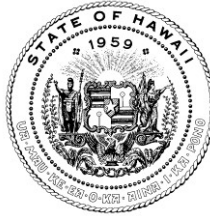


DAVID Y. IGE  
GOVERNOR OF  
HAWAII



**DEPT. COMM. NO. 86**

SUZANNE D. CASE  
CHAIRPERSON  
BOARD OF LAND AND NATURAL RESOURCES  
COMMISSION ON WATER RESOURCE MANAGEMENT

ROBERT K. MASUDA  
FIRST DEPUTY

M. KALEO MANUEL  
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES  
BOATING AND OCEAN RECREATION  
BUREAU OF CONVEYANCES  
COMMISSION ON WATER RESOURCE MANAGEMENT  
CONSERVATION AND COASTAL LANDS  
CONSERVATION AND RESOURCES ENFORCEMENT  
ENGINEERING  
FORESTRY AND WILDLIFE  
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 1, 2022

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

The Honorable Scott K. Saiki, Speaker  
and Members of the House of  
Representatives  
Thirty-Second 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 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/2023/FW23-NARS-FY22.pdf>.

Sincerely,

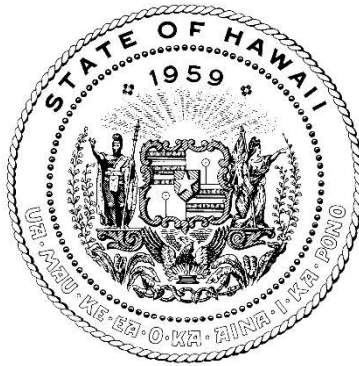
/s/ *Suzanne D. Case*

SUZANNE D. CASE  
Chairperson

Enclosure

**REPORT TO THE THIRTY-SECOND LEGISLATURE  
STATE OF HAWAI‘I  
2023 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  
October 2022

**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 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.

*FY 22 Accomplishments at a glance:*

21	19,664	60,000	10,171	11,999
Miles of fence constructed	Trees and shrubs planted	Hours of youth intern service contributed	Acres of invasive plant control	Volunteer hours donated

**Act 90, Session Laws of Hawaii 2003 Pasture Transfer Issue**

The past three legislative sessions have heard bills that would transfer Department of Land and Natural Resources (DLNR) lands in the agricultural district to the Department of Agriculture. While DLNR supports the transfer of many of these areas, a transfer of all of the lands would be detrimental to watershed protection, endangered species, and public access and hunting resources. DLNR cooperates with ranchers on co-managing many of these areas for native tree planting sites, invasive species removal, and oversees tens of thousands of acres of public hunting lands on these leases. Since many of these areas are not productive ranch lands because they are landlocked, dry, remote, forested, or steep, ranchers have voluntarily offered certain lands to DLNR to set aside as Reserves for watershed and rare species protection. Legislation to transfer all these lands to the Department of Agriculture (DOA) would sever DLNR’s ability to manage these areas, and result in areas with high-quality native forest potential and areas with other natural and cultural resources being managed by DOA.



*Above: Community volunteers replanting near the Koaia Tree Sanctuary in Kohala, part of a ranching lease set aside for restoration.*

Currently, the law requires each parcel to be reviewed by subject matter experts of the Board of Agriculture and the Board of Land and Natural Resources to determine the appropriate agency to





oversee the lands. The DLNR supports this existing process to review lands individually. The Legislature established a working group which recommended that some of these lands are multi-use and should remain in DLNR. The working group also recommended giving DLNR the same authority that DOA has to directly negotiate lease rents. This would facilitate long-term leases and provide ranchers security. DLNR will continue to seek legislative authorization in upcoming sessions.

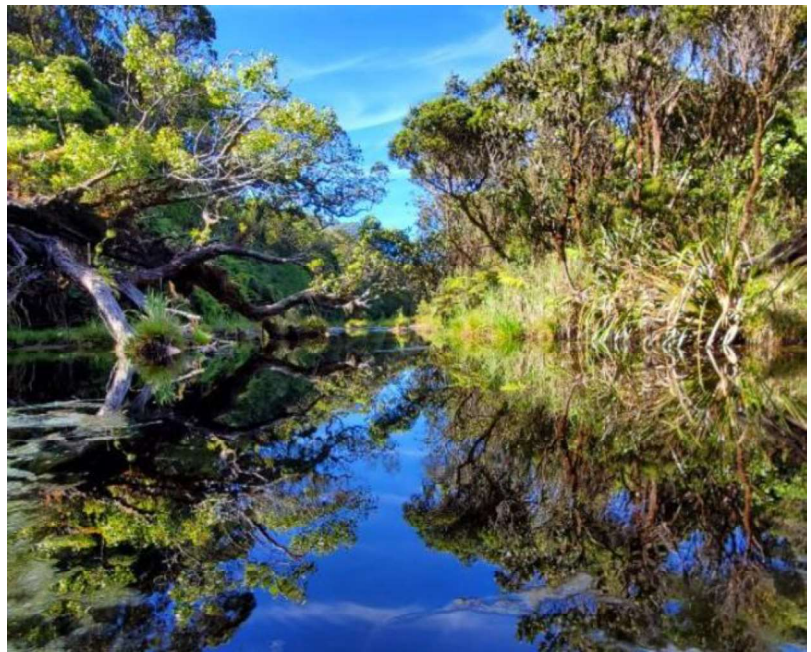
This website provides more details on this issue:  
[Revocable Permit & General Lease Land Transfers \(arcgis.com\)](https://arcgis.com)

This website details how the Division of Forestry and Wildlife is critical for agriculture and food security:  
[Forests and Farming \(arcgis.com\)](https://arcgis.com)

*Left: Old-growth forest in the agricultural district in Kona that is landlocked and unusable for ranching. This area has been recently designated as the Waiea Natural Area Reserve and DLNR is fencing it. DLNR would not have the direct authority to do this important work if these areas were transferred to DOA.*

### **30x30 Watershed Initiative**

Progress continues on the goal to protect 30% of priority watershed forests by 2030. The Legislature's historic allocation of \$8 million of CIP funds for Watershed Initiatives, Statewide for FY23 will hasten progress toward that goal at an urgent time. The fences funded by that CIP are critical for dealing with the Emergency Proclamations for deer, increased drought, and as the only landscape-level tool available to dramatically reduce the spread of Rapid 'Ōhi'a Death. Pictured to the right is Kauai's Alakai forest, where two new fenced units were completed.



These fences protect 2,300 acres of irreplaceable forest from damage from goats, pigs, and deer. The forests in these fenced units purify and supply water for western Kaua'i. These fences also protect habitat for some of the world's rarest birds and plants. In fact, Kaua'i has over 75 species of plants that have fewer than 50 individuals remaining in the wild.

## FY22 Branch Highlights



### Kaua`i

Three new predator proof fences were constructed near the Kalalau rim – totaling 17 new acres that will be sanctuaries for extremely rare species such as the critically endangered Newell's Shearwater (A'o). These fences will provide a place for these birds to nest without being preyed upon by rodents, cats, and pigs.



### O`ahu

A large grant from the Department of Defense Readiness and Environmental Protection Integration program was awarded to protect forests that supply water for the Pearl Harbor aquifer. Economic studies have published high benefit-to-cost ratios for these forest protection projects (like fencing Waiawa) to keep water supplies plentiful now and in the future.



### Maui Nui

Five areas have been proposed to be added to the Natural Area Reserve System in Maui and Moloka`i, including a new NAR in Kaumanu (near Hana) and extensions of the `Ahihi-Kina`u, Kanaio, Pu`u Ali`i, and Nakula NARS. These expansions will allow the program to restore new areas. Pictured at left is a tree planting project at Nakula, which will expand with the new NAR lands added.



### Hawai`i Island

The program has established one of the largest predator control grids at Pu`u Maka`ala – spanning 500 acres. Surveys have found a nearly 90% reduction in rat populations due to this ongoing predator control work. This helps save endangered forest birds such as the `I`iwi and many other birds whose populations are restricted to just a few remaining forest sites.



## Programs

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.

**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 unique native flora of Hawai‘i. In FY 22, State funds were matched over 3:1 by Federal dollars. The Program 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 every year for restoring native plant communities in protected habitats. The Program also includes the Plant Extinction Prevention Program which focuses efforts on the 260 rarest native plant species with fewer than 50 individuals remaining in the wild. Nearly 10% of Hawai‘i’s native plants are already extinct. Together, these programs provide a safety net, preventing further extinction of plant species found nowhere else in the world. New plant species are still being discovered during surveys of remote natural areas and drone surveys of inaccessible cliffs.



*Omiodes anastrepta* is an endemic leafroller moth which had disappeared from Oahu over 30 years ago. Thanks to staff at HIP, the species was reintroduced to two different Oahu natural areas in FY 22.

**Hawai'i Invertebrate Program:** Directs resource management, monitoring, research, conservation, and policy relating to rare and federally listed threatened and endangered native invertebrate species. Insects and other invertebrates are experiencing catastrophic declines worldwide and those declines have a cascade of impacts on native ecosystems and people. Hawai'i is no exception to this trend, which is why Hawai'i Invertebrate Program seeks to stabilize and recover rare native invertebrate species through captive rearing, translocations and habitat enhancement. In FY 22, State funds were matched 4:1 by Federal funds. HIP includes the Snail Extinction Prevention Program, a partnership with the U.S. Fish and Wildlife Service.

**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 providing approximately 60,000 hours of service.

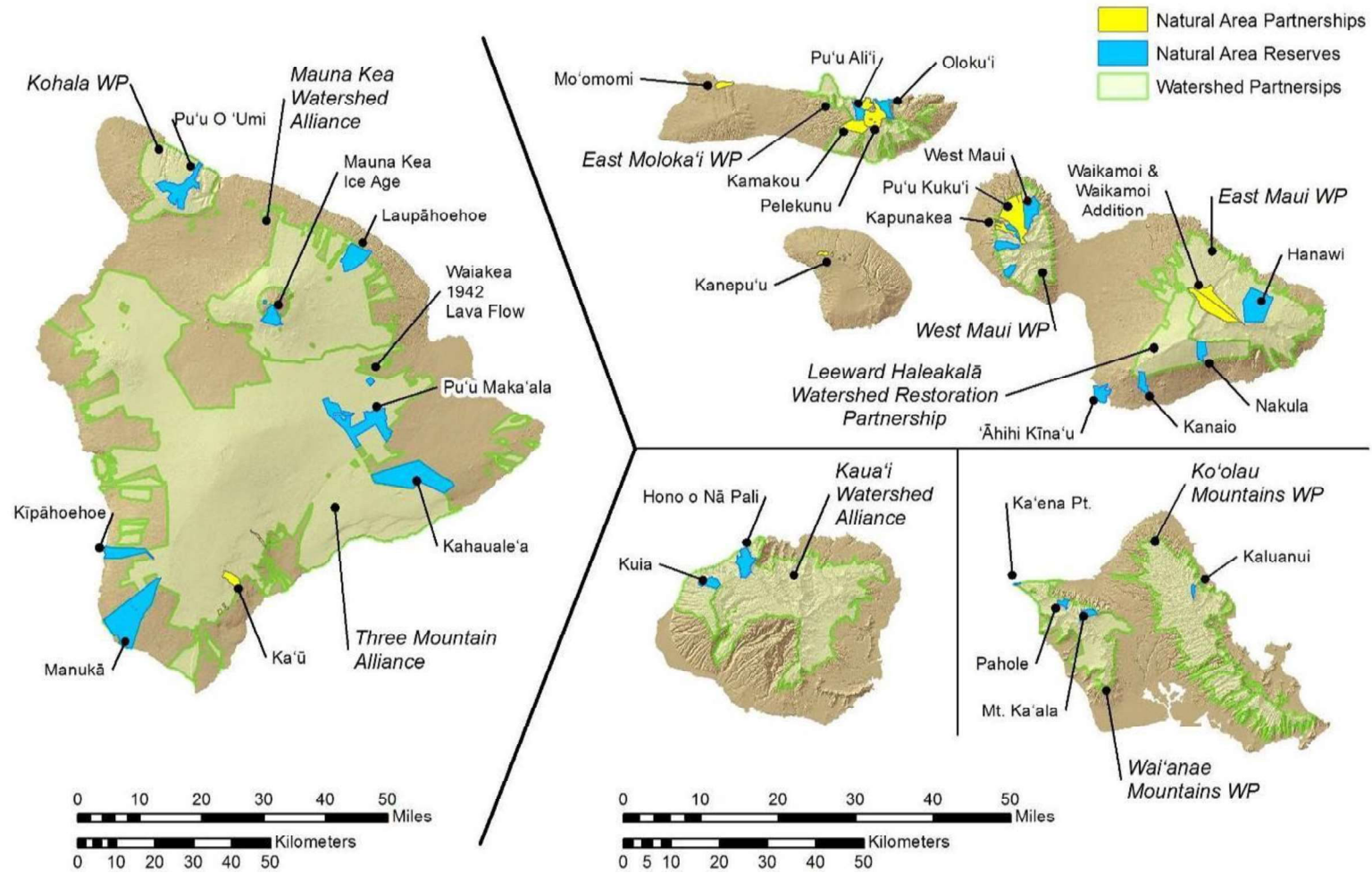


*Youth Conservation Corps members at Kawainui marsh.*





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



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



FY 22 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	20	3,578	970	461	-	4.10
	Kiua	NAR	42	133	1,455	691	-	4.81
	Lihue Kōloa Forest Reserve	NAR	-	23	-	-	-	0.15
	Honopu	NAR	-	-	-	-	1.32	1.77
	Kauai Invasive Species Committee	WP	125	-	-	-	-	-
	Kaua'i Watershed Alliance	WP	19	9,000	-	-	5.80	13.10
O'ahu	Pahole	NAR	24	650	2,016	620	-	7.00
	Ka'ena Point	NAR	4	65	887	38	-	0.40
	Mt. Ka'ala	NAR	2	1,526	183	378	-	9.75
	Poamoho (Ewa Forest Reserve)	NAR	1	1,300	394	-	-	-
	Kaluanui	NAR	203	540	646	-	-	-
	Pia	NAR	-	-	92	-	-	-
	Various other locations	NAR	105	10	1,868	230	3.00	1.00
	O'ahu Invasive Species Committee	WP	11	-	-	-	-	-
	Wai'anae Mountains WP	WP	6	**	-	-	-	**
	Ko'olau Mountains	WP	167	**	-	1,924	0.13	14.50
Maui, Moloka'i, and Lana'i	'Āhihi-Kīna'u	NAR	20	626	200	1,228	-	4.40
	Hanawī	NAR	100	6,411	-	-	-	14.30
	Nakula	NAR	50	1,500	2,500	-	-	8.90
	Kanaio	NAR	469	1,450	200	-	-	7.60
	West Maui	NAR	-	5,461	-	-	-	3.60
	Pu'u Ali'i & Oloku'i	NAR	-	2,950	-	-	-	6.65
	Mauna Kahalawai (West Maui)	WP	34	9,512	-	215	-	4.90
	Leeward Haleakalā Restoration	WP	-	5,524	-	-	0.75	18.31
	East Maui	WP	233	7,201	-	42	-	6.42
	East Moloka'i, Kamakou, Pelekunu	WP/NAPP	400	15,947	-	1,740	1.50	11.00
	Mo'omomi	NAP	16	175	-	480	-	3.75
	Pu'u Kukui	NAP	49	4,750	709	2,322	-	8.12
	Waikamoi and Waikamoi Addition	NAP	1,378	7,944	-	231	-	15.00
	Kapunakea	NAP	111	1,232	-	46	-	1.08
Kānepu'u	NAP	3	529	-	144	-	8.29	
Hawai'i	Mauna Kea Ice Age	NAR	-	3,894	300	-	-	0.81
	Pu'u O 'Umi	NAR	101	3,531	406	16	1.49	17.14
	Laupāhoehoe	NAR	13	17	549	-	-	1.12
	Kahuale'a	NAR	2	150	293	-	-	2.77
	Kipāhoehoe	NAR	68	1,336	1,123	8	1.50	10.97
	Pu'u Maka'ala & proposed extension	NAR	364	12,800	1,858	144	-	55.91
	Manukā	NAR	4,469	25,550	237	-	-	29.69
	Pu'u Wa'awa'a Sanctuary	NAR	39	3,748	374	36	-	15.53
	Koai'a Corridor Sanctuary	NAR	1	222	220	-	-	2.90
	Various other locations	NAR	1,412	158	2,184	-	1.56	8.47
	Three Mountain Alliance	WP	-	34,477	-	-	2.50	8.20
	Kohala	WP	33	1,124	-	383	-	15.00
	Mauna Kea Watershed Alliance	WP	46	1,100	-	-	1.20	5.78
Ka'ū	NAP	32	2,000	-	622	-	8.64	
<b>TOTAL</b>			<b>10,171</b>	<b>178,144</b>	<b>19,664</b>	<b>11,999</b>	<b>21</b>	<b>362</b>

Acronyms:

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.*

\* 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.



*Above: Partners constructing fence in Waiawa, O'ahu. Ko'olau Mountains Watershed Partnership.*

## *Additional Statewide Accomplishments*

### **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 nurseries to grow plants for restoration and store seeds in seed banks. Cutting-edge research on micropropagation, cryo-preservation, and seed banking is underway. These technologies will secure collections of native plants in storage until they are needed for species recovery.



*Pseudognaphalium sandicensium var. molokaiense*, a rare plant found at 'Ilio point on Moloka'i.

- 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 15,900 plants of 185 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 Seed Conservation Lab at Lyon Arboretum maintains twelve million seeds of threatened and endangered Hawaiian plants, the single largest collection of its kind in the world. In the last year, 275,500 seeds from over 350 collections of 80 rare species were processed and stored. In addition, over 11 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 34,000 germplasm cultures of threatened and endangered plants. In the last year, they received 142 new collections from 24 different species and sent hundreds of individual plants out to be planted at restoration projects statewide.

### **Plant Extinction Prevention Program:**

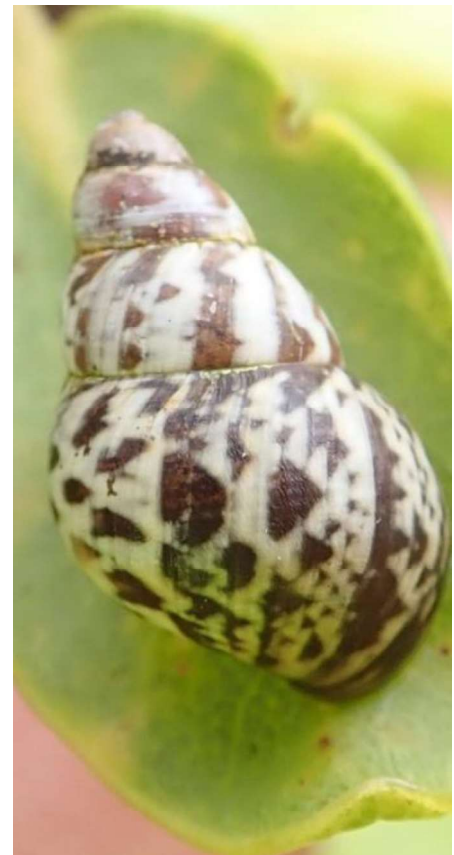
- Over the last year, staff on Kaua'i rediscovered a population of *Silene lanceolata*, a species not seen on the island since 1840. Hundreds of *Lobelia oahuensis*, a rare species only found on O'ahu, were planted back into protected habitat for the first time. Moloka'i staff protected *Solanum nelsonii* at 'Ilio Point, where the last plant was being browsed by feral deer. On Maui, staff hand-pollinated *Portulaca molokiniensis*, producing hundreds of seeds for planting back into the wild. Hawai'i Island successfully added *Gardenia remyi* to their nursery collection.
- Plant Extinction Prevention Program (PEPP) and DOFAW botanists worked to conserve 220 rare plant species. Staff focus on priority actions included surveys, monitoring, collecting seeds, controlling threats from invasive species, and restoration out-plantings at over 100 sites.

### **Hawai'i Invertebrate Program (HIP):**

- Received an additional \$500,000 in competitive grants to continue work with endangered yellow-faced bees, nalo meli maoli, on O`ahu and Maui. These bees are found nowhere else in world and pollinate a diverse array of unique native plants.
- Awarded a \$100,000 grant to support a Survey Entomologist to conduct surveys and assess the status of native insects statewide, as well as prioritize conservation and management needs.
- HIP has also received competitive federal grants to continue work on invasive invertebrate species. For example, a project to further planning and implementation to control the invasive southern house mosquito using incompatible insect technique in endangered forest bird habitat.
- A total of 5,560 endangered orange-black damselflies were raised at the DLNR-DOFAW Insectary in Kawainui and released to a reintroduction site at the Dillingham Military Reservation and a declining population at Tripler Army Medical Center in FY22, contributing towards the continued effort to recover populations of the damselfly on O`ahu.
- In collaboration with UHM, captive rearing is underway for two highly endangered picture-wing fly species: *Drosophila hemipeza* and *D. montgomeryi*. Additionally, a total of 835 individuals of another declining picture-wing fly, *D. ambochila*, have been reared and released on O`ahu.
- Two species of Hawaiian leaf-roller moths have also been reintroduced into areas of Oahu where they had previously disappeared. A total of 541 *Omiodes anastrepta* and 825 *O. continuatalis* have been released and monitoring will continue to evaluate population establishment.

### **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 over 100 snail species are facing imminent extinction, such as *Perdicella helena* (right).
- Over the past year SEPP released over 7,000 rare snails from captive rearing back into the wild.
- SEPP has received a \$500,000 Competitive State Wildlife Grant from the U.S. Fish and Wildlife Service to partner with the Honolulu Zoo and the Bishop Museum to establish duplicate captive rearing facilities for rare and endangered snails. This will create a safety net for many species and allow the public to view these animals and learn about snail conservation efforts.





## **STATUS OF PUBLIC HUNTING OPPORTUNITIES**

Under 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 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 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, 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 elimination of seven vacant positions within LNR 407 during the 2021 legislative session was a significant setback, however, these positions were restored for FY23 so the Department will be expediting the hiring process to regain these much-needed staff. The Department will seek ways to reinstate more top priority positions as the budget situation improves. These civil service positions provide experience and long-term oversight for highly complex natural resource management programs, and their duties cannot be contracted. Having stable staffing is key for effective program management as specialized conservation work requires extensive training in wilderness safety 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, pursuant to Act 84, SLH 2015. However, the Department is raising revenues through parking fees for non-residents at ‘Āhihi 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 Department has received a ceiling authorization to use these funds in FY23, where they will be used to keep the NAR safe, sanitary, and protected from multiple threats, including invasive species and poachers.

## **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.