



Native Hawaiian Plant Society

Nanea Nā Pua O Ka 'Āina Aloha

NHPS Newsletter

February 2016

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Forest Dynamics: Ecological Timeframes

By Pat Bily

For you hikers, how many times have you gone through wildlands where the uluhe fern is so thick it's hard to get around? Or even for the more passive observers, how many times have you driven by those slopes that are denser with ferns each time you see them?

These are some of the impressions we have of our wildlands, and we tend to think of them as static, or a permanent vegetation status. But that's based on our perception according to human time-frames, NOT ecological time-frames.

In the ecological time frame, plant regimes do in fact shift, with formerly dominant species being replaced by others that have been waiting in the wings. Even the native uluhe fern (*Dicranopteris linearis*), which sometimes seems impenetrable to humans, eventually gets shaded out or outcompeted by shrubs and trees. Sword ferns like the native kupukupu (*Nephrolepis cordifolia*) or the introduced Boston fern (*Nephrolepis multiflora*) also eventually succumb to changes, allowing grasses or shrubs to displace them.

Exceptions to this of course are the priority invasive plants we love to hate, like Miconia, Clidemia, strawberry guava, and Himalayan (kahili) ginger. With these weeds especially, it seems once they become dominant or monotypic stands there is no getting them out and their status in the local plant regime is permanent.

But in terms of gradual changes in our mixed native/non-native forests, we know structural dynamic occurs, albeit very slowly, compared to the human pace.

Biologists performing intensive vegetation monitoring in these areas over decades are not surprised to note that former dominants have shifted. In the case of uluhe fern, the same extensive cluster may persist in our monitoring plots, but is it's moved over as 'ōhelo, pūkiawe and other shrubs start to fill in gaps in the layers of vegetation. Those working in natural areas may be familiar with the term "uluhe belt," referring to contiguous fields of the fern that are nearly impossible to get through. We use that term to denote areas that we shouldn't necessarily machete a trail into, as feral pigs could then start using the trails to penetrate into otherwise pig-free areas.



Uluhe fern gains dominance in center of monitoring plot.

But our vegetation monitoring over decades shows that this uluhe belt can shift, growing into new areas while the former habitat is filling with a more diverse vegetation regime.

Ultimately, one hopes for more diversity in the canopy, understory, and ground layers of Hawai'i's native forests. This "climax" vegetation consisting of ancient tall canopy trees, sub-canopy trees, mixed shrub/vine understory and fern/moss covers is the best for our watershed function. It helps reduce evapotranspiration and gently allows fog-drip or rainfall to penetrate evenly into the water table,

Continued: Next Page

Continued: From Page 1 — Forest Dynamics: Ecological Timeframes

recharging springs, streams, and aquifers. Even the gradual motion of uluhe or kupukupu ferns enhance the ability of our watersheds to keep functioning. And while it may take human generations to come close to seeing such transformation, we tend to count on that regime shift as a way to keep our watersheds diverse and alive.

While we witness strawberry guava or Himalayan ginger (*toilet brush plant*) take over more of our natural areas, we are also witnessing impacts on our beautifully structured native forested watershed, as these plants tend to be “water hogs,” negatively affecting the quantity of water that can filter into our water table. Once these plants take over, there will likely be no shift without human interference (manual, chemical or biological control of the weeds).

So the next time you encounter that uluhe belt or hillside of sword fern, look at the surrounding vegetation: it’s likely, in a decade or so, that you’ll see that seemingly static plant layer transform into a mixture of the neighboring vegetation. 



‘Ōhi‘a (lower left corner) starting to move into plot to eventually displace uluhe.

Ongoing NHPS Projects By Irene Newhouse

One of NHPS’ long-term projects is the ‘āwikiwiki enclosure on Ulupalakua Ranch land. NHPS fenced a population of ‘āwikiwiki (*Canavalia pubescens*) in the 1980s. At the time, it was one of several such populations in the area, which abuts ‘Ahihi-Kina‘u Natural Area Reserve. By the early 2000’s, the unprotected areas had succumbed to the combination of drought and goats. After all that time, some of the metal fence posts had rusted through. Plant Extinction Prevention Program Maui Coordinator and NHPS member Hank Oppenheimer supervised the fencing project, which involved coordinating with the landowner, Ulupalakua Ranch, and piggy-backing an air drop of the heaviest fencing materials by NARS in 2015. NARS personnel also helped with the fence building. Hank and TJ had to return a few days later to finish up the project, and experienced the heaviest rain they’d ever seen in South Maui. Painted by NHPS member Muffie Davis, ‘āwikiwiki is the plant featured on NHPS’ t-shirts. NHPS usually makes a service trip to this enclosure in winter.



‘Āwikiwiki flower close-up (*Canavalia pubescens*)



Mao Hau Hele (*Hibiscus brackenridgei*)

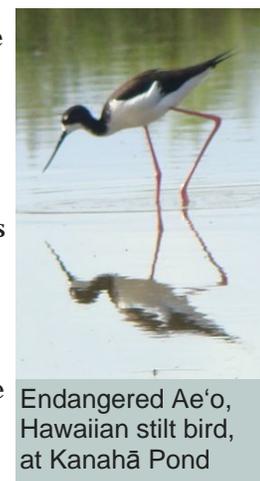
NHPS’ enclosure in South Maui to protect one of the last wild populations of the state flower, mao hau hele (*Hibiscus brackenridgei*) is another annual winter service trip. The site is on private land, and NHPS appreciates the support of the landowners, the Ting family, for this enclosure. This enclosure, too, has been an NHPS project since the 1980s.

NHPS has been working Thursdays at Kanahā Pond Wildlife Refuge for many years as well. Originally headed up by Board member Lorna Hazen, Becky Lau is now project leader. The first and third Thursdays of each month are ‘NHPS’ days at the Pond. The goal is to provide as original an environment for the protected birds as possible. The Refuge has been able to get grants to remove kiawe and other large trees. NHPS members help plant native plants in the cleared areas and weed in areas already planted.



The Courtyard Garden at Kahului Library

In the early 1990s, late NHPS member Eda Kinnear planted a native garden in the Kahului Library courtyard. It was dedicated in 1994, and she took care of it as long as she could. Lorna Hazen is project leader now, and we usually go the second Thursday of the month. NHPS placed laser-etched rocks to identify the plants, funded by donations in Eda’s memory. Focal point of the garden is a lovely naio tree. Two sides have a covered lanai, with tables for library patrons along one of them. People who may not know native plants still appreciate the garden’s beauty and sit at those tables. **Continued: Next Page**



Endangered Ae’o, Hawaiian stilt bird, at Kanahā Pond

President's Message

Thank you, to all of the officers, project leaders, work volunteers, and members of the Native Hawaiian Plant Society. Together we explored Maui from the seashore to above the clouds. We helped preserve native plants because they are valuable to our health, spirits, and lives. If you come out and volunteer with us, we can share the joy of companionship while working for a healthy island.

Do native plants affect the weather? Yes! An example of this is how clearing lowland forests to make ranches and farms over the last 200 years has changed the rainfall pattern. There is now much less lowland rain, and Kaho'olawe gets almost none. Another example is how well deep-rooted native forests prevent landslides and increase ground water storage, because native forests have open canopies and allow understory native plant growth.

Do invasive plants and animals out-compete our natives? Yes! One of our work projects removes invasive pickle weed from an anchialine pond in the 'Ahihi-Kin'au Natural Area Reserve. The Hawaii State Public Library has a new book, "Hawaiian Anchialine Pools, Windows to a Hidden World," by Mike N. Yamamoto, Thomas Y. Iwai, Jr., and Annette W. Tagawa. You can borrow it with your library card and read about these uniquely special land-locked pools.

Come and help our project leaders to keep Maui environmentally healthy.

Thank you,
Martha Martin,
President, Native Hawaiian Plant Society

Continued: Ongoing NHPS Projects

For more than 20 years, NHPS member Becky Lau has overseen and maintained native plantings at the Ha'ikū Elementary School parking lot and other areas around the school grounds. These plantings expose elementary school children, their families and the community at large to the beauty and uniqueness of native Hawaiian plants.

To participate in NHPS service trips and projects, contact the project leaders listed on Page 7 or NHPS Secretary, Irene Newhouse at einew@hotmail.com.



Volunteers at Ha'ikū Elementary School

Want to see what we've been up to?



Check out NHPS SmugMug for pictures of all our recent events!
<https://nhps.smugmug.com>

NHPS Wish List
Plants for Hawaii Nature Center:
māmaki, 'āwikiwiki seeds or seedlings, or any native sedges
Woodchips for Haiku School
Help! adding a PayPal button to the NHPS webpage
Help! with the NHPS Newsletter

If you would like to donate or help please contact NHPS Secretary, Irene Newhouse, at einew@hotmail.com

Come to the NHPS Annual Membership Meeting & Lecture

**Friday, February 26
7:00 pm**

**Tavares Community Center
91 Pukalani St, Pukalani
(Poolside Room)**

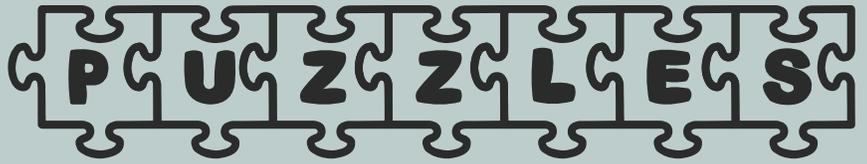
**Speaker: Tamara Sherrill,
Executive Director of
Maui Nui Botanical Gardens**

**Topic: Native beach plants
and coastal restoration
projects around Maui Nui**



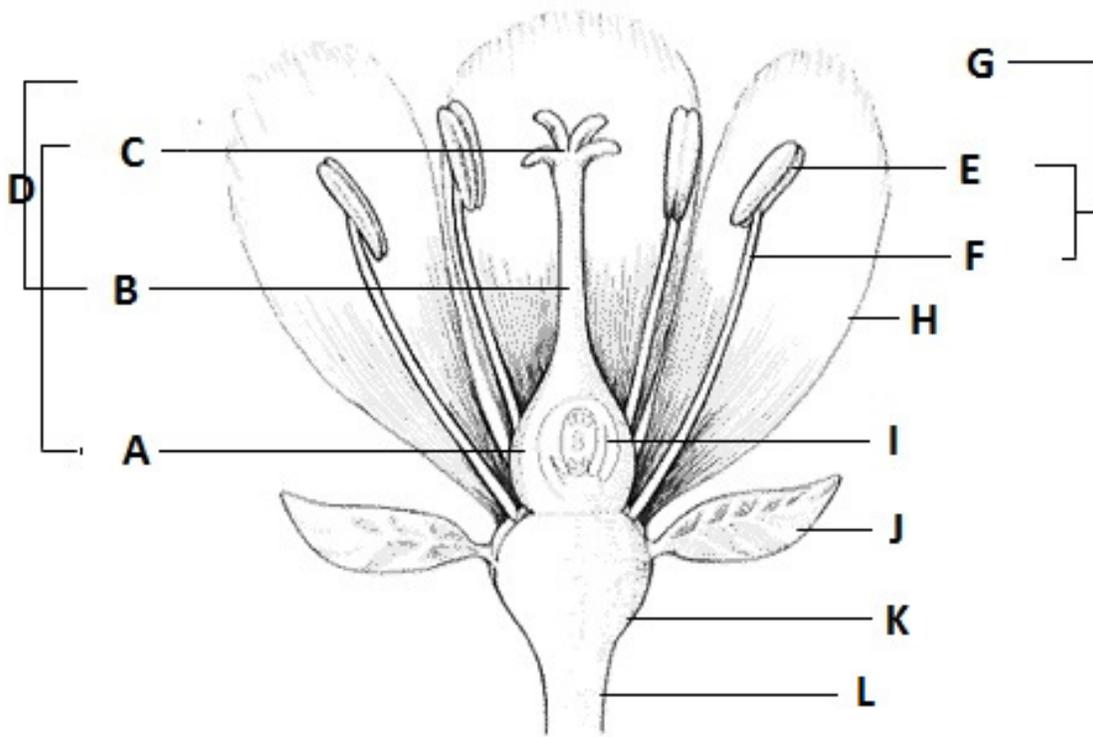
Endangered dwarf naupaka

This Event is Free and Open to the Public!



By Chuck Chimera

Do you know the parts of a flower?



_____ **Ovary** / The enlarged basal portion of the female part of the flower where ovules are produced.

_____ **Style** / The slender stalk that connects the upper & lower portions of the female flower parts

_____ **Stigma** / The part of the female portion of the flower where pollen germinates

_____ **Pistil** / The female organ of the flower, typically divided into three distinct parts.

_____ **Anther** / The part of the male portion of the flower where pollen is produced.

_____ **Filament** / The stalk of the male portion of the flower

_____ **Stamen** / The male part of a flower, composed of a stalk and topped by pollen-producing structures

_____ **Petal** / The parts of a flower that are often conspicuously colored.

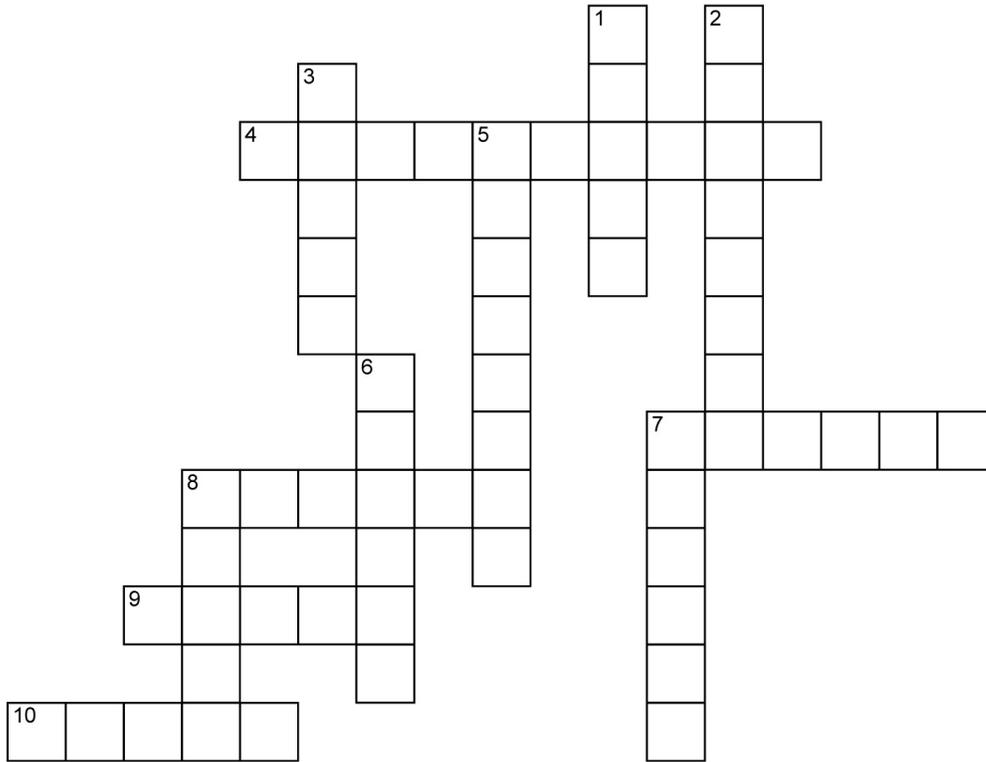
_____ **Ovule** / A young or underdeveloped seed

_____ **Sepal** / The outer parts of the flower (often green and leaf-like) that enclose a developing bud.

_____ **Receptacle** / The part of a flower stalk where the parts of the flower are attached.

_____ **Peduncle** / The stalk of an inflorescence or of a solitary flower.

Hawaiian Plant Crossword by Chuck Chimera

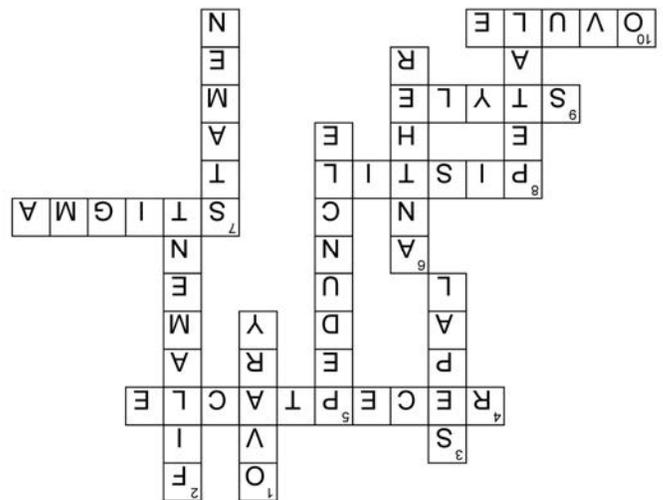
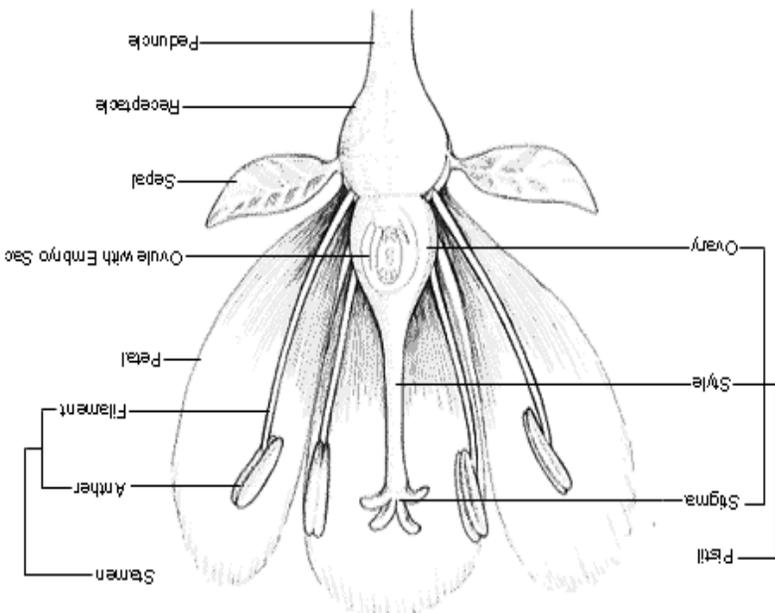


ACROSS

- 4 The part of a flower stalk where the parts of the flower are attached.
- 7 The part of the female portion of the flower where pollen germinates
- 8 The female organ of the flower, typically divided into three distinct parts.
- 9 The slender stalk that connects the upper & lower portions of the female flower parts
- 10 A young or underdeveloped seed

DOWN

- 1 The enlarged basal portion of the female part of the flower where ovules are produced.
- 2 The stalk of the male portion of the flower
- 3 The outer parts of the flower (often green and leaf-like) that enclose a developing bud.
- 5 The stalk of an inflorescence or of a solitary flower.
- 6 The part of the male portion of the flower where pollen is produced.
- 7 The male part of a flower, composed of a stalk and topped by pollen-producing structures
- 8 The parts of a flower that are often conspicuously colored.



The Hawai'i Nature Center on Maui

An NHPS Newsletter Interview with Irene Newhouse

NHPS member and director Irene Newhouse worked as an environmental educator at the Hawai'i Nature Center located in Īao Valley, Maui. When HNC Maui discovered that Irene knew more than a little something about native Hawaiian plants, they asked Irene to help upgrade and reinvigorate the Center's landscape. Here Irene shares with NHPS about HNC Maui, her experience as an environmental educator and defacto landscaper.

What is the Hawai'i Nature Center? Hawai'i Nature Center is a private nonprofit founded on O'ahu in 1981 whose mission is hands-on environmental science education for preschool through fifth grade. It's funded by a mix of private and public funding. HNC has programs on O'ahu and Maui.

What kinds of things do students learn at HNC? For each level there is an educational script which was carefully written by professional, in-house curriculum developers to reinforce the science concepts students are taught in that grade. Each grade comes to the Center for the entire school day. After an introduction, they do their hands-on science activities outside. Then they meet again at the Center, have lunch, do a short after-lunch program and wrap-up, and go back to school in time to catch the bus.

What are some of the things students learn at each grade level? Kindergarten students make *soil cookies* from rock dust, torn up dry leaves, soil, and water, to reinforce what plants need to grow, and to *give back to nature*. During cookie making, we discuss what and how many things people get from nature.

First graders hear about stream life at the two small connected artificial ponds. We don't usually lecture – we ask the students questions that direct them toward the points we want to make. Teachers get a packet of materials they can use to prepare the students for the day's activities. We show pictures of the introduced stream life we have in the ponds, and also tell them about 'o'opu, hihīwai, and 'ōpae.

Second graders fish in Īao stream after talking about the water cycle and animal life cycles. Third graders learn about wetlands and the endangered Hawaiian wetland birds at Kealia Pond, where we get a special use permit. All of the programs provide a chance for students to get into nature, engage their curiosity and learn in an experiential manner.

What is the history of the HNC property on Maui? The Maui Center was originally a motel built and run by the Duarte family in the 1950s and '60s. As more hotels were built on Maui, they could no longer attract tourists, so the family converted one room to a community kitchen and rented the motel rooms long-term. I still meet people who lived at the motel in the 1980s and reminisce about how wonderful it was. The rooms are still rented to environmental or Hawaiian cultural groups, or to school sports teams that come to Maui. In the summer, they rent the facility to the Bishop Trust for their Ho'olauna *Where's the wai?* program.



When you started to restore the landscape around the Center, what was your game plan? After nearly four years without weeding, the Center was pretty overgrown. The worst weeds were guinea grass and clock vine. My first idea was simply to get rid of the weeds, but I soon learned you **MUST** plant something else in order to keep the weeds from roaring back.

Because I had no budget, I started scrounging native and Polynesian-introduced plants. Maui Nui Botanical Gardens was very generous in donating plants. I had *Fimbristylis* in my yard. 'Ahu'awa thrives at HNC, so I potted up all the seedlings I could find in order to use them in different places. 'Ilima are simply devoured by African tree snails and slugs, so that's a non-starter. Nanea and *Plectranthus* also can't survive for the same reason. Every sedge I tried worked well. I also took dozens of cuttings from the well-established 'uki'uki to use as a cover and transplanted palapalai fern from the forest. I think most of the palapalai stands were planted by NHPS founder, Rene Sylva. One of my best ground covers is sweet potato. Maui Nui Botanical Gardens donated the original cuttings of several of their native Maui sweet potato varieties.

Upcoming NHPS Events & Announcements

Annual NHPS Membership Meeting & Guest Speaker

February 26th (Friday) 2016 at 7:00 pm

Speaker: Tamara Sherrill, Executive Director of Maui Nui Botanical Gardens will speak on native beach plants and coastal restoration projects around Maui Nui

Location: Hannibal Tavares Community Center, 91 Puklani St., Pukalani (in the Poolside Room)

The Annual NHPS Membership Meeting to elect the 2016 Board of Directors will be held at 6:45 pm, just prior to the lecture.

Regular Service Trips

Kanahā Pond (1st and 3rd Thursdays 8:30-11am)

Contact Becky Lau (808) 575-2369

Ha'ikū School

Contact Becky Lau (808) 575-2369

Kahului Library (2nd Thursday 9am-12 noon)

Contact Lorna Hazen (808) 572-6338 or email lornajack34@gmail.com

NHPS service trips, hikes and other events are scheduled frequently.

For up-to-date information, contact Irene Newhouse at einew@hotmail.com (808) 264-6977

Mahalo Nui Loa

Donors

NHPS extends a special *mahalo* to the following donors for their generous contributions in 2015:

- | | |
|------------------|------------------------------------|
| Harold Appleton | Carolyn Gressitt & John Freyermuth |
| Debbie Brown | Raymond Higashi |
| Diane Carr | Leslie Hiraga |
| Cathy Davenport | |
| Dr. Peter Galpin | |

Corporate , Government & Exclosure Partners:

- Maui County Parks and Recreation for the use of Hannibal Tavares Community Center Pool Room.
- Maui Nui Botanical Gardens for propagating plants
- Haiku Elementary School
- Exclosure Partners:
- Duane Ting and family and Flyin' Hawaiian Zipline,
- Hawai'i State Department of Land and Natural Resources,
- Ulupalakua Ranch

Continued From Previous Page: The Hawai'i Nature Center on Maui

Once I started getting the weeds around the buildings in check, I dreamed bigger. Last year, we cleared the entire corner of 'Īao Valley Road and the entrance. I planted elephant ear to keep the grass out, and am slowly replacing it with wauke root suckers from the plants around the museum, a hala pepe I rooted from a branch of one of the trees that broke off, and a ma'o hau hele donated by the Botanical Gardens.

It would be nice to get a list of plants that are native to 'Īao Valley so we could plant things that naturally do well here. Because there is so little native vegetation left on the valley floor, it's difficult to tell what's native by just looking around. Also, with a list, our requests for plant donations could be more targeted.

What kind of help have you gotten with your landscaping efforts? Every so often, a group wants to do a work day. We've had students from Seabury Hall two years in a row. We've had the Kamehameha Schools Honor Society, a Cub Scout troop, and NHPS. For two years we've had interns from Kaho'olawe Island Reserve Center who are training to work on Kaho'olawe – they usually do an incredible amount of work! I also have two volunteers, one of whom has been coming nearly every week for the past two years. I've been weeding several times a week during summer, less so during the school year, when I teach.

What does the future hold for Maui HNC? I believe the HNC Board is focusing on securing long-term funding to make the Center self-sustaining. Years of neglect while HNC concentrated on making the O'ahu branch self-sustaining have taken their toll, and there's a lot of repair work to be done on the buildings. Recently, new Maui board members were selected, some of whom work in construction and who have been extremely generous in donating both building materials and their time to do repairs. I hope they are able to continue to revitalize the Center, as I feel it is a valuable resource for Maui's school children and community. 🌸



Native Hawaiian Plant Society

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E-mail: info@nativehawaiianplantsociety.org

Website: www.nativehawaiianplantsociety.org



Hunakai (*Ipomoea imperati*)
Photo by Irene Newhouse



NHPS Logo Shirts



'Awikiwiki flower design
by NHPS member Muffie Davis

DON'T FORGET TO RENEW!

Membership Form

Name (please print) _____ Date _____

Address _____

City _____ State _____ Zip _____

Telephone (Hm) _____ (Cell) _____

Email _____

(Please print carefully!)

Donation Categories: Individual \$20 _____ Family \$25 _____ Other \$ _____

Native Hawaiian Plant Society, P.O. Box 5021 Kahului, Hawai'i 96733-5021

The Native Hawaiian Plant Society is a nonprofit 501(c)(3) organization founded in 1980.