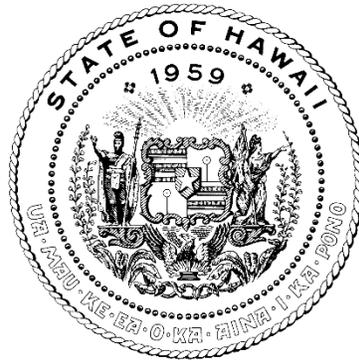


**REPORT TO THE THIRTY-FIRST LEGISLATURE
STATE OF HAWAI‘I
2021 REGULAR SESSION**

**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 2020

**REPORT TO THE THIRTY-FIRST LEGISLATURE
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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 20 Accomplishments at a glance:

				
\$8.1m	42,226	63,000	17,778	20,639
Federal, County, and private funds leveraged	Trees and shrubs planted	Hours of youth intern service contributed	Acres of invasive plant control	Volunteer hours donated

COVID-19 Impacts and Opportunities

In periods of economic crises, decisionmakers have invested in conservation as a proven way to create short-term jobs that have a long-term impact. The Civilian Conservation Corps (CCC) in the 1930s, the Emergency Environmental Workforce of 2002, and the American Recovery and Reinvestment Act of 2009 successfully employed Hawaii's jobless while creating long-lasting environmental improvements. Many of Hawaii's trails, cabins, tree plantations, and other investments in natural resources were created by these crews. Once again, DLNR-DOFAW can quickly put Hawaii's unemployed back to work during the COVID-19 economic crisis.

The Department is able to host hundreds of short-term, unskilled workers. The Department has provided the Legislature lists of the potential work sites statewide, and range widely for constructing trails and other infrastructure, planting trees, maintaining firebreaks, removing invasives, research and monitoring, from backcountry areas to urban settings. These projects also rely on local supplies, such as tree seedlings, so are resilient to disruptions in trade and can be implemented immediately while



Conservation projects create local jobs in rural areas, such as this fence crew on Moloka‘i.

supporting local businesses. There are outfitting, training and wilderness safety needs for each worker, so the longer their hiring duration, the more efficient the program will be in accomplishing tasks for natural resource protection, recreation, and public health and safety. Additionally, funding for the Departments' programs needs to be maintained to be able to productively and safely use these new hires.

Throughout the COVID-19 shutdowns, the Department has continued to find creative solutions to maintain safe working conditions while proceeding with the projects. Fortunately, fieldwork is largely in remote areas with small groups, lessening exposure. While there have been delays, field work has occurred continuously and impressive advances have been made in FY20. For example, the Department is continuing to strive for the goal to protect 30% of priority watershed forests by 2030, which is a central part of the Sustainable Hawaii Initiative. Currently, 17% of priority forests are protected, and many fence projects are nearing completion.

FY20 Branch Highlights



Endangered ua'u (Hawaiian petrel) translocated from Hono O Na Pali Natural Area Reserve to the Nihokū predator proof fence at Kīlauea Point returned to nest for the first time, marking a major milestone for establishing a new colony in a protected area. Three new fences are planned in northwest Kaua'i to prevent cats from preying on birds. The cat pictured at right killed 9 ua'u.



In other seabird news, Kaluanui Natural Area Reserve is the first place in the Ko'olau mountains where populations of ua'u have been found. It is also a hotspot for the endangered 'a'o (Newell's Shearwater), pictured at right.



DOFAW acquired the 800-acre Pua‘ahala ahupua‘a, on the south slope of Moloka‘i. This area has native *mauka* rainforests rich in rare plants, as well as a wetland that provides habitat for waterbirds *makai*.



The 1,200-acre ‘Opaeloā fence was completed, protecting a unique moss-covered rainforest from feral pig damage. Dedicated crews camped in this wet forest in small shelters in order to construct the fence.

Programs

The main activities of the programs supported by the Native Ecosystem Protection and Management program 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 two 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.

Rare Plant Program: Perpetuates the native flora of Hawai‘i. In FY 20, 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.

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 20, State funds were matched 6:1 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.

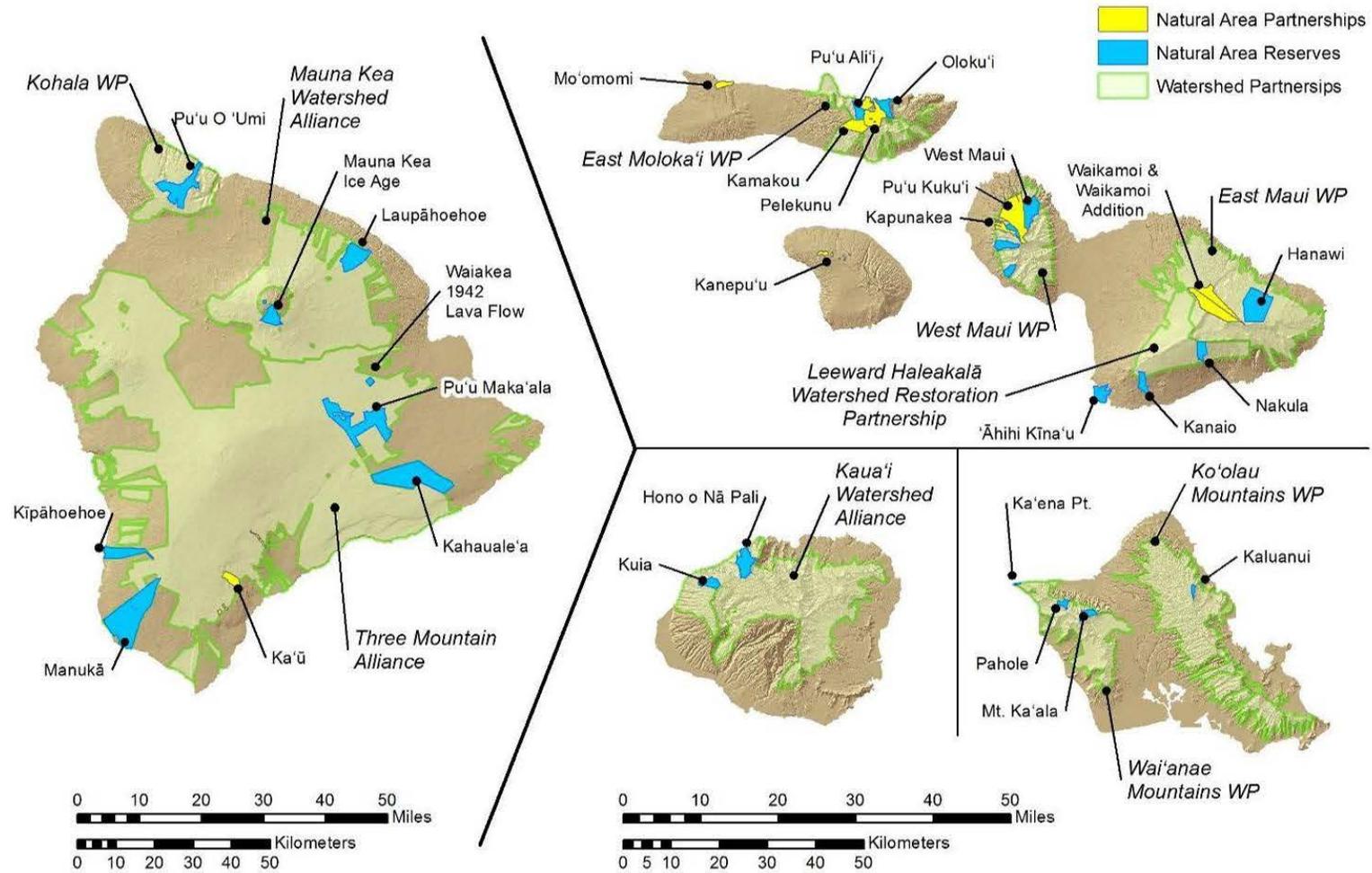
Information and Education Program: Connects with communities through press releases, community events, presentations, websites, social media, field trips, classroom visits, volunteer trips, educator workshops, and Youth Conservation Corps internships. Through the Project Learning Tree program DOFAW supports the training of local educators in connecting students with nature. The Youth Conservation Corps Program enables young adults to gain entry-level experience as they work with natural resource professionals. The program mentored 35 year-round interns in addition to 15 weeks of project service learning for summer teams, providing approximately 63,000 hours of service.



Achatinella fuscobasis, an endangered tree snail from the mountains surrounding Honolulu. This species now only exists in the Snail Extinction Prevention Program’s captive rearing laboratory.

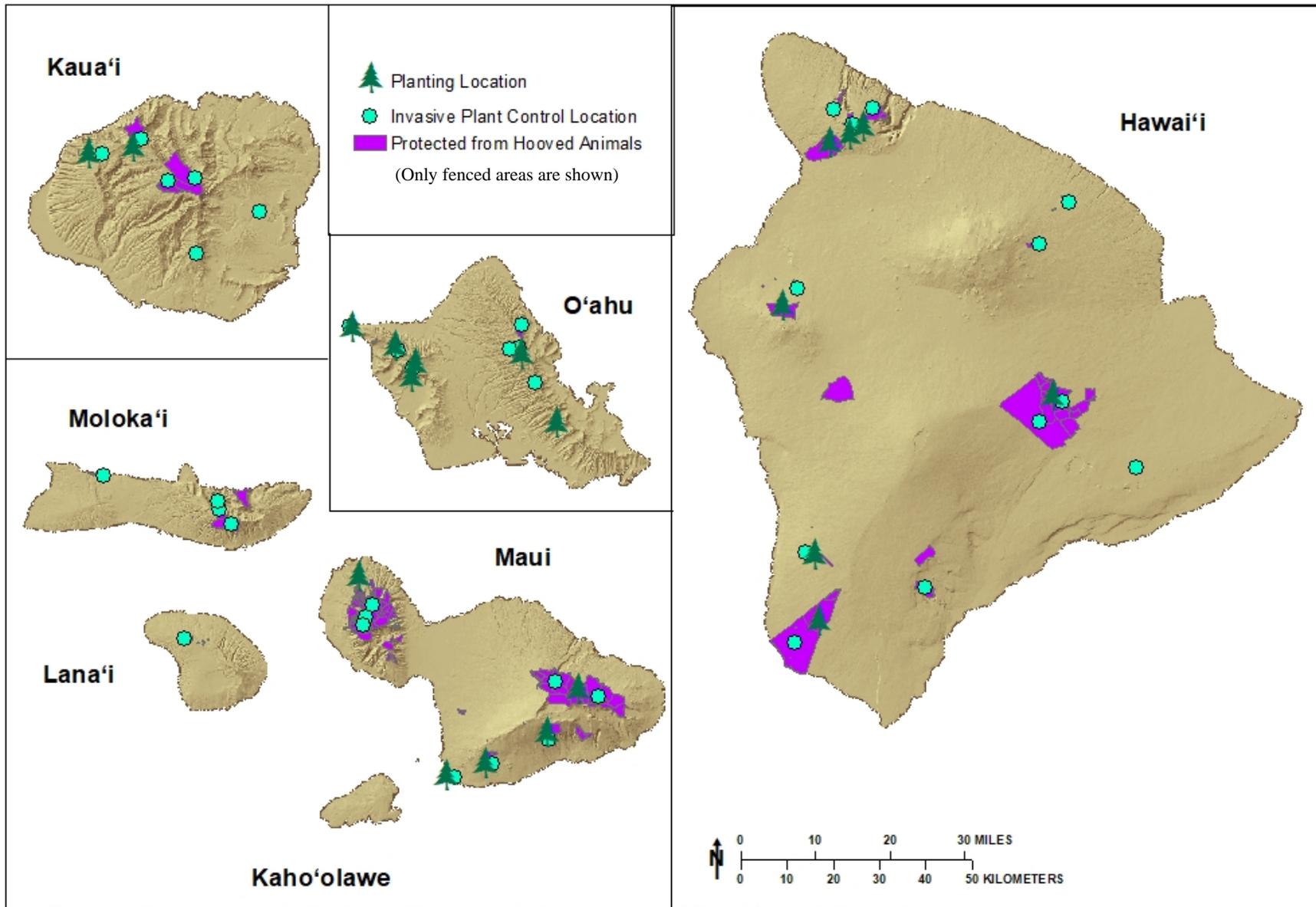


Natural Area Reserves, Natural Area Partnerships, and Watershed Partnerships



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

FY20 Accomplishment Summary



Rare Plant and Invertebrate accomplishments are not included on this map. September 2020. (808) 587-4170. DOFAW-DLNR.

FY 20 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	1,937	413	249	0.36	4.25
	Kuia	NAR	52	147	1,011	330	-	4.70
	Līhue Kōloa Forest Reserve	NAR	-	40	-	-	-	0.04
	Kauai Invasive Species Committee	WP	589	-	-	-	-	-
	Kaua'i Watershed Alliance	WP	113	7,077	-	-	-	13.10
O'ahu	Pahole	NAR	21	650	1,975	2,209	-	7.00
	Ka'ena Point	NAR	1	65	252	230	-	0.40
	Mt. Ka'ala	NAR	1	1,526	82	872	0.25	9.10
	Poamoho (Ewa Forest Reserve)	NAR	190	1,300	13	110	-	-
	Kaluanui	NAR	311	540	-	200	-	-
	Various other locations	NAR	162	10	1,012	250	-	1.00
	O'ahu Invasive Species Committee	WP	275	-	-	-	-	-
	Waianae Mountains WP	WP	0.4	-	67	-	-	-
Ko'olau Mountains	WP	199	**	-	1,495	0.50	14.50	
Maui, Moloka'i, and Lana'i	'Āhihi-Kīna'u	NAR	20	626	325	664	-	4.40
	Hanawī	NAR	50	6,411	-	-	-	14.30
	Nakula	NAR	300	1,500	3,100	-	-	8.90
	Kanaio	NAR	404	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	38	9,512	-	181	-	5.10
	Leeward Haleakalā Restoration	WP	4,905	332	13,724	2,226	0.27	18.51
	East Maui	WP	203	7,201	369	516	-	6.42
	East Moloka'i, Kamakou, Pelekunu	WP/NAPP	836	15,947	-	6,000	2.42	41.00
	Mo'omomi	NAP	24	175	-	75	-	3.75
	Pu'u Kukui	NAP	4	4,750	3,644	1,623	-	7.17
	Waikamoi and Waikamoi Addition	NAP	435	7,944	-	660	-	18.60
	Kapunakea	NAP	87	1,232	-	67	-	1.19
Kānepu'u	NAP	9	551	-	237	-	8.13	

(Continued from previous page)

Hawai'i	Mauna Kea Ice Age	NAR	-	3,894	-	-	-	0.81
	Pu'u O 'Umi	NAR	54	3,945	270	160	1.50	16.68
	Laupāhoehoe	NAR	23	17	-	-	-	1.12
	Kahauale'a	NAR	5	154	-	140	-	2.76
	Kīpāhoehoe	NAR	52	1,331	590	30	-	9.17
	Pu'u Maka'ala & proposed extension	NAR	70	14,583	3,667	380	3.79	60.53
	Manukā	NAR	5,455	29,858	211	184	-	29.69
	Pu'u Wa'awa'a Sanctuary	NAR	616	4,339	2,120	-	-	19.09
	Koai'a Corridor Sanctuary	NAR	-	277	28	-	-	2.90
	Various other locations	NAR	1,329	36	2,568	-	0.75	1.55
	Three Mountain Alliance	WP	630	34,477	-	-	-	25.00
	Kohala	WP	2	10,624	6,385	844	0.85	25.07
	Mauna Kea Watershed Alliance	WP	246	1,625	-	-	-	11.12
Ka'ū	NAP	34	2,000	-	707	-	8.64	
TOTAL			17,778	186,494	42,226	20,639	11	424

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

*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.

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 O'ahu to grow additional plants for restoration and store seeds in seed banks. Specialized nurseries on Kaua'i, O'ahu, Maui and Hawai'i Island focus on growing rare native plants, which require very specific conditions to thrive.



Newly propagated Kanaloa kahoolawensis. Until recently, only 2 plants existed. This year was the first time this plant reproduced in decades.

- Over the last year, staff had significant success in propagating *Kanaloa kahoolawensis*, an extremely rare plant that is extinct in the wild. Efforts to cross-pollinate the last two plants being kept on Maui resulted in the first new keiki seedlings in decades! This success is an important milestone for a plant that was once one of the most common species in Hawai'i, and now one of the rarest.
- Rare Plant nursery facilities shelter living collections of Hawaii's rarest plants and produce thousands of young plants for ongoing restoration and reforestation projects. Last year, over 10,500 plants of 150 endangered species were produced for restoration projects statewide. These plants were transferred to protected habitat to resume their roles in native ecosystems and prevent extinction.
- The Lyon Arboretum Seed Conservation Lab maintains twelve million seeds of threatened and endangered Hawaiian plants, the single largest collection of its kind in the world. In the last year, 214,000 seeds from 108 collections of 41 rare species were processed and stored. In addition, over 10-million 'ōhi'a seeds are now secured at Lyon Arboretum, providing an important safeguard against rapid 'ōhi'a death. Lyon's Micropropagation Lab continues to maintain over 30,000 germplasm cultures of Hawaiian plants. In the last year, they received 128 new collections from 46 rare Hawaiian species and sent hundred of plants from 54 species out to be planted at restoration projects statewide.

Plant Extinction Prevention Program:

- Plant Extinction Prevention Program (PEPP) and DOFAW botanists conducted conservation actions for over 200 Threatened and Endangered plant species in the last year. Staff focus on priority actions such as surveys, monitoring, collecting seeds, controlling threats from invasive species, and restoration outplanting to create new sites.
- In early 2020, Ma'ō hau hele, Hawaii's State Flower (pictured at right), was returned to Moloka'i for the first time



Ma'ō hau hele, Hawaii's State Flower

since it went extinct there 100 years ago. A partnership between DOFAW, PEPP, Moloka'i Land Trust, Olinda Rare Plant Facility, and the Army Natural Resources Program on O'ahu coordinated the transfer and outplanting of *Hibiscus brackenridgei* to a restoration site in the last year. Another Moloka'i species, *Stenogyne bifida*, was recently rescued from extinction by PEPP and Lyon Arboretum and is now thriving in outplantings back in protected forest near Kamakou.

- A review of recent monitoring data of uhiuhi (*Mezoneuron kawaiense*), a rare tree known from only a few locations on Kaua'i, O'ahu, and Hawai'i Island showed a severe decline. Fewer than fifty trees are remaining in the wild, so it was added as a target for PEPP. Protection of the last remaining trees on Hawai'i Island is being planned for the coming year. Hundreds of seeds are stored at Lyon Arboretum and can be used for future restoration projects throughout the state.

Hawai'i Invertebrate Program (HIP):

- In FY20 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. Over 43,500 Kamehameha butterfly eggs were released.
- 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 O'ahu. A total of 1,236 damselflies have been released at three sites across O'ahu and monitoring is ongoing to determine whether the reintroductions will be successful.
- HIP has received competitive federal grants to continue work on additional rare and endangered species, including picture-wing *Drosophila*, Hawaiian leaf-roller moths, and conduct surveys of rare invertebrate species on Maui Nui.
- Planning commenced to relocate our current Insectary and Rare Snail Labs from the DLNR Baseyard in Kawanui, to Waimano Baseyard in Pearl City where there will be added security and protection from natural disasters.



Above: 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):

- The Snail Extinction Prevention Program works with both public and private partners across the state to protect Hawaii's unique land-snail species, known as the "jewels of the forest" from extinction. Conservation includes surveys and threat assessments, predator control, construction of predator-proof fences, captive propagation, and reintroduction back into the wild. Estimates suggest that approximately 100 species are facing imminent extinction.
- SEPP's captive rearing facility, located on Oahu, currently rears 40 species of rare and endangered snails from five islands for eventual release back into the wild.
- Over the past year SEPP and partners have released into the wild over 2,000 snails representing eight critically imperiled species.

- During this reporting period SEPP completed construction of a predator-proof fence in the Honolulu Watershed Forest Reserve. This is the first fence of its kind in the Southern Ko‘olau Mountains and will protect several beautiful tree-snail species once common in the forests surrounding Honolulu.

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, year round. 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‘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.

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. Most importantly, having a stable staffing is key for effectiveness because the specialized conservation work requires extensive training in wilderness safety and knowledge of remote landscapes and plants and wildlife.

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 raise revenues



Retaining dedicated and highly trained natural resource staff will be the highest priority during budget cuts.

through parking fees for non-residents at ‘Ahihi Kina‘ū NAR once tourists return to Maui. 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.

CONTACT INFORMATION

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 FY19 funds, which largely occurred during FY 20. This report includes only actions funded by the State Watershed Partnership Program Grants; additional partnership work is funded by federal, county and private funds.



Small enclosures to keep out predators are the only way to stop extinction of Hawaii’s unique native snails. This year, a new enclosure was built in Mānoa. The one pictured above is in Poamoho, in the Northern Ko‘olau mountains.