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STATE OF HAWAII | KA MOKU'ĀINA 'O HAWAII'
DEPARTMENT OF LAND AND NATURAL RESOURCES
KA 'OIHANA KUMUWAIWAI 'ĀINA

P.O. BOX 621
HONOLULU, HAWAII 96809

December 13, 2024

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

The Honorable Nadine K. Nakamura,
Speaker
and Members of the House of
Representatives
Thirty-Third State Legislature
State Capitol, Room 431
Honolulu, Hawaii 96813

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

For your information and consideration, I am transmitting a copy of 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 <https://files.hawaii.gov/dlnr/reports-to-the-legislature/2025/FW25-NARS-Report-FY24.pdf>

Sincerely,

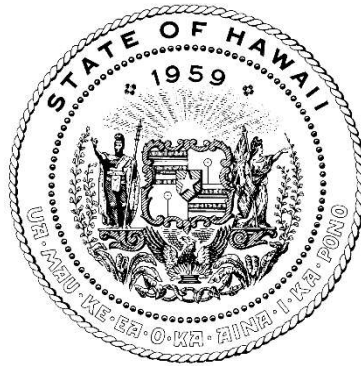
A handwritten signature in black ink, appearing to be "Dawn N.S. Chang".

DAWN N.S. CHANG
Chairperson

Enclosure

**REPORT TO THE THIRTY-THIRD LEGISLATURE
STATE OF HAWAI‘I
2025 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 2024

**RELATING TO THE NATURAL AREA RESERVES SYSTEM,
NATURAL AREA PARTNERSHIP PROGRAM, AND
THE FINANCIAL CONDITION OF THE
NATURAL AREA RESERVE FUND¹**

The main activities of the programs supported by the Native Ecosystem Protection and Management program are fencing and control of hoofed 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.

In fiscal year 2024 (FY24), State funds provided the required match for large Federal grants, more than doubling the State’s investment in native ecosystems and rare species protection. As threats to these species increase, funding active management is critical to keep many species from being lost, and this year, many milestones were reached toward species recovery. For example, the *Cyanea konahuanuiensis*, a flowering plant (right), was discovered less than a decade ago in Mānoa and has fewer than a hundred individuals remaining. This year was the first time propagated plants were replanted back into the wild. While this beautiful plant had a close call with extinction, active management is now leading it toward recovery.



FY24 Accomplishments at a glance:

7	53,849	53	21,056	25,012
Miles of fence constructed	Trees and shrubs planted	Interns mentored in natural resource careers	Acres of invasive plant control	Volunteer hours donated

¹ Section 195-6.6, Hawai‘i Revised Statutes (HRS), requires a 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 Partnerships Program, Hawai‘i Invertebrate Program, Rare Plant Program, and the Information and Education Program.

FY24 Branch Highlights

Kaua‘i



The Kaua‘i program secured another large grant from the Readiness and Environmental Protection Integration program of the Department of Defense to protect the native forests that provide fresh water, reduce erosion, and are home to thousands of unique plants and animals.

O‘ahu



The O‘ahu program trained community volunteers to control invasive weeds independently. The volunteers are tracked through an app that shares weed locations and tracks whether those populations have been controlled. This innovative use of technology dramatically improves volunteer effectiveness. This network of volunteers has removed weeds from native forests across the island.

Maui Nui



At ‘Āhihi Kīna‘u Natural Area Reserve (NAR), the community provided over a thousand hours of volunteer service, including 36 hunters who removed 24 axis deer, 53 goats, and three pigs. The district’s outreach program interacted with over 13,000 community members, including 140 students.

Hawai‘i



While forest bird populations are crashing across the state, the endangered bird populations at Pu‘u Maka‘ala NAR have remained stable, protected by predator trapping across 2,600 acres. This is one of the most extensive trapping efforts statewide and proves that predators can be effectively suppressed on a landscape scale. Eventually, staff hope to build a predator-proof fence that fully protects this core habitat for Hawaii’s forest birds.

Programs

Natural Area Reserves: State lands that preserve in perpetuity specific land and water areas that 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 Hawaii's most important watershed lands. 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.

Rare Plant Program (RPP): Perpetuates the unique native flora of Hawai‘i. In FY 24, State funds were matched over 4:1 by federal dollars. The RPP supports plant nurseries and seed storage facilities on Kaua‘i, O‘ahu, Maui, and Hawai‘i Island. These facilities grow thousands of threatened and endangered plants yearly to restore native plant communities in protected habitats. The RPP also administers Hawai‘i’s Plant Extinction Prevention Program (<http://www.pepphi.org/>), which focuses efforts on 270 of the rarest native plant species, each with fewer than 50 individuals remaining in the wild. Nearly 10% of Hawai‘i’s native plants have gone extinct. Together, these programs provide a safety net, preventing further extinction of plant species found nowhere else in the world.



The last known wild Nā‘ū (*Gardenia brighamii*) on O‘ahu was observed to have died in the last year. The only remaining wild plants are on Lāna‘i, but an ambitious project to reintroduce it across the state is beginning. Collections secured from the last plants on O‘ahu, Moloka‘i, and Lāna‘i will all be grown together to increase the diversity in new populations.

Hawai‘i Invertebrate Program: Insects and other invertebrates are experiencing catastrophic declines worldwide, which have a cascade of impacts on native ecosystems and people. Hawai‘i is no exception to this trend. The Hawai‘i Invertebrate Program (HIP) seeks to stabilize and recover rare native invertebrate species through captive rearing, translocations, habitat enhancement, research, and policy. HIP is a partnership with the U.S. Fish and Wildlife Service and includes the Snail Extinction Prevention Program. Estimates suggest that over 100 snail species are facing imminent extinction.

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.

Information and Education Program: Connects with communities through press releases, community events, presentations, websites, social media, field trips, classroom visits, volunteer trips, educator support, and workforce training opportunities through the Youth Conservation

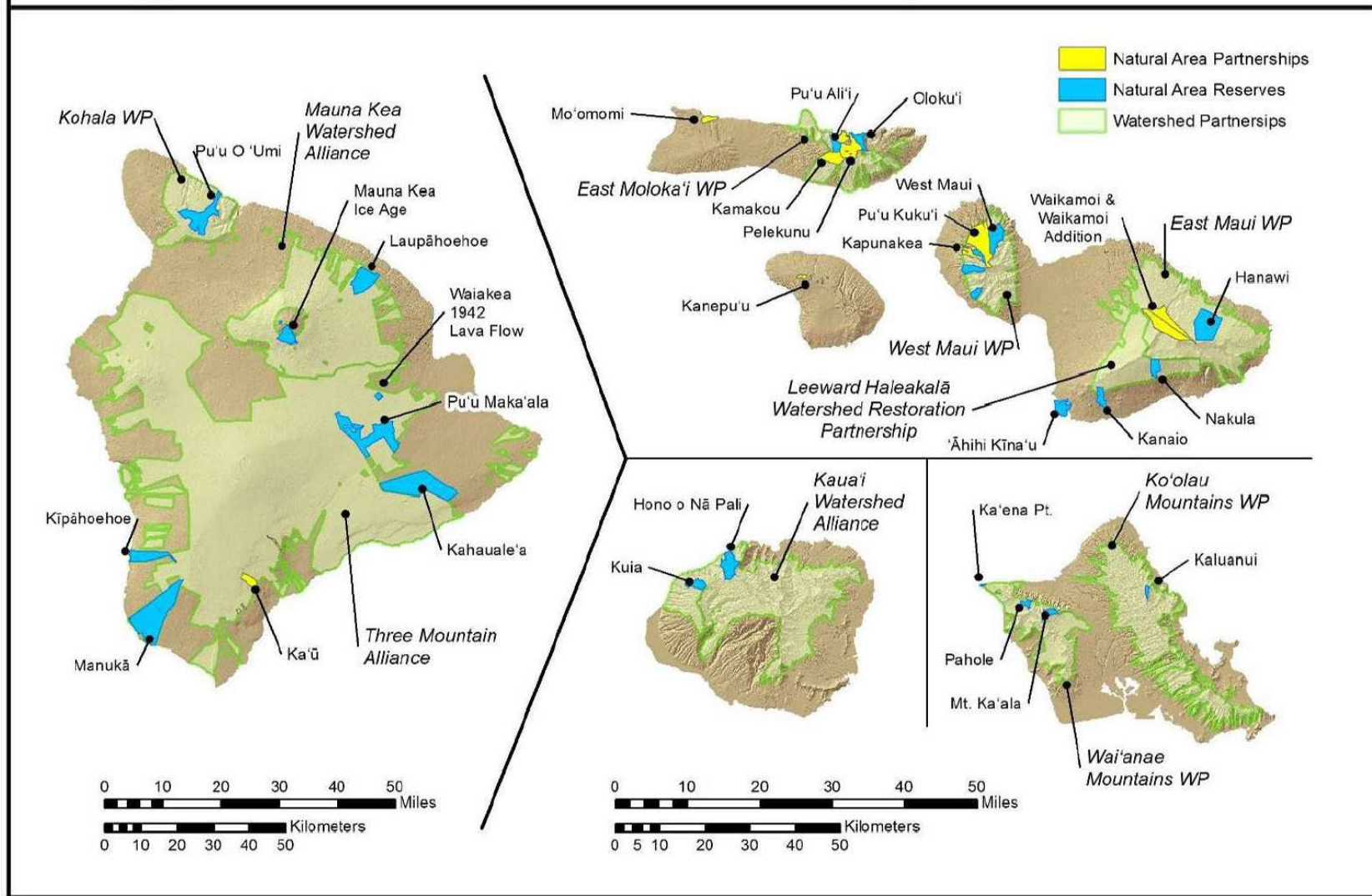
Corps (YCC) and its sustainability subprogram known as the Green Jobs Youth Corps (GJYC). These programs enable young adults to gain entry-level experience working with natural resource professionals. In FY24, funding routed through this program supported many members working across conservation and sustainability organizations, with roughly 53 members placed at DLNR Forestry & Wildlife and associated projects. In FY24, the Information and Education Program recorded an estimated 36,100 attendees at in-person outreach and education events. Division-level social media had an estimated reach of 404,968, and our division website pageviews totaled 1,620,022. We use the National Association of State Foresters definition of “direct contacts” to combine these three metrics for a total estimate of 2,061,090 direct contacts in FY24.



Dozens of species of kāhuli, the native Hawaiian snails, have gone extinct in the wild, and only remain in captive propagation in a laboratory in Waimano, O‘ahu. This year, thousands of snails have been released back into the wild in fenced protected forests.



Natural Area Reserves, Natural Area Partnerships, and Watershed Partnerships



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

FY 24 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
Kauai'i	Hono O Nā Pali	NAR	10	3,578	430	160	-	5.40
	Kūia	NAR	33	133	582	570	-	4.81
	Līhue Kōloa Forest Reserve	NAR	6	23	50	-	-	0.15
	Honopu	NAR	25	238	5	-	-	2.50
	Kauai Invasive Species Committee	WP	262	-	-	-	-	-
Kauai Watershed Alliance	WP	240	9,000	-	-	0.07	13.10	
O'ahu	Pahole	NAR	40	650	1,550	1,431	-	7.00
	Ka'ena Point	NAR	8	65	1,253	236	-	0.40
	Mt. Ka'ala	NAR	34	1,526	193	1,233	-	9.75
	Poamoho (Ewa Forest Reserve)	NAR	22	1,300	201	-	-	-
	Kahuanu	NAR	5	540	67	100	-	4.50
	Pia	NAR	1	-	498	56	-	-
	Various other locations	NAR	5	741	1,590	40	-	<1
	O'ahu Invasive Species Committee	WP	22	-	-	-	-	-
	Waianae Mountains WP	WP	115	-	7,500	6,316	0	10
	Ko'olau Mountains	WP	1,712	2,306	1,105	2,620	0.70	5.60
Maui, Molokai, and Lanai	'Āhihi-Kīna'u	NAR	17	626	200	1,146	-	4.40
	Hanawī	NAR	-	6,411	-	-	-	14.30
	Nakula	NAR	-	1,500	-	-	-	8.90
	Kanaio	NAR	75	1,450	-	480	-	7.60
	West Maui	NAR	-	5,461	1,200	180	0.12	8.00
	Pu'u Ali'i & Oloku'i	NAR	-	2,950	-	-	-	6.65
	Mauna Kahalawai (West Maui)	WP	20	9,512	-	-	2.32	4.90
	East Maui	WP	325	11,650	-	-	-	6.40
	East Molokai, Kamakou, Pelekunu	WP/NAPP	350	15,947	306	127	0.90	18.30
	Auwahi	WP	184	-	1,158	-	-	-
	Malama Haleakala	WP	400	-	370	-	-	-
	Mo'omomi	NAP	17	175	-	80	-	3.75
	Pu'u Kukui	NAP	85	4,750	430	6,812	-	10.00
	Waikamoi, Kapunakea, Kanepu'u	NAP	537	7944	42	715	-	15.00
	Hawaii	Mauna Kea Ice Age	NAR	-	3,894	-	-	-
Pu'u O 'Umi		NAR	177	4,392	82	-	0.99	18.14
Laupāhoehoe		NAR	13	17	-	-	-	1.12
Kahaule'a		NAR	4.25	150	-	104	-	2.77
Kīpāhoehoe		NAR	114	4,099	98	-	-	16.79
Pu'u Maka'ala & proposed extension		NAR	420	12,802	57	180	0.37	55.91
Mamūā		NAR	5,014	25,550	-	-	-	29.69
Waiea		NAR	6	1	-	-	-	0.21
Pu'u Wa'awa'a Sanctuary		NAR	17	3,748	648	-	-	15.53
Koai'a Corridor Sanctuary		NAR	-	222	40	182	-	2.90
Various other locations		NAR	130	168	-	-	-	10.71
Three Mountain Alliance		WP	10,182	34,477	9,376	2,044	-	73.30
Kohala		WP	24	1,834	2,524	200	1.61	24.15
Mauna Kea Watershed Alliance		WP	40	1,100	400	-	-	5.78
Waipunalei - Parker Ranch		WP	366	-	21,894	-	-	-
Ka'ū	NAP	-	2,000	-	-	-	8.64	
TOTAL			21,056	182,930	53,849	25,012	7	438

Acronym s:

WP: Watershed Partnership

NAR: Natural Area Reserve

NAP: Natural Area 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.



Building fences to exclude hooved animals is the most effective way to protect native forests from Rapid 'Ōhi'a Death. Fenced areas can have 63 times less ROD mortality than in adjacent unfenced forests.

Additional Statewide Accomplishments

Hawaiian Mid-Elevation Rare Plant Facilities:

- DOFAW's Rare Plant Program uses an integrated approach that protects native plants where they live and uses specialized nurseries to grow plants for restoration and store seeds in seed banks. Cutting-edge research on micropropagation, cryo-preservation, and seed banking is underway. Over the last year, these efforts have secured hundreds of collections of native plants in storage, where they are safely held until they are needed for species recovery projects that will return them to protected habitats.



Endangered plants are being grown at O'ahu, Kaua'i, and Hawai'i Island nurseries.

- Plant nursery facilities shelter living collections of Hawai'i's rarest plants and produce thousands of young plants for ongoing restoration and reforestation projects. Last year, over 10,000 plants of 155 endangered species were produced for restoration projects statewide. These plants were transferred to protected habitats to resume their roles in native ecosystems and prevent extinction. Other plants are kept in the nursery facilities for breeding and seed production.



An aging shade house at the nursery facility on Hawai'i Island was replaced last year.

- With support from DOFAW’s Rare Plant Program, the Seed Conservation Lab at the University of Hawai‘i’s Lyon Arboretum maintains over 33 million seeds of native Hawaiian plants, the world’s single most extensive collection of its kind. In the last year, 1,085,643 seeds were processed and stored from over 309 collections of 139 rare species. In addition, nearly 13 million ‘ōhi‘a seeds are now secured at Lyon Arboretum, providing an essential safeguard against Rapid ‘Ōhi‘a Death.
- Lyon Arboretum’s Micropropagation Lab maintains over 37,000 germplasm cultures of threatened and endangered plants. In the last year, they received 201 new collections from 43 different species and sent hundreds of individual plants to be planted at restoration projects statewide. DOFAW’s Rare Plant Program supports these projects at Lyon.



Damage from CRB on Loulu palms, collection efforts, and resulting seedlings of Loulu.

Plant Extinction Prevention Program:

Over the last year, staff on Kaua‘i collected spores of Palai lā‘au (*Adenophorus periens*), a critically rare fern that is now being grown for the first time at Lyon Arboretum. On O‘ahu, efforts have focused on securing collections of Loulu (*Pritchardia* spp.), Hawai‘i’s native palm trees that are being destroyed by Coconut Rhinoceros Beetle (see pictures above). Moloka‘i staff partnered with the National Tropical Botanical Garden to conduct drone surveys of inaccessible cliffs where the last known populations of Pua‘ala (*Brighamia rockii*) and Koki‘o ke‘oke‘o (*Hibiscus arnottianus* subsp. *immaculatus*) are found on Maui, worked with National Park Service crews to outplant ‘Oha wai (*Clermontia samuelii*) into protected habitat. Hawai‘i Island staff continued working with the Center for Mauna Kea Stewardship to restore and protect ‘Āhinahina (*Argyroxiphium sandwicense* subsp. *sandwicense*). Read more about the accomplishments of the Rare Plant Program here: [Hawai‘i Rare Plant Conservation Highlights 2023](#).



On Moloka'i, DOFAW, PEPP, and NTBG staff use drones to survey cliff sites for rare plants.

Hawai'i Invertebrate Program (HIP):

- The HIP continues to direct vital resources to stabilize and recover populations of rare, threatened, and endangered insect species, leveraging state funds to obtain federal grants.
- HIP was awarded a second year of funding from the DOD Readiness and Environmental Protection Integration program to continue to work with nine endangered insect species (including yellow-faced bees, damselflies, and picture-wing *Drosophila* flies).
- The HIP also received a new State Wildlife Grant to pursue conservation and research of native picture-wing *Drosophila* flies, focusing on improving heat tolerance and survivorship in the context of increasing temperatures, given our changing global climate.
- HIP staff continued work on invasive invertebrate species: 1) provided technical support and facilitated planning for the control of the invasive southern house mosquito in endangered forest bird habitat; 2) secured funds and assisted with planning for yellow-fever mosquito control projects in collaboration with the Hawai'i Department of Health.

- More than 4,500 endangered orange-black damselflies were raised at the DLNR-DOFAW Insectary in Kawainui and released into the wild, contributing to the continued effort to recover damselfly populations on O'ahu. Conservation work with a second species (the endangered blackline damselfly) was also initiated, and 64 captive-reared individuals have now been released into the Waianae Kai Forest Reserve.



Hawaiian orange-black damselfly.

- In collaboration with the University of Hawai‘i at Mānoa, captive rearing concluded for two highly endangered picture-wing fly species. 17,466 *D. montgomeryi* and 13,361 *D. hemipeza* were reared and released at the Mānoa Cliffs Restoration Area on Mount Tantalus and the Ekahanui Management Unit in Honouliuli FR.
- Congressionally directed funding was awarded for constructing a joint Forestry and Wildlife Rare Plant and Rare Invertebrate Rearing Facility in Olinda, Maui. The establishment of this laboratory will enable applied management and conservation work to be expanded to additional rare Maui Nui invertebrate species.

Snail Extinction Prevention Program (SEPP):

- SEPP and participating partners including the Bishop Museum and Honolulu Zoo released their 10,000th snail back into the wild into protected habitat.
- SEPP successfully established *Achatinella concavospira*, raised in captivity, into two protected areas outside its historical range. This is the first time this type of translocation has been conducted.
- SEPP and partners maintained over 20,000 rare and endangered snail species in captivity.
- SEPP worked with Rouge Detection Teams, a company that trains shelter dogs for conservation detection work. SEPP now has a detection dog on its team that assists with removing invasive predators from endangered snail sites. This dog was adopted from the Hawai‘i Island Humane Society.
- SEPP received funds from the U.S. Fish and Wildlife Service to establish public-facing captive-rearing laboratories at the Honolulu Zoo and Bishop Museum. In FY24, the lab spaces were constructed and outfitted with equipment. During FY25, SEPP will transfer snails, and the labs will be open to the public.
- SEPP received funds from the National Geographic Society to construct a predator-proof fence to protect endangered snails on O‘ahu.
- Governor Josh Green declared 2023 the Year of the Kāhuli to bring attention to the plight of Hawaii’s endangered snails. This kicked off a year-long outreach blitz, culminating with a documentary film featuring the program’s efforts.
- In 2024, the Maui SEPP program constructed 500 feet of fencing, out-planted 1,200 plants, and had 180 hours of help from volunteers.



Achatinella lila are extinct in the wild and only exist inside the Snail Extinction Prevention Program’s captive rearing facility. As of FY24 the captive colony is over 2,000 snails strong and is slated for reintroduction in the coming years.

STATUS OF PUBLIC HUNTING OPPORTUNITIES

Under the NARS management policies, strategies to reduce populations of non-native animals to the lowest possible level are to be employed. Public hunting continues to be utilized in many areas within Natural Area Reserves, with most lands now open to hunting year-round daily. Staff animal control, including fencing, trapping, staff hunting, snaring, and aerial shooting, are used as needed or as resources permit in areas where public hunting cannot reduce hooved animal impacts to low enough levels. Staff continue to work with hunting organizations and others to find ways to achieve the animal control goals of the program and provide opportunities for the hunting community. For example, ‘Āhihi-Kīna‘u Natural Area Reserve is all state land, but a portion is closed for safety reasons. The reserve allows registered hunters to enter this closed area to help control feral ungulates. In 2024, 36 hunters spent 338 hours, removing 24 axis deer, 53 goats, and three pigs. Volunteer hunters are essential to relieve pressure on native resources in the unfenced area of this reserve.

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 can hunt in portions of the preserve when it does not interfere with management, guided hikes, or ranch employee hunting.
- 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

The hiring process for external staff continues to take longer than expected. However, the Department is attempting to fill vacancies as quickly as possible. The Department will seek ways to reinstate more top-priority positions. These civil service positions provide experience and long-term oversight for highly complex natural resource management programs, and their duties cannot be contracted. These staff serve as firefighters and natural disaster responders. Stable staffing is critical for effective program management as specialized conservation work requires extensive training in wilderness safety, disaster response, and knowledge of remote landscapes and hundreds of species of 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 under Act 84, SLH 2015.

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.