VOLUNTEER TRIP PHOTOS:

Left: Volunteers from a Hawaiian Studies class at the University of Hawaii at Manoa dig out incipient *Juncus effusus* at Kaala with shovels.

Below: Volunteers water nursery-grown awikiwiki (*Canavalia* sp.) before outplanting at Kahanahaiki.
VOLUNTEER FEEDBACK:

Below are samples of solicited feedback from volunteers using an online evaluation form (excerpt pictured below) to provide post-service trip comments and suggestions. Feedback is used to help outreach staff refine and improve service trip opportunities.

“The US Army program is first class. I enjoy the people that I meet, the plants that I see, and the information that is conveyed. I recommend keeping the program as is.”

“I'm most happy to see that DPW Environmental has established excellent working relationships with the C&C BWS and State DLNR offices (and others) in support of common goals. I'm amazed at the breadth of the Management Plan for the Waianae and Koolau areas and humbled by the amount of dedication and effort put forth by DPW professionals. Not to take anything away from the professionals - there's more than enough work yet to be accomplished - but on the assumption that the volunteers do make a small contribution to the overall effort, I'd like to see the Volunteer/Outreach program grow even more. Yes - I understand that this takes funding - and I commend the OANRP Outreach Specialists (Ms. Kimberly Welch and Ms. Celeste Ventresca) for constantly striving to improve the scope and experience of volunteer trips (e.g., replacing/improving work tools, incorporating Cultural Resources to broaden trip experience, writing grant proposals to obtain funding, et al). Volunteers are routinely "thanked" for coming on these trips and working in the mountains - personally, I consider it a privilege to be allowed to come on these trips, and work in these very, very special places. I like the forests I get to work in - I like the people I work with - and most of all, I like the leaders who take such good care of all us volunteers!”

“Not sure if it can be better - this trip not only was for weeding, but also included a Cultural Resources specialist who gave us a talk on native Hawaiian culture in the Valley and also impacts of post-Cook use of the Valley by western cultures. Great idea to give us volunteers a broader understanding of different cultures make different uses of the same land, and how the Valley plant life/vegetation came to be what we see today.”
OUTREACH EVENT PHOTOS:

Above: Environmental Outreach Specialists Celeste Ventresca (left) and Kim Welch (right) share about natural resources with families at Waialua Elementary School’s Aina in Schools night.

Above: Kids paint native Hawaiian plants and animals on a mural at the Army Earth Day celebration at Schofield Barracks.

Above: Students from Mililani High School help to control the incipient Crocosmia x crocosmiiflora at Kaala.
EDUCATIONAL MATERIALS:

Above: Map created for motocross community at Kahuku Training Area to prevent the spread of invasive weeds and encourage riders to report devil weed (Chromolaena odorata) sightings. Below: Slides from presentation given twice monthly at USAG-HI Range Briefs, describing endangered species concerns on training areas and what soldiers can do to protect natural resources.
Growing Native Hawaiian Plants
with the O'ahu Army Natural Resources Program
Joint Spouses Conference 2013

Ko‘oko‘olau (Bidens tarta)
Growing Instructions

DESCRIPTION: A tall, 1/2 - 8 ft. annual

LIGHT: Partial to full sun

SPECIAL GROWING QUALITIES: Ko‘oko‘olau produces small, cheerful, sunny-yellow flowers. It is an annual, so it will die off each year, but not before re-seeding (spreading its seeds).

HOW TO GROW:
- Sprinkle seeds on surface of a 1:3 mix of potting soil to perlite
- Water seeds in, then water every other day
- Keep in shady, protected area until seeds sprout (-1 week to 1 month)
- Transplant to large pots, then plant in well-drained section of your yard or garden
- Can also try sowing some directly into yard

Koa (Acacia koa)
Growing Instructions

DESCRIPTION: A large tree, 60-150 ft. tall

LIGHT: Partial to full sun

SPECIAL GROWING QUALITIES: Koa trees can handle dry conditions. They also add nitrogen to the soil, helping to make nearby soil more healthy. Koa can be pruned to keep them smaller, if desired.

HOW TO GROW:
- Place seeds in hot (almost boiling) water; remove water from heat and let seeds soak overnight - seeds will swell
- Alternatively, try 'scouring' seeds by rubbing with sandpaper, then place overnight in tap water - seeds will swell
- Pluck swelled seeds - 1/4 inch deep in potting mix
- Water until moist, then water every other day
- Seeds will sprout in ~ week
- Transplant seedlings to larger pots and
- Plant in well-drained yard after ~ 1 year
- Once established, water only when conditions are very dry

Native plant workshop materials created for the 2013 Joint Spouses Conference, held at Schofield Barracks.
The OANRP blog (titled “Lapalapa”) features information on volunteering, including how to become a volunteer, project descriptions, and location descriptions.
This fence protects a fragile native Hawaiian ecosystem that must remain pig and goat free to survive.

Please mālama this fence and all that it protects by:
• using fence crossovers
• leaving no sign of your visit

He aliʻi ka ʻāina, he kauā ke kanaka
The land is the chief, the people are servants

For more information or to report any damage to this fence, please contact the Oʻahu Army Natural Resources Program at 656-7741
Public Relations:

Natural Resources gives Hawaiian plants a new home in Manuwai

By Celeste Ventresca

Some of Hawaii’s rarest flora is enjoying final preparations under the nurturing care of horticultural specialists at the Oahu Army Natural Resources Program’s (OANRP) rare plant nurseries. This year, six endangered plant species, including Hawaii’s state flower, the ma’ohau hule (Hibiscus brackenridgei subsp. mokuleia) will be outplanted in a new location for the first time: Manuwai.

Situated in the northern Wai‘anae Mountains of Oahu, Hawaii, Manuwai is one of just a handful of places on the island where these plants can be found. The area is extremely scarce, containing some of the richest representation of Hawaii’s rare plants. The OANRP found this place to be the case in 1999 when staff began to visit historical rare plant populations in Manuwai and also survey for new populations. Staff steadily collected fruit and cuttings from endangered species in the area so that the plants could be grown under the care of the nursery’s horticulturalists and reintroduced back into the wild.

HONOLULU — Carnivorous wolf snails, Jackson’s chameleons, pigs, goats, deer, fountain grass, strawberry guava, rats, slugs, devil weed, ants, coqui frogs, sheep.

This listing is an abbreviated one of some of the most destructive human introductions to Hawaii’s native ecosystems to date.

Schofield Barracks — Kahale Pali, natural resources management coordinator, OANRP, displays a large male Jackson’s chameleon that he found on a routine invasive species search in the native forest above South Range, here. (Photo courtesy Oahu Army Natural Resources Program.)

The risk they pose and their history of invasiveness worldwide.

State’s native ecosystems are under attack by some very unsuspecting subjects.

Kimberly Welch
Oahu Army Natural Resources Program, Directorate of Public Works, U.S. Army Garrison-Hawaii

Devil Weed (Chromolaena odorata)

Native to: Central America

How’d it get here: Abundant in Guam, the plant likely hitched a ride to Kahuku Training Area via military vehicles or personal gear.

Crimes committed: Toxic to humans, animals and even other plants, devil weed can grow up to 12 feet tall and produce 800,000 seeds in a year.

What OANRP is doing: The Army has spent a large amount of time and money controlling the infestation at KTA since the plant was first discovered in 2011. More than $125,000 will be spent this year to continue control efforts. Also, staff constantly conduct weed surveys along roads and trails, and in the forest, to detect weeds in new locations on Army lands.

What you can do: Prevent devil weed from spreading. Motorcross bikes should be hosed thoroughly before entering and exiting Kahuku motorcross track, and Soldiers should wash all vehicles and personal gear prior to exiting KTA. Reserve a wash rack with Range Control when making reservations to train on the range.


**The O'ahu Army Natural Resources Program (OANRP) manages rare plants that occur on or around Army training areas on O'ahu. Since many of these species are only known from very small populations, outplanting (putting plants grown in the nursery into the wild) is used to increase the number of individuals. Planting is done during the rainy season between November and March to take advantage of the cooler, wetter conditions. In order to prepare for this year's outplanting, the nursery crew has been transferring the seedlings and small plants out of the incubators (climate-controlled growing chambers), onto the mist bench and into the nursery. This year we will be planting many of the same species as previous seasons such as Cyanea superba subsp. superba (hāhā), Delissea waianaeensis (ʻōhā wai), Schiedea kaalae, and Pritchardia kaalae (loulu). We will also be outplanting Kokia degenerii var. degenerii, an endangered manono species, for the first time.

Outplantings into a new management area, the Manuualwai Management Unit (MU), will be another "first" for OANRP this winter. Manuualwai MU is located on State of Hawai'i lands on the north shore of O'ahu. The MU is fenced to protect the ecosystem from degradation by goats and pigs, and weed control is ongoing. This year, six endangered plant species will be outplanted.

For the first time, OANRP will reintroduce endangered Kokia degenerii var. degenerii into the wild. The tiny seeds of Cyanea superba subsp. superba are extracted from the fruit in the OANRP seed lab. Seedlings germinate in tiny pots within a temperature-regulated incubator to ensure a successful start to life. As the young Cyanea superba subsp. superba grow, they are placed into larger pots.

**Ecosystem Management Program Bulletin Spring 2013**

**Inside this issue:**

- Time Saves Army's Bottom Line—Insecting the Utility of Automatic Rat Traps
- For the Future: The Role of Geological Curation in Cultural Resource Management
- Army Natural Resources Program Celebrates North

- A new Automatic Trap works on rat predation. In the late 1990s, the species was facing extinction with only six C. superba plants in the Waianae Mountains. The OANRP installed rat bait stations and traps around the last remaining wild plants in order to protect their invariable fruit. Thankfully, viable seeds were collected before the last plants died, and they were successfully propagated and cultivated to a stage where they could be outplanted in the forest. Because of these efforts, there are now hundreds of C. superba plants in the forests of the Waianae Mountains. However, rats continue to degrade habitat and prey on C. superba and other endangered species. Reducing rat populations to a level that adequately protects vulnerable species is a never-ending and labor-intensive battle.

- The OANRP acquired a new tool that is to be an important component for long-term control efforts: automatic rat traps. These traps are designed to kill rats and stoats (a land pest) and are powered by compressed dioxide (CO₂). Goodnature® Ltd., a New Zealand company, invented and designed the...