry practices for high-value species, such as koa and ‘iliahi that also have important ecological and cultural values. (ongoing)

Policy E: Develop volunteer and information programs for natural resource management that allow meaningful and productive community involvement in the stewardship of natural resources on public lands. Promote outreach and foster partnerships to improve public understanding, responsibility, and participation.

Objectives and Estimated Time Frame:

- E.1. Maintain and improve DOFAW’s web page to provide the public easy access to information about ongoing projects and conservation information. (ongoing)
- E.2. Encourage the public to work on natural resource management projects by supporting community volunteer programs. (ongoing)
- E.3. Develop information and educational materials on DOFAW’s programs, such as maps, reports, brochures, teacher’s packets, videos, and posters. (ongoing)
- E.4. Support young adult natural resource stewardship training programs, such as the Youth Conservation Corps (YCC) and AmeriCorps, and provide internships. (1 year)
- E.5. Work with community members to engage and collect information on the natural and cultural resources that are important to them; integrate community stewardship for management of natural and cultural resources. (ongoing)
- E.6. Construct educational pavilions at key wildlife sanctuaries, forest reserves, and natural area reserves to facilitate and promote experiential learning opportunities for youth. (ongoing)
- E.7. Collaborate with partners to educate and inform residents about the threat of wildfires in Hawai‘i through risk reduction initiatives, including the annual statewide unified multi-agency *Wildfire LOOKOUT!* campaign, national Wildfire Community Preparedness Day, and *Firewise USA* program. (ongoing)

III. MEASURES OF EFFECTIVENESS:

Policy A:

- Percent of watershed forests protected and actively managed.
- Number of acres protected by NAPP contracts and Forest Legacy Program conservation easements.
- Acres of land conservation acquisitions or easements.
- Number of awards for acquisition or easements for land conservation.
- Number of acres enrolled in watershed partnerships.
- Number of threatened and endangered (T&E) species with active recovery implementation programs.
- Number of rare or T&E plant species managed.
- Number of reserves and preserves managed.
- Number of protected snail exclosures.

- Number of invertebrates released.
- Number of trees and shrubs planted.

Policy B:

- Number of acres of hazardous fuel treated.
- Number of miles of firebreak constructed and maintained.
- Number of fires responded to.
- Number of acres of invasive plants controlled or monitored.
- Total amount of funding disbursed by HISC for invasive species prevention, control, outreach, and research projects.
- Number of habitat conservation plans and safe harbor agreements in development and approved/being implemented.
- Number of rare or T&E bird species managed.
- Acres planted for native bird habitat restoration.
- Acres of wildlife sanctuaries managed.
- Population estimates of forest birds (every 5 years), nēnē (annual) and waterbirds (annual).
- Number of landowners involved in partner programs.

Policy C:

- Percentage of trails and access roads maintained annually compared to total mileage.
- Percentage of recreational facilities maintained annually compared to total.
- Number of signs installed and maintained annually.
- Number of game animals harvested annually.
- Number of hunting permits, stamps, and tags issued annually.
- Acres of public hunting areas.
- Number of commercial trail tour patrons guided annually.
- Number of ancient and historic trail abstracts performed annually.

Policy D:

- Number of seedlings distributed or sold.
- Number of acres of tree planting or reforestation.
- Number of landowners, organizations, or communities assisted.
- Percentage of funds leveraged compared to goal.
- Number of acres acquired or secured for forest reserve or other conservation purposes.
- Percentage of departmental lands under commercial timber management.
- Revenues created from traditional and non-traditional forest products.

Policy E:

- Number of YCC students and interns enrolled, and number of intern service hours contributed.
- Number of volunteer service hours in resource management projects by category.
- Number of educational programs presented or disseminated.
- Number of education materials produced and distributed to target audiences.
- Number of hits on web page.
- Dollar value of volunteer labor.