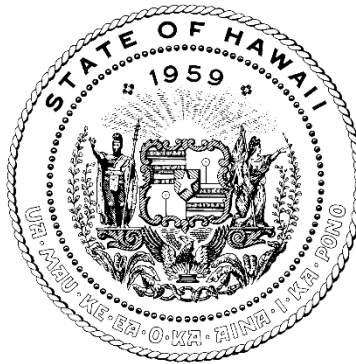


**REPORT TO THE THIRTIETH LEGISLATURE
STATE OF HAWAI‘I
2020 REGULAR SESSION**

**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
November 2019

**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 19 Accomplishments at a glance:

				
\$5.2m	19,787	70,000	18,700	41,206
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

A central sustainability goal for the State is to protect 30% of priority watershed forests by 2030. This goal will require building approximately 190 miles of fence to protect these native forests from hooved animals. Currently, 17% of priority forests are protected. Recent Capital Improvement Project funding, and matching grants, will keep the Department on track to reach this goal.

Hawaii’s forests have lasted millions of years on these 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). Studies have recently been published showing fencing is significantly reducing the amount of dead ‘Ōhi’a trees in areas fenced from hooved animals on Hawai‘i island. These forests also absorb large quantities of carbon dioxide, making forest protection and restoration one of the most immediate and effective solutions to combat climate change.

FY20 Island Highlights



Kaua'i: A native Hibiscus thought to be extinct has been rediscovered. Drones have located four plants of *Hibiscadelphus woodii* on the cliffs of Kalalau. These last remaining plants are in imminent danger of being trampled or eaten by feral goats. It is one of 424 plants listed as Threatened or Endangered by the U.S. Fish and Wildlife Service.



O'ahu: Forty-three Laysan Albatross chicks fledged, due to increased predator control efforts and a partnership with Navy facilities to relocate eggs to safe breeding areas such as Kaena Point Natural Area Reserve. Photo: Randy Bartlett.



Moloka'i: The 2,500-acre Kawela-Kamalo fence unit is now nearly free of hooved animals. This area is Molokai's largest protected area and essential for protecting the island's watershed and reducing erosion into the south shore's fringing reef.



Maui: Leeward Haleakala Watershed Restoration Partnership has led a pilot project to remove feral cattle that are damaging koa forests in Department of Hawaiian Homes Lands in Kahikinui. The trial program provided 227 feral cattle to the community, which totaled 31,524 pounds of meat.



Hawai'i: The 1,100-acre Army Road fence unit is complete, expanding protection for 'Alalā and other rare plants and animals found in the Pu'u Maka'ala Natural Area Reserve.

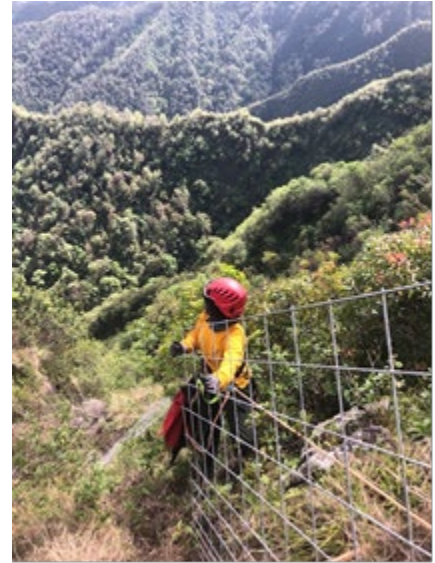
1. Programs

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, 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.

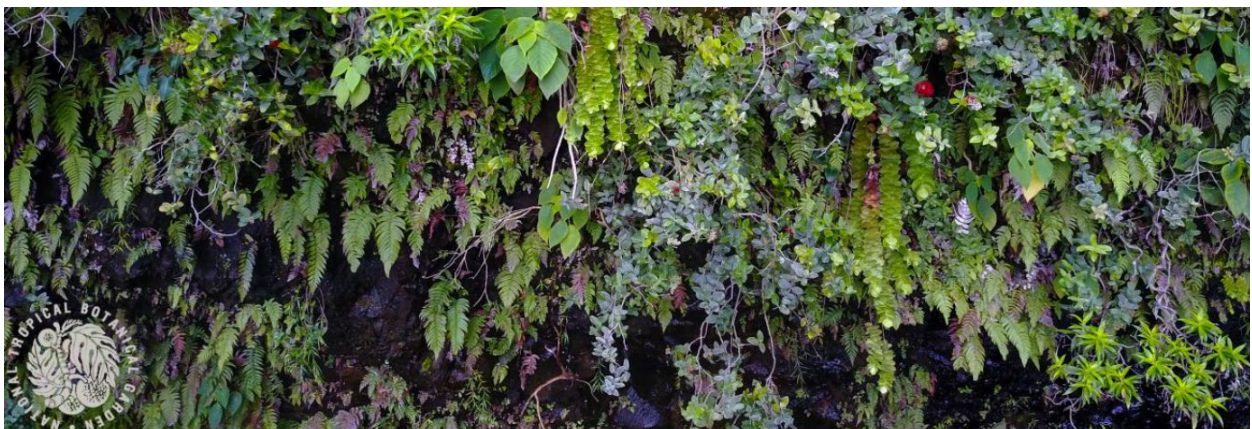
Watershed Partnerships: Voluntary alliances of public and private landowners committed to protecting over 2 million acres of the most important watershed lands in Hawai‘i. Organizations and agencies compete for funding, and State funds leverage Federal, County, and private monies on a 1:1 basis, doubling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

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.



Building strategic fences at Ka‘ala Natural Area Reserve, O‘ahu.

Rare Plant Program: Perpetuates the native flora of Hawai‘i. In FY 19, State funds were matched over 2:1 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.



*In the Lihue-Koloa Forest Reserve, DOFAW is surveying and protecting diverse ecosystems with rare plants like the recently discovered *Lysimachia iniki*. Photo: National Tropical Botanical Garden.*

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 19, State funds were matched 5:1 by Federal funds. 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 40 year-round interns in addition to 15 weeks of project service learning for summer teams, providing approximately 74,000 hours of service.



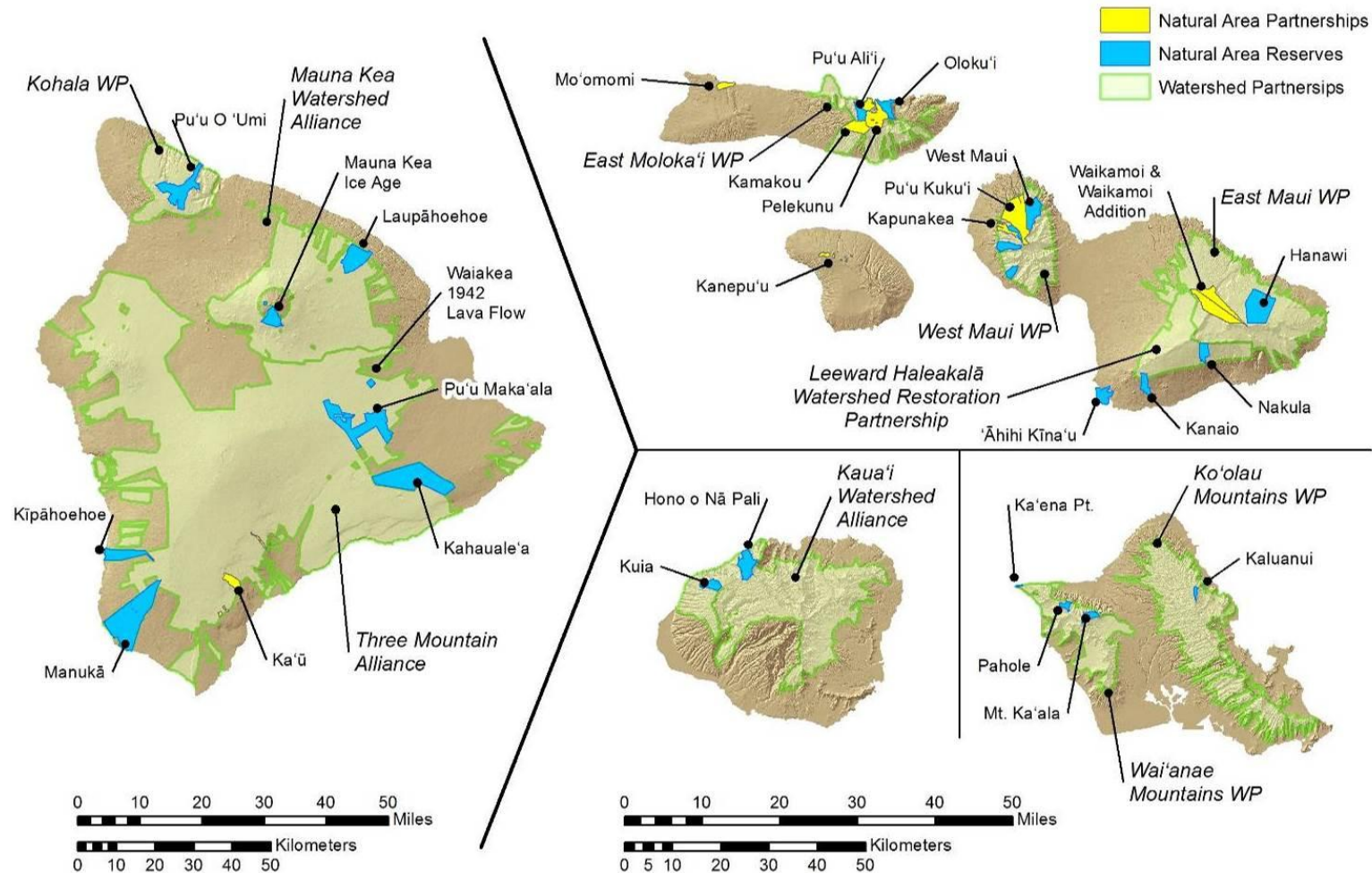
Laminella sanguinea, a rare terrestrial snail endemic to the island of O'ahu. The Snail Extinction Prevention Program is actively reintroducing this species back into the wild from captive propagation.



Kupu Hawai'i Youth Conservation Corps learning how to outplant trees. Nakula NAR, Maui

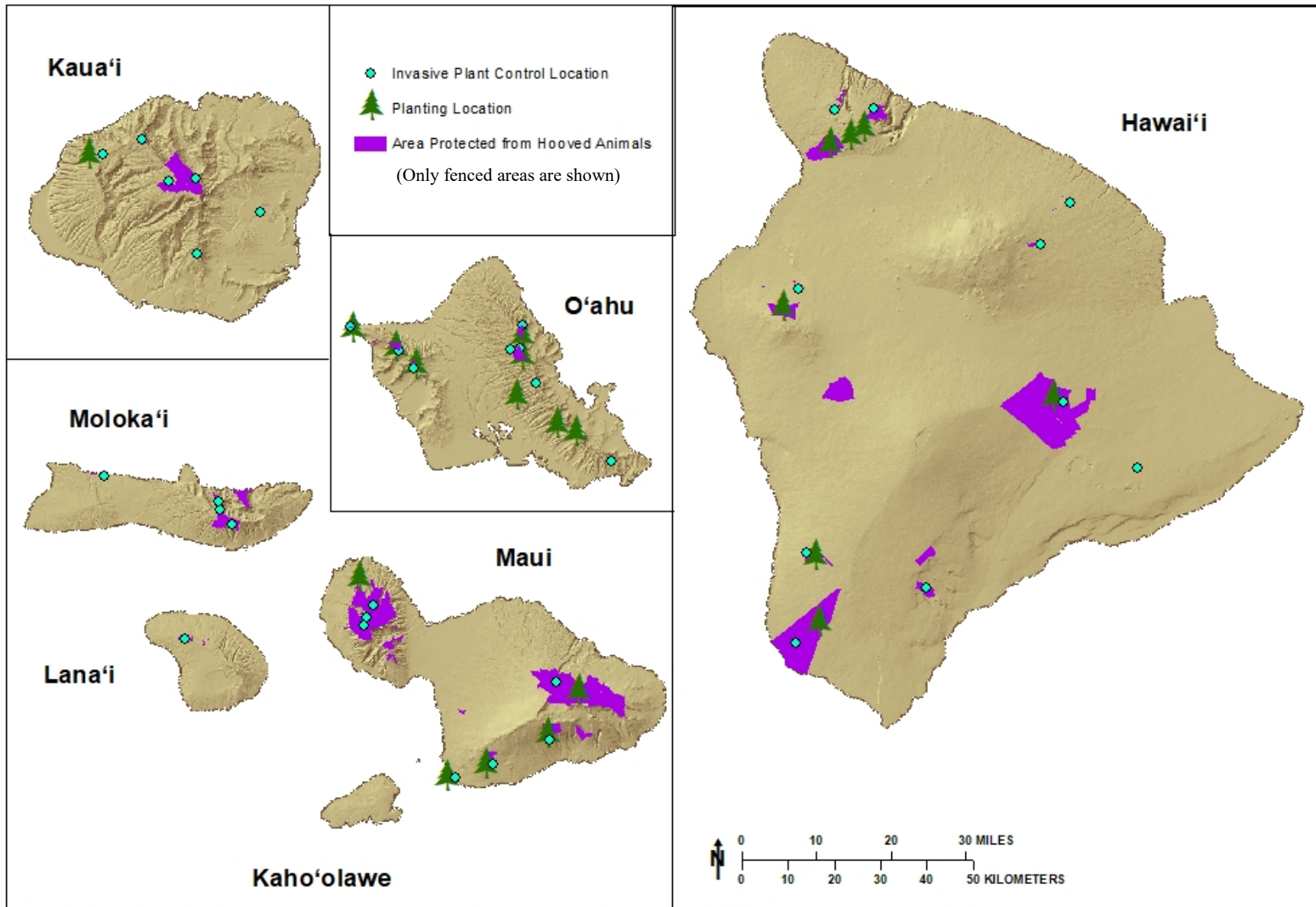


Natural Area Reserves, Natural Area Partnerships, and Watershed Partnerships



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

FY 19 Accomplishment Summary



Rare Plant and Invertebrate accomplishments are not included on this map. August 2019. (808) 587-4170. DOFAW-DLNR.

FY 19 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	34	3,400	413	249	0.36	4.25
	Kuia	NAR	52	1,600	1,011	330	-	4.70
	Līhue Kōloa Forest Reserve	NAR	-	40	-	-	-	0.04
	Kauai Invasive Species Committee	WP	480	-	-	-	-	-
	Kaua'i Watershed Alliance	WP	926	7,077	-	-	-	13.10
O'ahu	Pahole	NAR	32	650	833	1,562	-	7.00
	Ka'ena Point	NAR	2	65	104	207	-	0.40
	Mt. Ka'ala	NAR	4	51	79	877	0.25	3.00
	Poamoho (Ewa Forest Reserve)	NAR	33	1,300	160	132	-	-
	Kaluanui	NAR	10	540	950	-	-	-
	Various other locations	NAR	1	10	1,220	-	-	1.00
	O'ahu Invasive Species Committee	WP	305	-	-	-	-	-
	Ko'olau Mountains	WP	247	**	1,556	2,248	-	13.00
Maui, Moloka'i, and Lana'i	'Āhihi-Kīna'u	NAR	20	626	325	-	-	4.40
	Hanawī	NAR	-	6,411	-	-	-	14.30
	Nakula	NAR	300	1,500	2,000	-	-	8.90
	Kanaio	NAR	400	1,450	400	-	-	7.60
	West Maui	NAR	-	5,461	-	-	-	3.60
	Pu'u Ali'i & Oloku'i	NAR	-	2,950	-	-	-	6.65
	West Maui Mountains	WP	48	9,512	-	366	-	5.20
	Leeward Haleakalā Restoration	WP	6,122	340	-	20,011	4.32	10.59
	East Maui	WP	156	7,201	302	282	-	6.42
	East Moloka'i	WP	536	3,200	-	3,800	-	22.50
	Kamakou	NAP	60	847	-	341	-	4.36
	Mo'omomi	NAP	11	175	-	608	-	3.75
	Pelekunu	NAP	7	11,900	-	66	-	-
	Pu'u Kukui	NAP	34	4,750	1,060	1,450	-	8.65
	Waikamoi and Waikamoi Addition	NAP	4,060	7,944	-	962	-	21.35
	Kapunakea	NAP	33	1,542	-	-	-	1.19
	Kānepu'u	NAP	10	529	-	237	-	8.13

(Continued from previous page)

FY 19 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
Hawai'i	Mauna Kea Ice Age	NAR	-	3,894	-	-	-	0.81
	Pu'u O 'Umi	NAR	6	2,422	309	-	2.10	13.08
	Laupāhoehoe	NAR	22	17	-	-	-	1.12
	Kahauale'a	NAR	2	154	-	-	-	2.76
	Kipāhoehoe	NAR	69	1,331	210	-	-	9.17
	Pu'u Maka'ala	NAR	472	13,213	2,651	536	3.79	60.53
	Manukā	NAR	4,804	26,638	122	226	0.06	29.69
	Pu'u Wa'awa'a Sanctuary	NAR	148	121	3,257	-	-	19.09
	Koai'a Corridor Sanctuary	NAR	-	222	24	-	-	2.90
	Various other locations	NAR	-	-	-	276	1.25	-
	Three Mountain Alliance	WP	-	34,477	-	-	-	25.00
	Kohala	WP	2	8,965	2,801	6,440	-	36.36
	Mauna Kea Watershed Alliance	WP	129	1,625	-	-	0.51	14.66
	Ka'ū	NAP	51	2,000	-	515	-	8.64
TOTAL			18,700	176,150	19,787	41,206	13	408

*Multiple agencies may alternate duties to maintain the same length of fence in quarterly maintenance schedules.

**Co-managed Poamoho and Kaluanui areas, accomplishments are noted in those Reserves fields.

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.

Additional statewide accomplishments include:

Hawaiian Mid-Elevation Rare Plant Facilities:

- DOFAW's Rare Plant Program uses an integrated approach to plant conservation that protects native plants where they live and uses specialized horticulture at Mid-Elevation Rare Plant Facilities on each island and at Lyon Arboretum on Oahu to grow additional plants for restoration and store seeds in seed banks. Specialized nurseries on Kauai, Oahu, Maui and Hawaii Island focus on growing rare native plants, which require very specific conditions to thrive.
- Over the last year, these facilities worked together to overcome significant technical obstacles and developed new techniques to grow Hawaiian ferns. This success will enable the propagation and restoration of these vulnerable plants, twenty of which are listed as Endangered Species.
- Nursery facilities shelter living collections of Hawaii's rarest plants and produce thousands of young plants for ongoing restoration and reforestation projects across the state. In the last year, 8,356 T&E plants from nearly 45 plant species were produced for restoration projects statewide.
- The Lyon Arboretum Seed Conservation Lab received, processed, and stored over 245,000 seeds from 95 collections of 51 rare and endangered plants in the last year. The Micropropagation Lab continues to maintain over 30,000 germplasm cultures of Hawaiian plants.

Plant Extinction Prevention Program:

- In the last year, the Plant Extinction Prevention Program (PEPP), conducted conservation actions for 178 Threatened and Endangered plant species. This includes monitoring, collecting seeds, controlling threats from invasive species, and restoration out-planting.
- Plant Extinction Prevention Program (PEPP) staff worked with DOFAW partners to construct fences around vulnerable populations of rare plants on Oahu, Molokai, and Hawaii Island.
- Surveys of remote areas by PEPP, DOFAW, and other conservation partners discovered previously unknown populations of several critically rare plants, including some thought to be extinct. *Hibiscadelphus woodii*, was rediscovered in Kalalau Valley on Kauai. This critically rare plant was thought to be extinct, until a few individuals were observed with a drone by staff from PEPP and the National Tropical Botanical Garden on remote inaccessible cliffs.



Planting native species in the Kuia Natural Area Reserve with Kawaikini Middle School volunteers.

Hawai'i Invertebrate Program (HIP):

- HIP staff have continued 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 preserve ecosystem function in priority watershed forests, as well as increase public awareness and restore habitat for the species across communities. Approximately 10,000 Kamehameha butterflies were released this year.
- Captive propagation and reintroductions have also been conducted for the orange-black damselfly, an endangered insect known from just a single population on the island of Oahu.
- HIP has received competitive federal grants to continue work on additional rare and endangered species, including picture-wing *Drosophila*, Hawaiian leaf-roller moths, Kaua'i stag beetles and the Kaua'i green sphinx moth, and conduct surveys of rare invertebrate species on Maui Nui.



Orange-black damselfly, a rare insect species nearly extinct on the island of O'ahu. Currently HIP is captive rearing and reintroducing this species back into areas of its former range.

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 brink of extinction. Management activities include invasive predator control, habitat enhancement, construction and maintenance of predator-proof fencing, translocation, captive propagation and reintroduction.
- In FY 19 SEPP expanded captive propagation of snail species facing imminent extinction. Currently, 38 species from five islands are being actively reared for reintroduction back into the wild.
- In the fall of 2019 SEPP completed construction of a predator-proof fence in the Pahole Natural Area Reserve on O'ahu which houses several critically endangered snail species.

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 utilized 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, or as resources permit, in specified areas where public hunting is not able to reduce hooved animal impacts to low enough 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 Preserve is open for public hunting 365 days a year, with no bag limit. During extreme fire hazard or unsafe road conditions, all or portions of the preserve may be closed. Kanepu'u, Pu'u Kukui, and Ka'u 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.

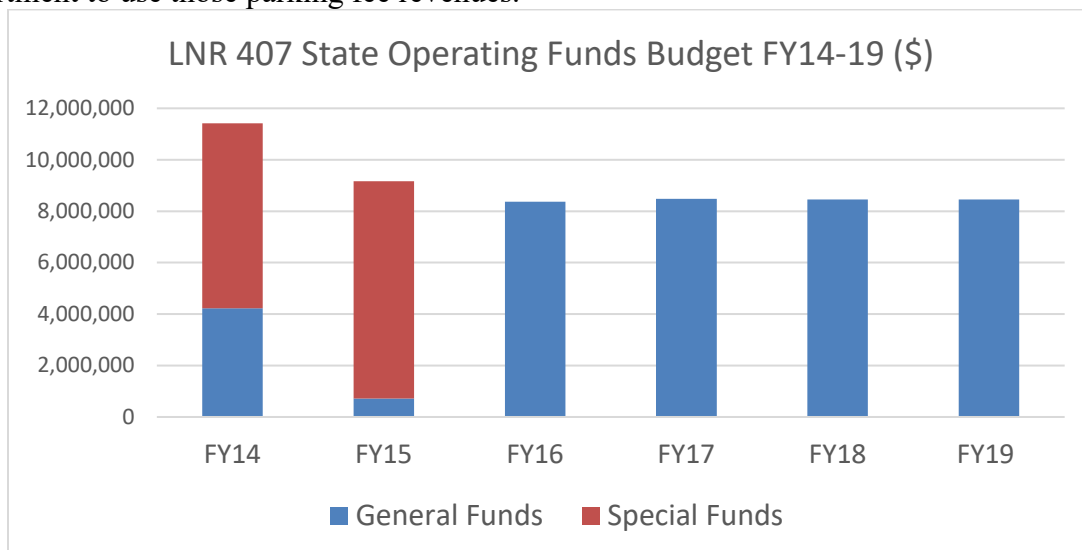
3. ANALYSIS OF THE PROBLEMS AND ISSUES ENCOUNTERED

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 species, which rely on active and sustained protection and management. Many of these programs rely primarily on federal funding and are anticipating significant cuts with the proposed federal administration 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 of higher 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 contractor overhead costs and providing programmatic continuity.

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 identified 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.



The previous 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 FY18 funds, which largely occurred during FY 19. This report includes only actions funded by the State Watershed Partnership Program Grants; additional partnership work is funded by federal, county and private funds.



Drone surveys by the Fish and Wildlife Service and the National Tropical Botanical Garden (NTBG) have found new populations of rare plant species as well as species thought to be extinct. In Limahuli Preserve, the Plant Extinction Prevention Program partners with NTBG to conserve these unique species found only on Kauaʻi.