



# Native Hawaiian Plant Society

*Nanea Nā Pua O Ka 'Āina Aloha*

NHPS Newsletter

February 2019

## Taking a walk on the wild side at Kealia Pond

By Mia Charleston

Nicknamed the “patron saint of swamps”, author Henry David Thoreau once wrote “I enter a swamp as a sacred place, a sanctum sanctorum . . . I seemed to have reached a new world, so wild a place . . .”. Fortunately here on Maui, there is a team of volunteers and the Friends of Kealia Pond (National Wildlife Refuge FKP) who share Thoreau’s view of wetlands. They are focusing their efforts on restoring the native plant communities in the



Kealia Pond National Wildlife Refuge, that reflect the ecology of what might have existed before human settlement of the Hawaiian islands.

In 1992, the Kealia Pond National Wildlife Refuge (NWR) was established to preserve, restore and protect wetland habitat crucial for endangered waterfowl such as the Hawaiian coot (‘alae ke‘oke‘o) and the Hawaiian stilt (ae‘o) which utilize the area for foraging and nesting. The U.S Fish and Wildlife Service manages the refuge, encompassing over 700 acres. Not only does the refuge have a large wetland ecosystem, but it also contains tropical shrublands and a coastal dune.

I had the pleasure of touring all three habitats with long-time volunteer and land steward, Sonny Gamponia, who is also a member of FKP. According to Sonny, in the 1980’s Rene Sylva began planting sandalwood, wiliwili and *Pritchardia beccariana*, a native loulu plam. Forest and Kim Starr extended the native plant community by restoring a section of the dunes with ‘aki‘aki, aweoweo and kou. Jack Hazen planted more trees in the mid-1990’s, volunteering at Kealia Pond until he was 91 years old! His work can be appreciated to this day as you drive through the visitor center entrance where hala and wiliwili trees welcome guests as they enter the refuge.

### The Coastal Dune

In an effort to reestablish the ecological integrity of the ecosystem, volunteers have been conducting small experimental plantings. Their goal is to increase native plant growth and decrease invasive plant species (marsh fleabane, kiawe, buffel grass and pickleweed).

To track changes over time, two variables are measured: 1) proportion of native plant species among the grasses, ground cover, low shrubs, tall shrubs and trees in a given area; and 2) proportion of native root coverage of 10 x 10 meter sections of the same area. Both variables increased comparing from 2014 to 2017. Documentation of these changes can be seen at the following link: <https://kealianwr.smugmug.com/Ecology>

Increasing the root density with diverse native plant communities (‘ākulikuli, pa‘u o hi‘i‘aka, pōhuehue, ‘ilima, ma‘o, naio, naio papa) has transformed small degraded

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Mia Charleston

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sections of the dunes and coastal strand into functional habitat for pollinators and potential nesting sites for hawksbill sea turtles and wedge-tailed shearwaters.

**The Tropical Shrubland**

One of the main objectives in the Kealia Pond NWR Comprehensive Conservation Plan for the tropical shrublands is to enhance habitat in order to attract the endangered 'ōka'i 'aiea (Blackburn's sphinx moth). A pollinator garden has been planted behind the visitor center primarily to attract the moth. Sonny is hopeful that the small native shrubland projects surrounding the pollinator garden will connect to provide habitat of scale for endemic insects like the Kamehameha butterfly, koa butterfly, the Hawaiian yellow-faced bees, as well as the Hawaiian hoary bat.

In 2007, Stephanie Pau and a group of researchers studied soil samples from the middle of Kealia Pond. Pollen from 28 plant families were identified as having existed between 2500 BC to the 900 AD. At present, 14 of the 28 prehuman settlement species are growing on the refuge. There now nearly 50 species of native plants growing in small patches on refuge property including 'a'ali'i, wiliwili, ma'o, kou, 'ākia, naupaka, hala, naio and 'aki'aki grass.

**The Wetlands**

The wetlands of Kealia are inundated with invasive Indian marsh fleabane, pickleweed and kiawe. Small patches of 'aki'aki grass and makaloa and kaluhā sedge remain. Once the invasive plants have been removed, wetland grasses spread on their own. Rhizomes from these essential wetland species can be used to expand critical wetland habitat for the Hawaiian stilt, Hawaiian coot, nēnē and migratory shorebirds.



An example of the aeroponic kit being used in a pilot propagation project at Kealia Pond. This picture shows a small bale with a rooting plant on top.

Along with these projects done by community groups and individual volunteers, Sonny has his own pilot project to utilize small aeroponic systems to propagate native plant species. The aeroponic units would decentralize plant propagation from a single small greenhouse and expand native plant propagation to the general community.

After purchasing a couple of aeroponic kits, Sonny built his own using materials from local hardware and gardening stores. He monitored propagation times and survival rates of native species used at the refuge. The basic principal behind aeroponics is to suspend plant cuttings where root structures can be exposed to a mist of water and nutrients at regular intervals, basically replacing soil. Why replace the soil? According to studies performed by NASA aboard the Mir space station using adzuki beans, "Aeroponics systems can reduce water usage by 98 percent, fertilizer usage by 60 percent,

and pesticide usage by 100 percent, all while maximizing crop yields. Plants grown in the aeroponic systems have been shown to uptake more minerals and vitamins, making the plants healthier". From the [https://www.nasa.gov/vision/earth/technologies/aeroponic\\_plants.html](https://www.nasa.gov/vision/earth/technologies/aeroponic_plants.html).

The Friends of Kealia Pond is working on a project to loan aeroponic units to volunteers who wish to propagate cuttings for the native plant restoration projects at the refuge. Participants in this program will transplant the rooted cuttings into small bales of native grasses and native seeds. These bales, about the size of a loaf

PROPOGATION EFFICIENCY			
Species	Rooting time	Survival rate	Outplant in:
Akulikuli			
<i>Sesuvium portulacastrum</i>	2 weeks	80%-100%	1 month
Akiaki grass			
<i>Sporobolus virginicus</i>	2 weeks	80%-100%	1 month
Ewa hinahina			
<i>Acharanthes splendens</i>	2 weeks	80%-100%	2 months
Naupaka kahakai			
<i>Scaevola taccada</i>	2 weeks	80%-100%	2 months
Ilima			
<i>Sida fallax</i>	2 weeks	80%-100%	1 month
Kului			
<i>Nototrichium sandwicense</i>	3 weeks	50%-75%	3-4 months
Kokio ula (Red Hibiscus)	3 weeks	50%-75%	3-4 months
Nanu			
<i>Gardenia brighamii</i>	3 weeks	50%-75%	3-4 months

of bread, are “cured” and planted in shrublands wetlands and dunes at the refuge.

Based on the continued accumulative efforts of FKP, it seems hopeful they will obtain their goal of restoring the native flora to Kealia National Wildlife Refuge.

Sonny wanted to acknowledge that the restoration projects would not be possible without the pioneering work by Rene Sylva, Anna Palamino, Forest and Kim Starr and the Native Hawaiian Plant Society. The whole ecology of the Hawaiian tropical shrubland and coastal strand is near extinction. The trend is slowly being reversed with projects at Haleakalā National Park, Mākena, Kanahā Pond and Waihe‘e Wetlands and Coastal Dunes. Restoring native plant communities is the best gift we can give to the ‘aina.

If you would like to learn more about the refuge, the Visitor Center is open M-F from 8:00 a.m. to 3:30 p.m. and the coastal boardwalk is open seven days a week from 6:30 a.m. to 7:00 p.m. You can find Sonny and the FKP volunteers on Tuesday and Thursday mornings from 9:00 to 11:00.

Thank you so much to Sonny Gamponia, his wife Diana Lyons, and all of the wonderful volunteers like Frank Krau and Carl Griffith, as well as the staff at the refuge who I met during my tour. Your work is truly motivating. Mahalo. 🌿



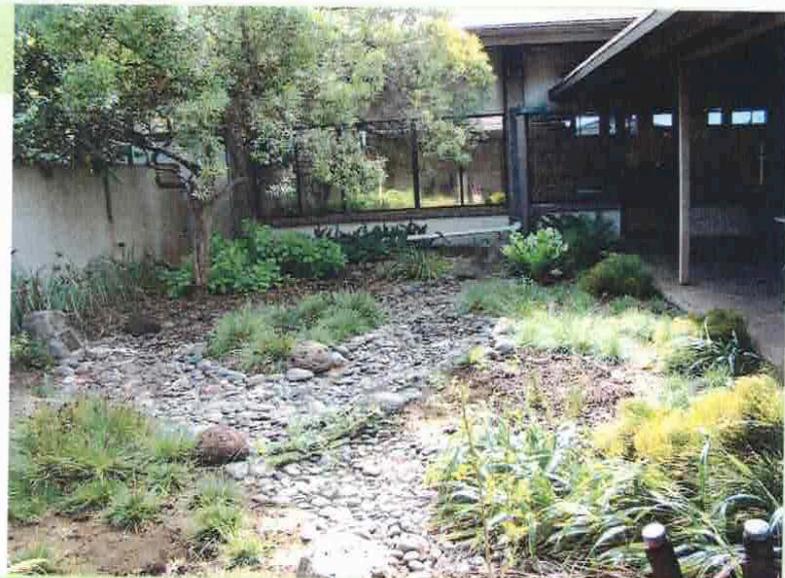
These 5-gallon jugs have timers set to water new native plantings.

**Kahului Library Courtyard Garden  
By Lorna Hazen, NHPS Project Leader**

We plan to add more plants to the Library Garden.

1. Several *Shiidea globosa* along the shelf in front of the back wall.
2. An ‘ie‘ie vine which will climb up and across the back wall.
3. One maiapilo shrub.
4. One dwarf naupaka
5. Several species of *Peperomia* in a wet area

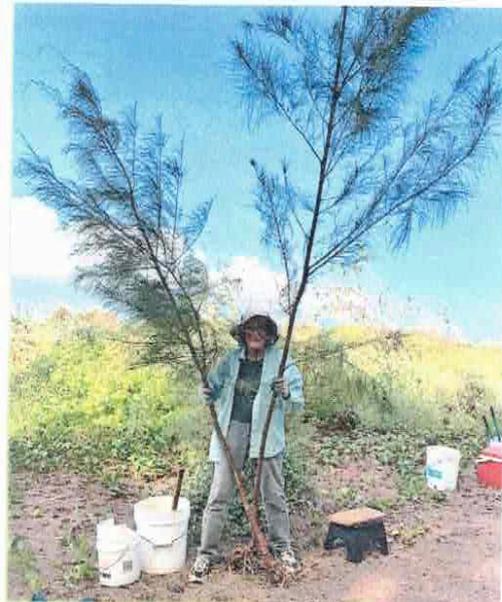
To volunteer, we meet every second Thursday at 9:00 am at the Kahului Library and are usually done by 11:30. For more information, call Lorna at 572-6338.



**Kanahā Pond  
By Becky Lau, Project Leader**

We’ve been concentrating on three areas at Kanahā, including the back gate visitor entrance area. Weed problems are generally lessening as the aki aki grass and pohuehue (beach morning glory) fill in more and more. We have a core of about six volunteers, but would love to have more. We meet at 8:30 am the first and third Thursdays of every month. Call Becky at 575-2369 or 283-8493.

Photo (left): Martha standing with two ironwood saplings she dug out. Good job, Martha!



## What we did... NHPS Service Trips in 2018 By Irene Newhouse

**January**—Our January service trip was to the Rare Plant Facility in Olinda, which thirteen of us attended. Anna Palomino had plants selected for us to plant on the slope between the Rare Plant Facility and the Forest Bird Recovery Center. We planted them all by eleven a.m., weeded another hour then had lunch in one of the green houses. Anna had plants for participants with yards. I was able to get, because there were extras, three olopuia for Hawaii Nature Center. (Photo: Kanawao, the endemic cousin of hydrangea.)



**February**—Five of us went to the *Hibiscus brackenridgei* enclosure, including Project Leader Hank Oppenheimer. The rain resulted in its being very green, and the largest *H. brack.* was covered in flowers. There were many seedlings. Nehe were flowering, and there were aweoweo plants. We primarily removed lion's mane and grass. Our years of work on koa haole are paying off – there wasn't much in the enclosure. (Photo: Ma'o hauhele a/k/a *Hibiscus brackenridgei*, our Hawai'i state flower)



**March**—It was Ha'ikū School's turn. Six of us assisted Project Leader Becky Lau in the area between the road and the school parking lot and in various planting islands. There were many seedlings – 'ilima, alahe'e, a'ali'i, and even 'ākia. Some of took some home. (Photo: Endemic loulu palm in the school parking lot.)



**April**—Our activity was lei-making at the Ha'ikū Ho'olaulea. Tammy Sanches made set-up and take-down easy for us by enlisting family members and friends to help out. As usual, we had material donated by Fleming Arboretum, MNBG, and UH/MC, while Arianna Feinberg recruited two others to help pick at Forest and Kim Starr's and Anna Palomino's. Katie Romanchuk provided material from her Ohialani, and Dustin Palos brought palapalai. Three members worked all day – mahalo nui loa! – while four others worked in the morning, and an additional three worked in the afternoon. We also had help from two Ho'olaulea volunteers. Mia



Charleston and Christine Lamb will be the coordinators for next year. (Photo: The NHPS lei-making booth is one of the most popular booths at the Ha'ikū Ho'olaulea.)

**May**—Eight of us went to Fleming Arboretum at Pu'u Mahoe. We worked on the NHPS Forest, planting and weeding, then went to the cabin for lunch. Director Martha Vockrodt-Moran provided her signature purple cow desserts, which we enjoyed while admiring the view toward Kanaio. (Photo: Martha Vockrodt-Moran instructing the troops on proper planting technique.)



**June**—It was Haiku School again with five of us assisting Becky weeding the planting bed along the entrance drive to the school parking lot. (Photo: Becky Lau, "I heart weeding" at Ha'ikū School.)

**July**—July's trip was to Maui Nui Botanical Garden, where five of us worked along Kanaloa Avenue between the front and back garden gates, renewing the planting by the Botanical Garden sign near the back gate. Director



Tamara Sherrill provided a marvelous lunch from Ba-Le – the tapioca pudding was to die for! (Photo: Literally weeding the fence along Kanaloa Avenue.)



**August**—By popular demand, NHPS returned to the Rare Plant Facility in August – twenty-plus participants! (I lost count after that.) Again, we planted along the slope next to the Forest Bird Recovery Center, and once more we finished planting everything early, so weeded. Participants could select from kanawao, ‘ōhā wai, and a fern, *Deparia* genus. Hawaii Nature Center gained a kanawao and a *Deparia*. (Photo: Dustin Palos happily planting at the Rare Plant Facility.)



**September**—NHPS did not have a formal work day in September. Not enough members were available to do lei-making at MNBG’s La Ulu Day. MNBG could not find another group or person to do the activity, so in July Irene Newhouse held a lei-making class for Weed and Pot Club members on a Wednesday morning, and four of the attendees signed up to help on La Ulu Day. Additional NHPS and Weed and Pot Club members also signed up to help; enough NHPS members so that MNBG Director Tamara Sherrill paid NHPS the vendor stipend as if we’d done the entire activity. Thanks, Tamara! (Photo: It’s not hard to make a native plant lei. NHPS volunteers can teach you how to do it in less than two minutes!)

**October**—In October NHPS returned to Ha‘ikū School once more to work along the fence by the Community Center Parking lot. Irene Newhouse brought some kupukupu fern to plant along the fence. Becky had a flat of ‘uki‘uki from MNBG, plus several nehe in 1-gallon pots. The five of us were rained out after one hour. I’ve been attending NHPS Saturdays since late 1998. A very few have been canceled due to rain, but we’ve never had a rain-out like this! There was a re-do on Monday November 5, with five attending. (Photo: Katie Romanchuck with her hands full of weeds at Ha ‘ikū School.)



**November**—November is always Arbor Day at MNBG, which Mia Charleston coordinated. Nine other members turned out to help, and Martha Vockrodt-Moran brought materials down from Pu‘u Mahoe the day before. Other materials were provided by Janet Allan, Dustin Palos, Katie Romanchuk and Tammy Sanches who picks at UH/MC. Members of MNBG staff and volunteers picked at the garden. (Photo: Many hands make many lei at the MNBG lei-making booth on Arbor Day.)

**December**—For our December service trip, eight of us joined Project Leader Hank Oppenheimer to work on the ‘awikiwiki enclosure at LaPerouse. In the past, the corner by the entry has had invasive grass. This year much of it was displaced by uhaloa. The makai side has always had koali awa - morning glory - which was really rampant this year. We didn’t have time to work on it all, but we did decrease the area it covered along its edges. The ‘awikiwiki is still there, mostly on two of the wiliwili trees. We saw both seeds and flowers. There



was unusual insect activity: carpenter bees, bean butterflies and sweet potato bugs. (Photo: Inspecting fence to make sure goats can’t get under.)



**Bonus Photo:** On NHPS outings, you get special experiences, like viewing this monk seal resting on shore. (Telephoto lens used; no regulations on close approach to endangered animals were violated. Photo by Irene Newhouse.)

### President's Message

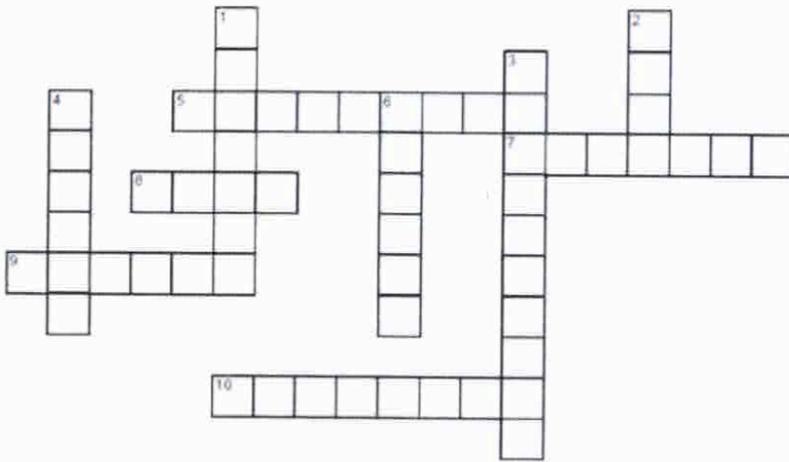
The Native Hawaiian Plant Society volunteers have a range of skills, from amateurs, professionals, employed, retired, young and old. This newsletter describes some of our 2018 activities, working to protect and increase the plants which lived here long before people came. These plants are a vital part of the interdependent life which includes soil, water, skies, and plants and animals.

In the new year ahead let's keep on, welcome old and new friends, support old projects and welcome new ones. Thank you all for your contributions to help keep Maui No Ka Oi.

Martha Martin,  
President, Native Hawaiian Plant Society

## Plant Puzzles by Chuck Chimera

### Plants of the Hawaiian Wetlands



#### DOWN

1 Mats made from this indigenous sedge were considered to be the finest in all of Polynesia. Known by this name on Ni'ihau, it is called ehu'awa on the other islands.

2 This mat-forming native herb, with prostrate stems and fleshy leaves, is common in coastal areas on mudflats, rocks, marshes, and banks of brackish streams, and is popular as a garden groundcover.

3 This succulent non-native plant from tropical America, also known as saltwort, is highly invasive and forms dense cover in mud flats, fishponds, salt or brackish marshes and raised coralline beachrock.

4 This endangered wetland fern, somewhat resembling a four-leaf clover, is rare on O'ahu and Moloka'i, but can now be encountered in some landscapes as a drought tolerant groundcover.

6 This indigenous sedge, also known as saltmarsh bulrush, is frequently encountered in mudflats and marshes, primarily in coastal sites on all of the main islands except Lāna'i and Kaho'olawe.

#### ACROSS

5 This succulent plant, the only native member of the Aizoaceae (Ice Plant family), is a natural feature in Hawaiian wetlands, providing habitat for invertebrates used as food by native waterbirds. It is edible, both raw or cooked, and has a slight salty taste.

7 The scientific name for this plant genus comes from kyperos, the Greek word for sedge.

8 This Polynesian "canoe plant", cultivated in wetlands, was an important starch staple in Hawaiian culture and continues to be a popular food source today.

9 One of the few indigenous plants cultivated by early Hawaiians, this sedge was used for cords or nets designed to carry food or water containers. Due to its strength, it was good for deep water fishing line and canoe rigging. They were also used as strainers for 'awa or niu (coconut) drink and medicine.

10 This tropical American tree, introduced to stabilize mudflats on Molokai in 1902, spreads by water-dispersed, viviparous propagules that become fully mature plants before dropping off the parent tree. Highly invasive, it can take over fringing reefs, tidal strand, marshes and other maritime habitats.

Answers on next page

**NHPS Events & Announcements**

**Annual NHPS Membership Meeting & Guest Speaker**

**February 22<sup>nd</sup> (Friday) 2019 at 7:00 pm**  
**Speaker:** Tamara Sherrill, Executive Director MNBG  
**Location:** Hannibal Tavares Community Center, 91 Pukalani St., Pukalani (in the Poolside Room)  
*The Annual NHPS Membership Meeting to elect the 2019 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 or (808) 283-8493

**Ha'ikū School**

**(Mondays afternoon 3:30 to 5:30)** Contact Becky Lau

(808) 575-2369 or (808) 283-8493

**Kahului Library (2nd Thursday 9am-11:30am)**

Contact Lorna Hazen (808) 572-6338 or

lornajack34@gmail.com

**NHPS Guest Speaker**

**Tamara Sherrill, Executive Director of Maui Nui Botanical Gardens, will speak on the long-term storage of native Hawaiian seeds**



**Friday, February 22**

**7:00 pm**

**Tavares Community Center**

**91 Pukalani St, Pukalani**

**(Poolside Room)**

*This Event is Free and Open to the Public!*

*See everything we've been up to*

**SmugMug**

[nhps.smugmug.com](http://nhps.smugmug.com)

**Mahalo Nui Loa**

*to the following donors for their generous contributions in 2018*

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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

Kahului Public Library

Duane Ting and family and Flyin' Hawaiian Zipline

Hawai'i State Department of Land and Natural Resources

Ulupalakua Ranch



**Puzzle Bonus—Nerd Knowledge**

1. Makaloa = *Cyperus laevigatus*
2. 'Ae'ae = *Bacopa monnieri*
3. Pickleweed = *Batis maritima*
4. 'Ihi'ihī = *Marsilea villosa*
5. 'Ākulikuli = *Sesuvium portulacastrum*
6. Kaluhā = *Bolboschoenus maritimus*
7. *Cyperus*
8. Kalo = *Colocasia esculenta*
9. 'Ahu'awa = *Cyperus javanicus*
10. Mangrove = *Rhizophora mangle*

## Native Hawaiian Plant Society

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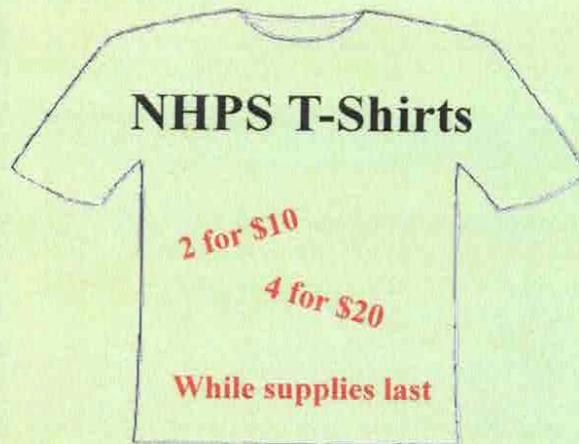


Pua'ala (*Brighamia rockii*)

Photo by Irene Newhouse



NHPS Logo Shirts design by NHPS member Dr. George LeBouvier



'Āwikiwiki flower design by NHPS member Muffie Davis

## DON'T FORGET TO RENEW!

### Membership Form

Date \_\_\_\_\_

Name (please print) \_\_\_\_\_

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

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