

ECOSYSTEM

MANAGEMENT PROGRAM BULLETIN

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Pacific Cooperative Studies Unit



The alluring leaves of the lapalapa tree, *Cheirodendron platyphyllum*, dance in the breeze along the summit of Ka'ala.

FROM THE EDITORS

IN OUR OWN BACKYARDS, aliens have landed and are preparing to call the Hawaiian Islands “home.” These invasive species have become one of the greatest threats to our native ecosystems and fragile endangered species found nowhere else in the world. In our age of global connectivity, invasive species enjoy the same ease of travel that we do.

While some of these invaders are here to stay (take strawberry guava, *Psidium cattleianum*, for example), many newcomers—incipient weeds—have yet to gain a foothold.

The battle against invasive weed species has become an obsession for Jane Beachy, the Ecosystem Restoration Program manager with the O'ahu Army Natural Resources Program. As Jane explains in this issue, one of the keys to winning the fight is early detection. Regular weed surveys can prevent recently introduced weeds from naturalizing and alert staff to new species that may pose serious risks to Hawai'i's native ecosystems, agriculture, human recreation and human health.

Jane's diligence has not gone unnoticed. The Hawai'i Invasive Species Council recently awarded Jane with the title “O'ahu MVP 2014” for her work overseeing the Army's continued control and monitoring efforts to prevent the spread of invasive weeds and for displaying dedicated rapid response to new invasive species introductions.

ON THE COVER **The invasive rough Mexican clover (*Richardia scabra*) was just one of many exotic weeds found on a recent OANRP weed survey along Palehua Road, adjacent to the Honouliuli State Forest Reserve.**

The Ecosystem Management Program Bulletin (EMP) is a means of highlighting the U.S. Army Garrison-Hawai'i's (USAG-HI) innovative approaches to natural and cultural resource management.

Following these same pathways of innovation, with this issue, the EMP unveils a new look. A greater emphasis on field photography and the inclusion of more information about the authors will provide readers with immediate connections to the resources and to the people working to protect these treasures.

We will continue to feature articles written by staff from both the Natural and Cultural Resources Programs of the USAG-HI Directorate of Public Works, Environmental Division. With the combined knowledge and expertise of these passionate conservationists, we hope to provide readers with a greater perspective on the varied challenges and successes in the fields of natural and cultural resource management here in Hawai'i.

Kimberly Welch & Celeste Ventresca,
Editors



JANE BEACHY

"If OANRP decides that control is warranted for a particular invasive species, collaboration becomes critical."

Jane Beachy has been with OANRP for over 10 years. This past March she was recognized by the State of Hawai'i for emphasizing collaboration between partners and stakeholders when responding to recent invasive weed introductions here on O'ahu. Beachy maintains a Flickr account to help others identify weed species found here in Hawai'i. Follow oanrp weeds on Flickr at [HTTPS://WWW.FLICKR.COM/PHOTOS/61414725@N03/](https://www.flickr.com/photos/61414725@N03/).

Jane works for the Pacific Cooperative Studies Unit's O'ahu Army Natural Resources Program as the Ecosystem Restoration Program manager.

Jaime Raduenzel explores Ka'ala management unit through a cultural lens in her contribution for this issue. She conducted research in museum archives, 'oli (chants) and mele (songs) to share about this awe-inspiring place. No stranger to research, Raduenzel has also worked and learned about cultural resources at the Field Museum in Chicago and here on O'ahu at Waimea Valley.

Jaime works for the Pacific Cooperative Studies Unit's O'ahu Army Cultural Resources Program as an outreach specialist.

JAIME RADUENZEL

"Ka'ala is symbolic of that which is beyond compare or unequaled."



"Having the right gear and knowledge can be the difference between an unexpected overnighter and returning to civilization safely."



KALĀ ASING

A member of OANRP's "Blue Team," Kalā Asing has extensive experience getting to remote management units using 4WD in an off road setting. With the program for over six years, Kalā also brings conservation experience from his work with Pono Pacific Land Management, Hawai'i Youth Conservation Corps, and Kaho'olawe Island Reserve Commission.

Kalā works for the Pacific Cooperative Studies Unit's O'ahu Army Natural Resources Program as a senior natural resource specialist.

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Towing may not be an option when your vehicle gets stuck en route to protect natural resources in the remote Wai'anae and Ko'olau mountains. Learn how OANRP staff utilizes a winch to get out of sticky situations off-road.

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COMMUNITY

21 OANRP Volunteers Earn the President's Volunteer Service Award

Seven OANRP volunteers were recognized for their ongoing commitment to serving natural resources with the program.

ACRONYMS

DPW	Directorate of Public Works
OACRP	O'ahu Army Cultural Resources Program
OANRP	O'ahu Army Natural Resources Program
USAG-HI	U.S. Army Garrison, Hawai'i

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THE ECOSYSTEM MANAGEMENT PROGRAM BULLETIN (EMP)

The EMP highlights the U.S. Army's Garrison Hawai'i's innovative approaches to natural and cultural resource management. The success of this newsletter depends on article contributions from the staff of the O'ahu Army Natural Resources Program, O'ahu Army Cultural Resources Program, Pōhakuloa Training Area (PTA) Army Natural Resources Program, and PTA Army Cultural Resources Program. Mahalo to all staff who contributed to this issue.

All photos in this issue are provided by O'ahu Army Natural Resources Program staff, unless otherwise noted.



Range Surveys Reveal Important Threats

BY JANE BEACHY

EARLY ON A SATURDAY, four OANRP staff met at the office in preparation for surveying training areas on Schofield for invasive plants. There are several different training ranges at Schofield, all located in the shadow of Ka'ala, between Kolekole Pass and the long arm of the ridge connecting the peaks of Ka'ala, Kamaohanui and Pu'u Pane. These ranges are critical to Army training, filled with busy Soldiers as well as service members from the other military branches. But on this Saturday, the ranges were quiet, ready for staff to begin their surveys.

Part of OANRP's mission is to minimize the impacts from training, including inadvertent spread of invasive plants. Every year, OANRP staff surveys roads and landing zones across Schofield Barracks, Kahuku Training Area, Kawaihoa Training Area, Dillingham Military Reservation, and Mākua Military Reservation. Miles of paved, gravel and dirt roads are driven slowly, staff hanging out the windows, recording all non-native plants seen, collecting plants they are unfamiliar with, and later identifying these back at the office, often with help from O'ahu Early Detection, a partnership between the O'ahu Invasive Species Committee and the Bishop Museum. The surveys are mentally demanding; on any one survey, 50 to 200 different non-native plants may be observed.

The surveys are mentally demanding; on any one survey, 50 to 200 different non-native plants may be observed.

While many of these species are already widespread across Hawai‘i, an important fraction is either new to the training area, new to the island of O‘ahu, or even new to the state. An even smaller, more critical fraction poses serious risks to Hawai‘i’s native ecosystems, agriculture, human recreation, human health and the integrity of the training ranges. Finding and identifying this fraction of incipient, high-risk invasive plants is the goal.

Once potential high-risk, incipient invasive plants are located, they are evaluated for control. Staff ask critical questions: How big is the infestation? How serious is the threat posed by the species? Are control methods known and available? Is eradication feasible? Often, answering these questions involves contacting experts at other agencies.

If OANRP decides that control is warranted for a particular invasive species, collaboration becomes critical. Schofield Barracks Range Control is an important partner, assisting OANRP in



scheduling access to sites, reminding troops to clean vehicles at the wash racks upon leaving a range, and even on one occasion blocking access to an area infested with devil weed (*Chromolaena odorata*) at Kahuku Training Area.



ABOVE The devil weed (*Chromolaena odorata*) infestation runs along this road. While the area isn’t large, staff must contend with 7- to 10-foot-tall hairy guinea grass, full sun, as well as unexploded ordnance. LEFT OANRP staff rely on 4WD vehicles to survey miles of dirt roads for invasive weeds, cruising at agonizingly slow speeds to allow for accurate plant identification.

The O'ahu Invasive Species Committee is another important partner, assisting with control efforts on fountain grass (*Cenchrus setaceus*) at Mākua and devil weed at Kahuku Training Area, along with their weed identification support at O'ahu Early Detection.

Schofield Barracks Road Survey Results

On this particular Saturday, staff spent a full day driving and walking 35.8 miles of roads and paths through the Schofield Barracks Training Range Complex. This is the first time the entirety of the Schofield Ranges has ever been surveyed. An impressive 172 different non-native species were found, including: one grass species never before found on O'ahu (*Urochloa distachya*) and one Aster which has experts at Bishop Museum stymied and which likely is a new record to the state. Sadly, staff also discovered a new infestation of devil weed, formerly limited to Kahuku Training Area.

When devil weed was discovered at Kahuku Training Area in January 2011, it was the first time this world-recognized pest had been seen in Hawai'i. Currently, OANRP spends several hundred thousand dollars on control efforts each year, and the devil weed infestation has already compromised military training. While this example highlights the importance of early detection surveys like those OANRP conducts, it is even more important to prevent invasive pests from hitching a ride to Hawai'i in the first place. Invasive species spread is a problem nationwide, requiring coordinated efforts on multiple fronts. •

UNUSUAL SUSPECTS

Plants which OANRP staff cannot identify are sent to the Bishop Museum Herbarium. Samples must include fruit or flowers, as well as information about where the plant was collected. O'ahu Early Detection staff use taxonomy reference books, the herbarium and a network of experts to identify each sample. This grass, *Urochloa distachya* (below), has never before been seen on O'ahu.



Who am I? This small Aster, related to daisies and dandelions, has stumped taxonomy experts. Its seeds are held in distinctive clawed clusters. It may be new to Hawai'i.



Invasive devil weed tries to hitch a ride on staff t-shirts.

STOP THE SPREAD of invasive weeds

You can help prevent the spread of invasive weeds!

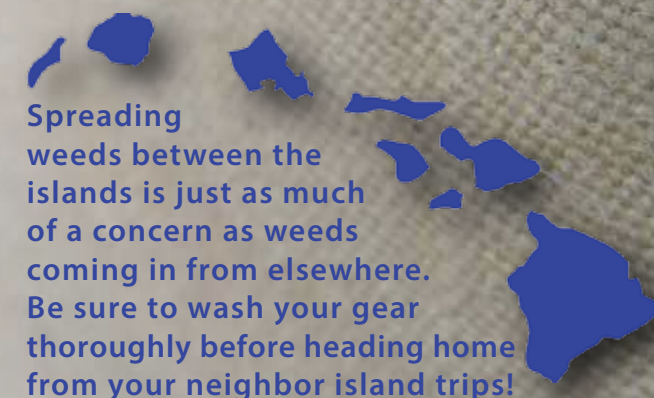
The threat of invasive weeds continues to grow as new, unwanted stowaways make their way to the islands without being detected. You can prevent the spread of invasive weeds through a few simple efforts.

1 Clean boots with a brush and hose after hiking to remove mud and potential stowaways from treads.

3 Use locally grown, native plants for landscaping needs. Many non-native ornamental plants have the potential to become invasive. Plants shipped from other places can bring in new pests to the islands.

2 Wash backpacks and rinse field gear after each use in the field. Backpacks are notorious for picking up mud and seeds from the ground, or catching seeds along the trail.

4 Wash down bikes, motorcycles, ATVs or off-road vehicles thoroughly, removing mud from wheel wells and undercarriage.



Spreading weeds between the islands is just as much of a concern as weeds coming in from elsewhere. Be sure to wash your gear thoroughly before heading home from your neighbor island trips!

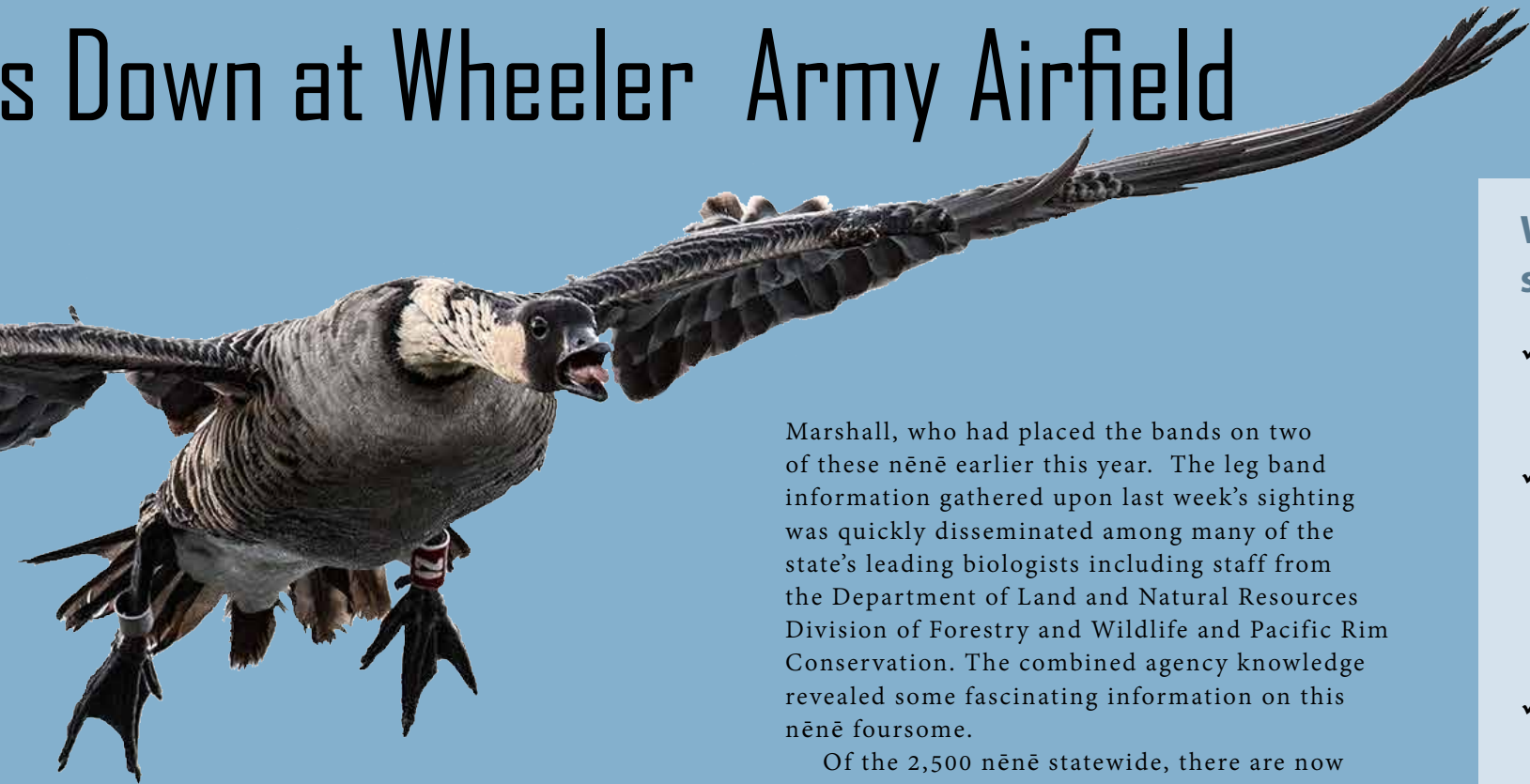
State Bird Touches Down at Wheeler Army Airfield

BY KIMBERLY WELCH

Thursday, August 14, Kapua Kawelo, a biologist with USAG-HI's DPW Environmental Division Natural Resources Program, received a surprising phone

call. Staff from the DPW Engineering branch had called to report the arrival of several geese at a construction site east of the Wheeler Army Airfield (WAAF).

"I was contacted by DPW Engineering branch regarding an observation of geese at a construction site east of the Wheeler airfield," stated Kawelo. "[They] sent a photo of the geese which appeared to be our endangered state bird, the nēnē. The DPW observer reported that the birds were banded. I dropped everything, grabbed some binoculars and drove over to Wheeler by 8:45 a.m. They were, in fact, nēnē, four in total, happily munching on newly planted and well watered grass."



Given their endangered status and close proximity to the WAAF runway, careful considerations had to be made about the safety of the nēnē (*Branta sandvicensis*) and how the presence of these large birds might affect airfield operations. Located just 300 meters from where the nēnē were grazing is a hot refueling station on the runway.

With the help of binoculars, Kawelo discovered that all four of the nēnē geese had been fitted with leg bands and that one of them had also been fitted with a radio tracking device. Bird bands contain individual identification numbers that are recorded on metal or brightly colored plastic. The numbers can usually be read at a distance without disturbing the birds. Tyler Miyamoto, Project Engineer with the U.S. Army Corps of Engineers, was on site to assist Kawelo with the nēnē observations and recorded the nēnē's identification numbers as Kawelo read them off. A few phone calls later, Honolulu biologists with the U.S. Fish and Wildlife Service (USFWS), one of the lead agencies for implementing the Endangered Species Act, quickly mobilized and met up with DPW staff at WAAF to assess the situation.

One of the USFWS biologists was Annie

Marshall, who had placed the bands on two of these nēnē earlier this year. The leg band information gathered upon last week's sighting was quickly disseminated among many of the state's leading biologists including staff from the Department of Land and Natural Resources Division of Forestry and Wildlife and Pacific Rim Conservation. The combined agency knowledge revealed some fascinating information on this nēnē foursome.

Of the 2,500 nēnē statewide, there are now 1,400-1,500 on Kaua'i, 416 on Maui, 77 on Moloka'i and 543 on the island of Hawai'i. The four that showed up at WAAF are the only known nēnē geese on Oah'u. Coming from Hawai'i island, two nēnē touched down on Oah'u for the first time in years this past January at the James Campbell National Wildlife Refuge, located in Kahuku on the north shore of the island. The couple nested in February and hatched three eggs in March. Two of the goslings survived and were banded by Marshall May 15 and shortly afterwards were observed flying around the Refuge.

Until recently, this nēnē family seemed content to stay on the Refuge. However, this time of year is flocking season—when nēnē typically fly greater distances in search of other food and other nēnē. Two weeks prior to their arrival at WAAF, sightings of this same nēnē family had been reported from Mililani Golf Course.

While it is thrilling to think that O'ahu may one day have a thriving population of nēnē, it will take all of our efforts to ensure that this dream becomes a reality. Nēnē are critically endangered and threatened by the presence of introduced predators (cats, rats and mongoose) and loss of habitat. Please help us keep our state bird safe by following the simple guidelines listed on this page. •

What can we do to help keep our state bird safe?

- ✓ **Report nēnē sightings**
via phone at 792-9400 (USFWS) or 655-9191 (OANRP), or email OUTREACH@OANRP.COM
- ✓ **Gather information**
 - Take photo if possible
 - Time of sighting
 - Location of sighting (address, landmarks)
 - Number of nēnē geese
 - Description of behavior
- ✓ **Keep pet cats indoors**
Required by Army Hawai'i Family Housing (AHFH)
- ✓ **Keep our nēnē wild!**
Do not approach them or feed them.



Biologists from the USFWS and USAG-HI DPW Environmental Division gather, August 14, to document several nēnē visiting a construction site on Wheeler Army Airfield. Pictured (from left) are Lasha-Lynn Salbosa, USFWS; Kapua Kawelo, natural resources, DPW Environmental Division, USAG-HI; Annie Marshall and Michelle Bogardus, both with USFWS; and Larry Hirai, chief, DPW Environmental Division, USAG-HI.

A family of endangered nēnē geese lands at Wheeler Army Airfield, August 14, to sample newly planted grass in a construction area adjacent to the runway and an active refueling station.



A nēnē soars in the air above Hakalau Forest National Wildlife Refuge on Hawai'i Island. ROY KIKUTA

Ka‘ala, A Symbol of Wai‘anae and O‘ahu

BY JAMIE RADUENZEL

Ka‘ala, at 4,025 feet above sea level, is O‘ahu's highest peak.

The mountain dominates the landscape and forms the backdrop of Schofield Barracks West Range. The traditional moku, or land districts, of Waialua, Wai‘anae, and Wahiawā all come together at the summit of Ka‘ala. Like other highest peaks of the Hawaiian Islands, Ka‘ala is symbolic of that which is beyond compare or unequaled.

Ka‘ala is noted in Hawaiian mo‘olelo, or oral tradition, for its beauty and was frequented by the gods. It is the mountain that the goddess Hi‘iaka, the sister of Pele, climbed on her way back to the island of Hawai‘i from Kaua‘i. From the top she could see the destruction that her sister Pele, enraged over her long absence, had wrought by causing a flow of lava over her lands in Puna (Kalākaua 1990).

Another well-documented legend refers to a goddess named Kaiona who dwells in the Wai‘anae Range near Ka‘ala (Sterling and Summers 1978). Kaiona is a benevolent goddess and was sometimes referred to as “the lady of sunshine.” She helped anyone who lost his way in the mountains by sending an ‘iwa, or Great frigatebird, to guide the lost one out of the forest. Because of her graciousness, Princess Bernice Pauahi Bishop was compared to Kaiona in songs (Pukui 1983).

Looking for Signs

In many accounts, Ka‘ala is a particularly good place to observe and interpret clouds for their meteorological import and signs of supernatural matters. In “Hua, King of Hāna,” Hua (ruling chief of Maui) has been cursed by a slain kahuna, or priest. Wherever he goes, he is afflicted



A glimpse into the back of Māhaha, as viewed from the end of the boardwalk trail on the summit of Ka‘ala. NICK TACINO



"Pu‘u Ka‘ala plus Kehau at night equals Ka‘ala

Kiu is the wind that blows from the makai side of Ka‘ala

Mālualua is the wind that blows from the kona side of Ka‘ala"

BISHOP MUSEUM ARCHIVES

by drought and blight. The scourge follows the chief to ‘Ewa, O‘ahu. A great prophet ascends the highest peak of the Wai‘anae mountains to observe the clouds and determine what to do. The prophet descends from the mountain and carries out a course of rituals to restore the rains and fertility of the land (Kalākaua 1990).

Summit Pond

The summit of Ka‘ala is distinctive not only for its flat top, but also for a large bog. According to Hawaiian traditions, the bog on the west side of the summit was once a freshwater pond used as a fishpond. Kamaoha was the goddess of this pond, in which shore fish and a kind of mullet were caught. The informant who reported the pond to J. Gilbert McAllister said it was once a luakini fishpond (1933), which might indicate its use only by chiefs. The “Song of Kūali‘i,” a 600-line poem celebrating the chief of O‘ahu and passed down orally for at least 150 years, mentions ‘elemihi ‘ula, or red crab, at the top of Ka‘ala. Fornander recorded the “Song of Kūali‘i” in 1917 and noted, “There is said to be a pond on the summit of Ka‘ala in which is found a fresh-water crab.”

Winds of Ka‘ala

Hawaiian ‘oli, or chants, provide traditional knowledge about the winds of Ka‘ala. According to legend, a gourd originally belonging to the wind goddess La‘amaomao contained all the winds of Hawai‘i. These winds could be summoned by chanting their names. From the chant of the inheritor of the gourd, we learn that “Pu‘u ka‘ala blows at Ka‘ala” (Nakuina 1990). In other sources, Kamapua‘a, the pig god, chants, “The heights of Ka‘ala have the Kehau breeze” (Akana 2004). Ethnographers hired by the O‘ahu Army Cultural Resources Program discovered previously unpublished information concerning the winds of Ka‘ala while studying the Edgar Henriques Collection at the Bishop Museum Archives (Ganda 2011). The collection contains notes on various winds of O‘ahu, including:

Pu‘u Ka‘ala plus Kehau at night equals Ka‘ala

Kiu is the wind that blows from the makai side of Ka‘ala

Mālualua is the wind that blows from the kona side of Ka‘ala



1



2

Military Use

Schofield Barracks extends from the summit plateau of Kaʻala as far east as Lake Wilson. The lands that became Schofield Barracks were ceded to the U.S. Government in 1899. Construction of the military post began in 1908 and early maps show no development in the vicinity of Kaʻala's summit. A 1928 U.S. Geological Survey map shows two trails, but no other development. A 1943 War Department map shows a total of four trails: one descending toward Mokulēʻia, one descending a steep ridge to the vicinity of Schofield Barracks, a third continuing towards the upland of Kaʻena Point, and a fourth trail winding towards the southwest and into Waiʻanae. The first development at the summit occurred during World War II and established an aircraft control and warning squadron, a very high frequency communication station, and a base camp. During this period, access to the facility was provided by an aerial tram system approximately two miles long. Three small structures that are remnants of the tramway can still be seen today. The facility was inactivated after the war until 1963, when construction of the existing facility began.

Due to their similar missions, the Federal Aviation Administration (FAA) and the Hawaiʻi Air National Guard agreed to jointly develop the communication facility. An aerial photograph from 1977 clearly shows the summit as having been graded for facilities and the road to the summit as being paved. Today, over 50 percent of the Kaʻala summit is encompassed by Schofield Barracks West Range, and the remaining portions fall within the Mount Kaʻala Natural Area Reserve (est. 1981) and Board of Water Supply land. The FAA and other government agencies continue to operate telecommunications facilities at the summit. •

Cable coil remnant (1) and transport cage (2) used in the old aerial tram system that once linked Schofield Barracks to the summit.

View toward Schofield Barracks West Range from the summit of Kaʻala. A remnant of the old aerial tram system can be seen in the foreground on the right. ROY KIKUTA

WINCHING 101

Recover your vehicle and avoid unplanned overnight trips with tips and tools on using a winch.

TOOLS OF THE TRADE



✓ winch

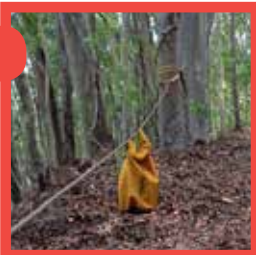
✓ shovel

✓ snatch block

Changes direction of winch line if you can't line up with target.

✓ damper

In the likelihood of wire rope or strap failure during recovery, the damper will absorb most of the energy in the cable or strap and reduce recoil. A piece of clothing, rope, floor mat, or even socks filled with dirt will do.



✓ d-ring/clevis

✓ tow strap

✓ choker chain

✓ leather gloves

✓ tree saver

Tow point using "tree saver" (a strap can be wrapped once or cinch).



✓ pulley

Snatch block to double your winching power. Acts as a pulley. Pull through, connect winch back to truck on tow line, doubling power of winch. (Can even triple if you had another snatch block.)

✓ hook

The winch line can be pulled out manually with a hook.



A front mounted winch can greatly increase your chances of a clean recovery.

Off-road driving is a daily part of the effort to protect O'ahu's rarest species for OANRP. Even the best of 4WD operators can get stuck trying to reach remote habitats in the Wai'anae and Ko'olau mountains, so it's important to know how to get out of a sticky situation. When driving in the backcountry, having the right gear and knowledge can be the difference between an unexpected overnighter and returning to civilization safely.

Proper management of your fleet and some basic equipment can ensure safe travels to and from your field sites. Tools such as shovels, tow straps, D-rings and fire extinguishers are all important to have on board your work rig. The addition of a front mounted winch can greatly increase your chances of a clean recovery if presented with an unexpected situation. Winches are a useful tool and relatively easy to operate.

PLEASE NOTE: Backcountry driving should only be attempted by trained professionals. The information relayed in this piece is for informational purposes only.

EXTRACTION

1. Line pulling vehicle up with target. Place vehicle in park, engage parking brake and block tires.
2. Unlock winch and free spool towards target making sure to leave at least five coils on winch drum.
3. Use tree saver or necessary equipment for anchor.
4. Place damper on winch line.
5. Lock winch and plug in winch control.
6. Winch slowly, adjusting as necessary.
7. When done, free anchor from target and re-spool winch line.

Uneven loading/uneven recoil can be dangerous and can damage the wire rope in the long term.

NO



STAY SAFE TIPS

YES

Always wear heavy leather gloves while operating a winch and handling a winch line.

Use winch intermittently. Be aware of winch motor heat—let it cool!

Hands off the winch controls when someone is working with or around the winch area.

Bystanders should stand a safe distance from operation.

Hook up only to solid mounted anchor points.

NO

Never stand in line with winch line when performing an extraction.

Never let winch line slide on rocks or sharp surfaces.

Never let wire winch line slide through your hands.

Never walk over a loaded winch line.

Avoid hooking winch line back onto itself.

On February 24, 2014, OANRP outreach staff happily presented the President's Volunteer Service Award to seven dedicated volunteers, honoring their many hours of volunteer service during 2013.

Honorees received a service award pin (bronze, silver, or gold, based on their number of volunteer hours), a personalized certificate of achievement and a signed congratulatory letter from President Obama.

In addition, OANRP outreach staff accompanied the award recipients on a special volunteer appreciation hike around the Ka'ena Point Natural Area Reserve.

**The President's Volunteer Service Award
OANRP 2013 Recipients:**

GOLD LEVEL
500+ hours of service
Elaine Mahoney
601.25 hours

SILVER LEVEL
250-499 hours of service
Roy Kikuta
285.75 hours

David Danzeiser
412 hours

BRONZE LEVEL
100-249 hours of service
Alex Loomis
100 hours

Joe Bussen
120 hours

Kathy Altz
152 hours

Laurie Loomis
200.5 hours

The President's Volunteer Service Award recognizes the valuable contributions volunteers are making in our communities and encourages more people to serve. The award was created as a way to thank and honor Americans who, by their demonstrated commitment and example, inspire others to engage in volunteer service.

The President's Volunteer Service Award is given to those who have achieved the required number of hours of service over a 12-month time period – or cumulative hours over the course of a lifetime.



OANRP staff leads a group of honored volunteers on an interpretive hike around the Ka'ena Point Natural Area Reserve.
(1) Bussen, Kikuta, Altz and Danzeiser, scan the horizon for breaching humpback whales; (2) Altz gets a close-up shot of the endangered 'akoko (*Euphorbia celastroides* var. *kaenana*) as A. Loomis shares details with rest of the group (Kikuta, Danzeiser and Bussen) about OANRP management strategies for this endemic Ka'ena treasure; (3) Coastal views and soaring Laysan albatross divide the attention of the group (CLOCKWISE L. Loomis, Kikuta, Welch, A. Loomis, Danzeiser and Mahoney); (4) Danzeiser, Bussen and Kikuta make their way to the point; (5) Altz and Mahoney photograph nearby Laysan albatross.

VOLUNTEER
Want to join the effort to protect endangered plants and animals on O'ahu?
Contact OUTREACH@OANRP.COM or 656-7741.

Native coastal strand vegetation of Ka'ena Point Natural Area Reserve

Root into your community

HO'OA'A

SEPTEMBER

FRIDAY 9/12

Mākaha

SATURDAY 9/27

Kahanahāiki

VOLUNTEER OPPORTUNITIES

OCTOBER

SUNDAY 10/5

Kaluaʻā

SUNDAY 10/12

Mākaha

THURSDAY 10/16

Kahanahāiki

FRIDAY 10/24

Kahanahāiki

BECOME A VOLUNTEER

The OANRP offers volunteer service trips in the forest to help protect endangered plants, animals and habitats.

JOIN THE VOLUNTEER LISTSERV

Contact OUTREACH@OANRP.COM or 656-7741 to be added to the volunteer database.

COMPLETE YOUR VOLUNTEER APPLICATION

Download the form online at [HTTP://MANOA.HAWAII.EDU/HPICESU/DPW/OTHER/VOLUNTEER.PDF](http://MANOA.HAWAII.EDU/HPICESU/DPW/OTHER/VOLUNTEER.PDF).

SIGN UP ONLINE FOR COMMUNITY VOLUNTEER TRIPS

Visit WWW.OANRP.VOLUNTEER.COM to sign up. Sign ups are on a first come, first served basis, and volunteer trips fill up quickly! If a trip that interests you is full, we encourage you to add your name to the waitlist so that we may contact you in the event that a spot opens up.

ORGANIZE A TRIP

Contact OUTREACH@OANRP.COM to organize a service opportunity for your class, hālau or group.

ABOUT THE U.S. ARMY GARRISON—HAWAII

U.S. Army Garrison-Hawaii (USAG-HI) is responsible for the day-to-day operations of Army installations and training areas in Hawaii. The USAG-HI team provides facility management and quality Soldier and military family services for more than 95,000 Soldiers, retirees, civilians and families across 22 military installations and training areas on O'ahu and Hawaii Island. These installations include O'ahu-based Schofield Barracks, Wheeler Army Airfield, Fort Shafter, Tripler Army Medical Center, and the Island of Hawaii-based Pōhakuloa Training Area.

ABOUT THE USAG-HI DIRECTORATE OF PUBLIC WORKS ENVIRONMENTAL DIVISION

The DPW Environmental Division Office at USAG-HI is comprised of two branches: the Compliance Branch and the Conservation Branch, who are dedicated to providing guidance, support and liaison services to those who live, work and train on the installation, while also protecting the environment. The Conservation Branch includes the Army's natural and cultural resource programs, which protect endangered species and cultural resources, respectively, on O'ahu and Hawaii Island.

ABOUT THE O'AHU ARMY NATURAL RESOURCES PROGRAM

The O'ahu Army Natural Resources Program is an award-winning Army program dedicated to natural resources protection and conservation. The program supports the Army's training mission by protecting the biological resources found on O'ahu Army installations and training areas. To minimize the impacts of military training on some of O'ahu's rarest plants and animals and their habitat, the U.S. Army Garrison-Hawaii partners with the University of Hawaii at Manoa Pacific Cooperative Studies Unit (PCSU) to protect more than 80 threatened and endangered species. PCSU employs over 60 staff through the Research Corporation of the University of Hawaii to accomplish natural resource work for the Army throughout the island of O'ahu.