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GOVERNOR OF  
HAWAII



**DEPT. COMM. NO. 66**

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HISTORIC PRESERVATION  
KAHOOLAWE ISLAND RESERVE COMMISSION  
LAND  
STATE PARKS

**STATE OF HAWAII  
DEPARTMENT OF LAND AND NATURAL RESOURCES**

POST OFFICE BOX 621  
HONOLULU, HAWAII 96809

December 5, 2018

The Honorable Ronald D. Kouchi,  
President  
and Members of the Senate  
Thirtieth State Legislature  
State Capitol, Room 409  
Honolulu, Hawaii 96813

The Honorable Scott K. Saiki, Speaker  
and Members of the House of  
Representatives  
Thirtieth State Legislature  
State Capitol, Room 431  
Honolulu, Hawaii 96813

Dear President Kouchi, Speaker Saiki, and Members of the Legislature:

For your information and consideration, I am transmitting a copy of the Relating To The Natural Area Reserves System, Natural Area Partnership Program And The Financial Condition of the Natural Area Reserve Fund report, as required by Section 195-6.6, Hawaii Revised Statutes (HRS). In accordance with Section 93-16, HRS, a copy of this report has been transmitted to the Legislative Reference Bureau and the report may be viewed electronically at <http://dlnr.hawaii.gov/reports/>.

Sincerely,

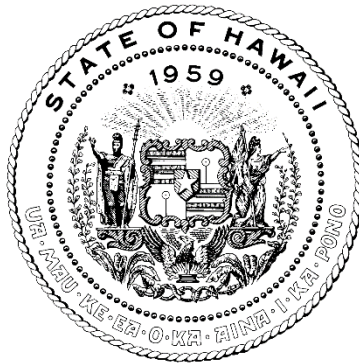
A handwritten signature in blue ink, appearing to read "Suzanne D. Case".

SUZANNE D. CASE  
Chairperson

Enclosure

**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:*

				
<b>\$6.89m</b>	<b>56,746</b>	<b>76,200</b>	<b>15,151</b>	<b>22,553</b>
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.



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

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.

## 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 Kawaiikini 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.

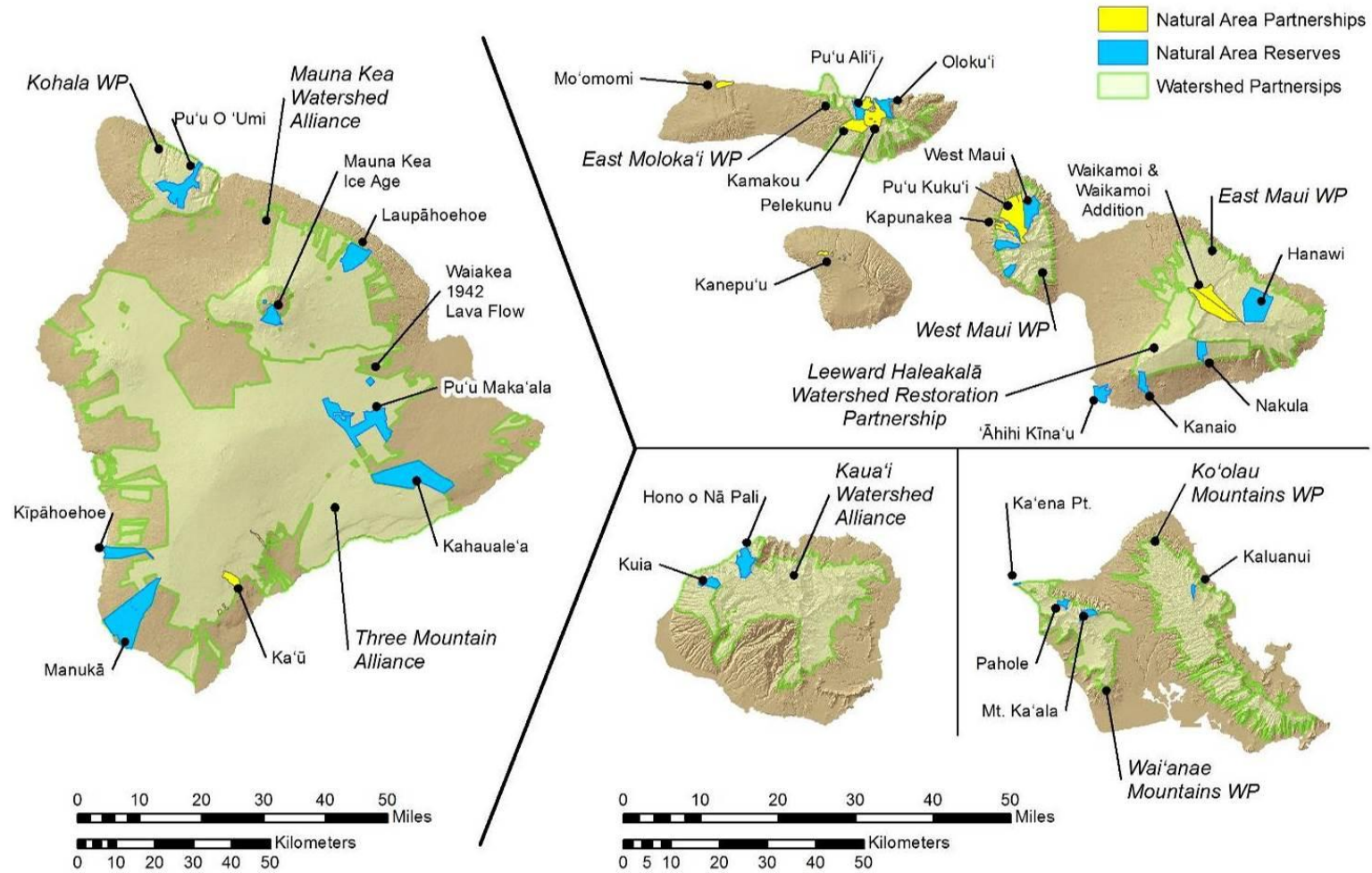
**Rare Plant Program:** Perpetuates the native flora of Hawai‘i. In FY 18, State funds were matched 3:1 by Federal dollars. This program includes nurseries and seed storage facilities to prevent extinction by propagating and storing plants for reintroduction into protected habitats. The Program also 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.

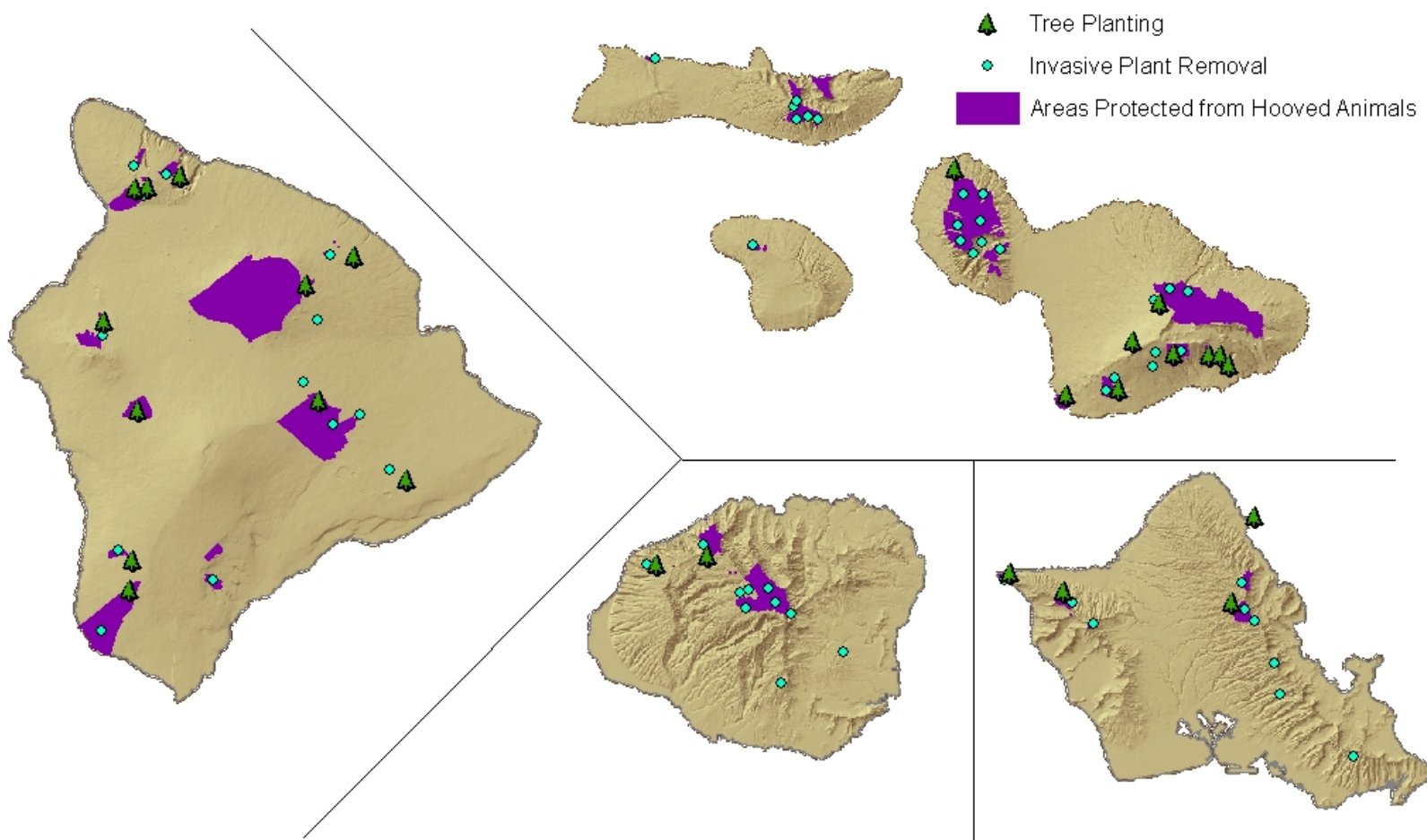


# Natural Area Reserves, Natural Area Partnerships, and Watershed Partnerships



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
<b>TOTAL</b>			<b>15,151</b>	<b>175,926</b>	<b>56,746</b>	<b>22,553</b>	<b>12</b>	<b>408</b>

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

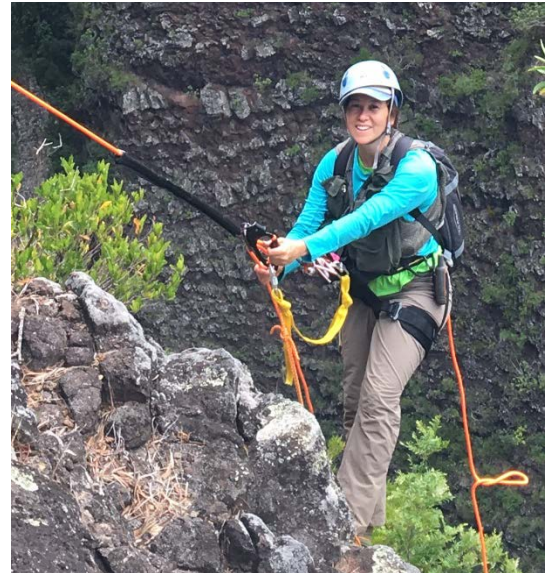


Federal funding and are anticipating significant cuts with the proposed President’s budget. To prevent extinctions and major losses to the programs, State funding will need to be maintained or increase.

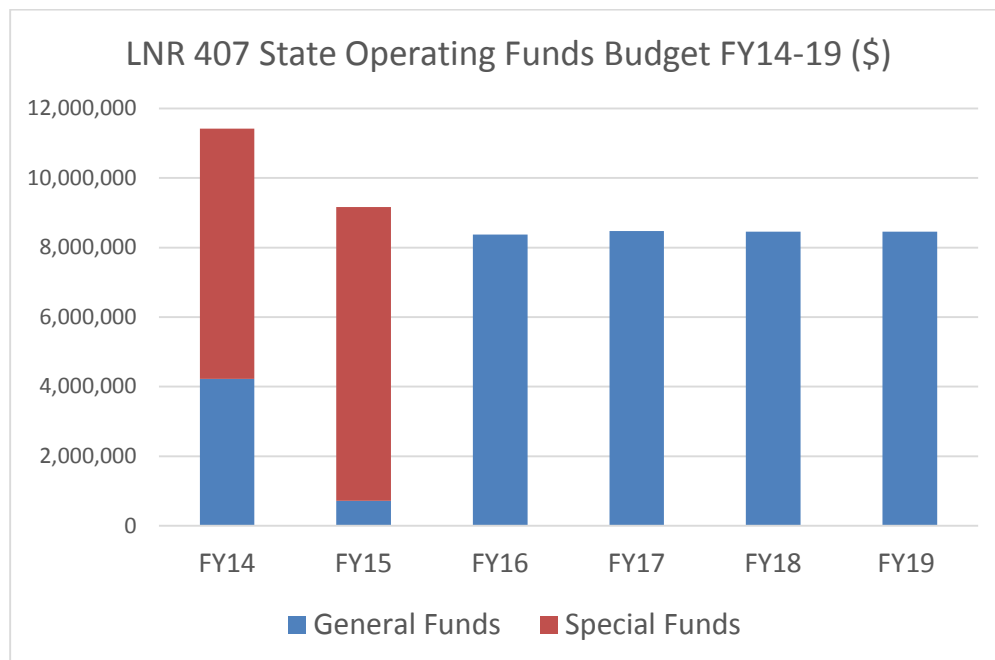
Establishing civil service staff positions is often more cost-effective and high-quality than contracted labor. The specialized conservation work requires extensive training in wilderness safety and knowledge of remote landscapes and plants and wildlife. DOFAW would like to reduce reliance on contracted 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 pyriformium). 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.*