



# MAUI NUI BOTANICAL GARDENS



Conserving Hawaiian Plants & Cultural Heritage | Summer 2023 Newsletter | Volume 58

## 'Uala: Untangling a Hawaiian Cultivar

by Tamara Sherrill,  
Executive Director



There is no plant group in Hawai'i more dependent on people than Hawaiian crop cultivars, meaning varieties dependent on cultivation. Of approximately 26 plant species introduced by Polynesian settlers to Hawai'i, some of the most intensively cultivated have lost the ability to reproduce by seed, and were cultivated by offshoots or cuttings for thousands of years before their introduction to Hawai'i. Ancient farmers utilized natural somatic mutations, which are changes that arise from the plant as it grows. Careful observation and selection by ancient farmers resulted in hundreds of uniquely Hawaiian varieties propagated clonally to preserve the changes. There are five important Hawaiian crop species with an impressive amount of genetic diversity created this way. These are 1) kalo (taro; *Colocasia esculenta*) with possibly as high as 800 Hawaiian cultivars at one time, with perhaps 60-65 remaining today; 2) mai'a (banana; *Musa* sp.) with 40 Hawaiian varieties but only 19 known today; 3) kō (sugarcane; *Saccharum officinarum*) with 50-60 sugarcane cultivars of which perhaps 35 remain; 4) 'awa (kava; *Piper methysticum*) with 35 or more original varieties, of which only 13 are still known; and 5) 'uala (sweet potato; *Ipomoea batatas*) 150-250 varieties of which very few remain or have been positively confirmed.

'Uala was a hugely important crop in ancient Hawai'i. Why are we unsure which 'uala are heritage Hawaiian cultivars? There are several possible reasons. 'Uala mature in only a few months, unlike other crops, like kō, that may persist for years. *He 'uala ka 'ai ho'ōla koke i ka wi*; the sweet potato is the food that ends famine quickly. 'Uala can still produce seeds, and sometimes these seeds germinate and may replace an original variety. 'Uala also easily *kahuli*, or mutates. Leaf shapes vary, even on the same plant, making it harder to describe a variety. Last, written descriptions were made after many foreign varietal introductions and hybridizations. The primary English language written resource for Hawaiian 'uala is a single chapter of *The Hawaiian Planter* (1940) written by E.S. Craighill Handy. This publication, with Elizabeth G. Handy and Mary Kawena Pukui, later became *The Native Planter In Old Hawai'i: Their Life, Lore and Environment* (1991). 'Uala varieties being grown in 1940 included American, Japanese, and Portuguese varieties that had been in cultivation for many years. Handy writes that "probably not an eighth of the specimens I collected are reported in this paper" and also that "There are many Hawaiian varieties still

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# Garden News



Photos, from top: Imu being built; 1000 'Ōhi'a seeds in hands for scale; Richards family at Wreath Making Workshop.

## Upcoming Workshops

Preregistration is required for all workshops. Register online at [mnbg.org/calendar](https://mnbg.org/calendar).

**As of publication, space is still available in all listed workshops unless stated otherwise.**

**Current Members:** We've updated our registration process! Please use your promo code to register at the member rate. If you have not received it, contact us at 808-249-2798 or [info@mnbg.org](mailto:info@mnbg.org).

### Imu Building Workshop with Chris Ikaika Nakahashi

Two Days: Friday, July 28th (10am–6:30pm) & Saturday, July 29th (8am–2pm)

This two-day, in-depth workshop will teach many aspects and benefits of cooking in an imu (traditional Hawaiian underground oven). Hands-on instruction will include how to plan, build, and cook from an imu. Imu cooking is a healthy and delicious method of food preparation that perpetuates the Hawaiian culture and sustainability. Participants will get to include a pan of food for cooking in the imu.

**Note:** This is a TWO-DAY workshop. Participants must attend both days.

**Members:** \$100

**New Members:** \$125, includes Naupaka-level Garden Membership

**Register here:** <https://bit.ly/3rA9TLI>

### 'Ōhi'a Seed Conservation Workshop with Dr. Marian Chau

Saturday, September 16th | 9am–12pm

This workshop is part of a series in the Rapid 'Ōhi'a Death Seed Banking Initiative, which aims to expand capacity for collection and banking of 'Ōhi'a seeds across all islands in response to the ROD crisis. It is free and open to anyone who wants to learn how to properly collect, handle, and process 'Ōhi'a seeds, without doing harm to trees or forests, using methods that protect seed viability and ensure conservation value for future restoration.

This workshop is sponsored by the USDA Forest Service Region 5 Urban and Community Forestry

Program. In accordance with Federal law and U.S. Department of Agriculture (USDA) civil rights regulations and policies, this institution is prohibited from discriminating on the basis of race, color, national origin, sex, age, disability, and reprisal or retaliation for prior civil rights activity. This institution is an equal opportunity provider.

**Cost:** FREE. Preregistration is required.

**Register here:** <https://bit.ly/3V85mKB>

### Ka Pili Oha Mai Ka 'Āina A Ka Moana Ke Kalo: The Interconnections Between Land, Sea, & Kalo with Namea Hoshino

Saturday, September 23rd | 9am–1pm

Hawaiian kalo varieties names also refer to other things. Gain hands-on experience in harvesting and identifying heritage varieties. Learn about Hawaiian land, sea, animal, plant names and their connections to kalo varieties names with MNBG Hawaiian Cultivars Manager Namea Hoshino. Kalo tasting is included.

**Members:** \$40.30

**New Members:** \$65, includes Naupaka-level Garden Membership

**Register here:** <https://bit.ly/3LmjbTD>

### Wreath Making with Native Plants

Saturday, December 2nd

Morning Session: 9am–12pm

Afternoon Session: 1pm–4pm

Make a holiday wreath with living, growing native plants OR cut, green, and dried native plants. Living wreaths will grow outdoors for several months or years if watered regularly, and cut foliage wreaths need no further care! Join our staff in this annual Maui Nui Botanical Gardens tradition.

**Members:** \$50.25

**New Members:** \$75, includes Naupaka-level Garden Membership

**Morning Registration:** <https://bit.ly/3mNUtka>

**Afternoon Registration:** <https://bit.ly/423wD4d>

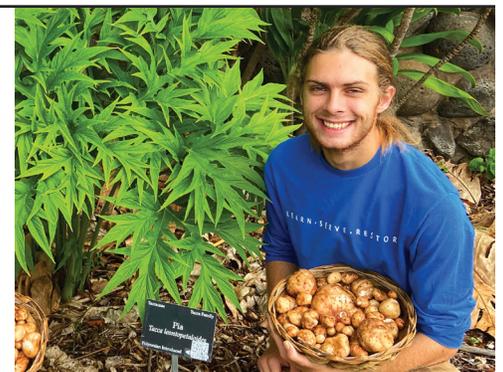
## Spotlight: Kupu Member, Kekoa Ebberson

Kekoa Ebberson is serving with Americorps at the Gardens through the Kupu Conservation Leadership Development Program.

Kekoa is a graduate of Kula Kaiapuni o Maui and is fluent in 'Ōlelo Hawai'i. As a Kupu member, Kekoa assists with anything and everything having to do with our mission, and gets cross training and field experience. Kekoa has worked on germination tests and seed collection for our 'Ōhi'a Seed Project through USDA,

maintaining our coastal area, and leading school groups in cultural activities ranging from using 'Ōlelo Hawai'i to ulana lau niu (weaving coconut leaf).

Kekoa is still considering his options for higher education, but is planning to work in Hawai'i in conservation. He started his second Kupu term in June with MNBG and will continue through the end of the year. Mahalo Kekoa!



# Mahalo to Nā Makua of Pūnana Leo o Maui

Parent volunteers from Pūnana Leo o Maui Hawaiian language immersion preschool made a major donation of time, equipment, and expertise in February. A solid day of work was dedicated to removing hazardous pathways so that our contractor, MauiScapes, could install a safer route around the kamani trees. They also re-sent sidewalk sections that were pushing out of the ground. Mahalo to Jenny and Keli'i Pawai of KP Construction and Excavation LLC for using their equipment and considerable expertise. Mahalo as well to David and Celina Bailey, Charles and Dee Dee Rapoza for the loan of a dump truck; and AJ Trillis and Sione Niula for their hard labor assisting with the removal.



## 'UALA Continued from Page 1

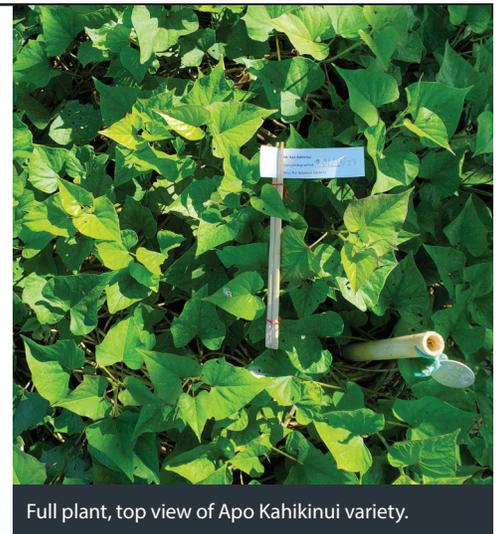
planted on Kauai... Niihau... Hawaii and on Maui that I have never seen." He identifies 24 varieties still being cultivated at that time that were judged to be ancient Hawaiian "with the aid of information given by old native planters."

Maui grew 'uala in both field systems and home-steads. By 1940, 'uala fields along the coast from Maalaea to Honokahua near good fishing grounds were mostly gone due to the displacement of Hawaiians by immigrants working the industrialized sugar and pineapple plantations. Only a few Native Hawaiians living in Makena and near Pu'u Olai were still known to cultivate 'uala for their families. Kula lands, the inland areas between the mountains and the sea, grew both dryland kalo and 'uala, and even on windward Maui in Keanae, Wailua, and Nahiku in 1934 Handy saw well grown patches as well as "wild" 'uala or remnants of old plantings. Southward from Hana town on the high slopes along the coast including Kipahulu still had homesteaders cultivating 'uala as well during this time. But from Kaupō through Kahikinui, Honua'ula, and Kula, from sea level up to 2,000 feet elevation, the greatest dryland, continuous planting area was still growing 'uala in the late 1930's. The fishermen along the coast of Kahikinui and Honua'ula used to exchange their fish for sweet potatoes and taro grown by those cultivating 'uala on kula lands.

Botanists and farmers have been exchanging 'uala and keeping 'uala collections since at least the late 1970's. The oldest varieties in the MNBG collection came from Waimea Arboretum (now called Waimea Valley) but some were collected by Lisa Raymond at other sites on Maui. David Orr, the curator at Waimea since 1989, states that some were collected by Rudy

Mitchell in Kalaupapa in the 70's and others were collected by Ken Nagata in 1989 from Lāna'i City. Amy Greenwell Ethnobotanical Garden, Harold L. Lyon Arboretum, Waimea Valley, National Tropical Botanical Gardens, CTAHR's Sustainable Organic Agriculture Program, and Maui Nui Botanical Gardens all have exchanged varieties dozens of times over the last two decades, and all currently hold some kind of collection of 'uala varieties.

To this end, the 'Uala Working Group is meeting regularly to continue the effort to untangle 'uala. Twelve meetings have been held by the group since August of 2021 with the purpose of improving management and stewardship of Hawaiian and Pacific 'uala collections through pono practices and collaborative learning, and to encourage mindful, rigorous science and practice among collections managers, researchers, and students who may seek to work with Hawaiian 'uala varieties. The group began by requesting all researchers and botanical gardens who hold Hawaiian 'uala cultivars collections to sign a guiding principles document. The group has developed photo documentation protocols and collections are now sharing photos of their plants as they are harvested. The University of Hawai'i's Mikey Kantar (Department of Tropical Plant and Soil Sciences) and Aurora Kagawa-Viviani (Department of Geography and Environment/Water Resources Research Center) have put together a research team to synthesize the current state of knowledge on Hawaiian 'uala varieties both in historical records and contemporary botanical collections, and to investigate attributes of the different varieties. The group hopes to untangle the 'uala collections by verifying which, if any, match historical descriptions; develop some informatic tools like online keys that can be used to identify 'uala; and investigate pigments, proteins, and sugars



Full plant, top view of Apo Kahikinui variety.

in the varieties. Penny Levin, of E Kupaku Ka 'Āina, is also funding some research into continuation of archival research into the history of pre-European contact cultivated sweet potato varieties in Hawai'i. They are seeking students to research varieties and planting methods in library and archival collections on Hawaii and Oahu islands. This portion of the project is seeking folks with 'ōlelo Hawai'i fluency, some archival research experience and good sleuthing skills because much of this work will be done with Hawaiian language newspapers and manuscripts.

'Ōpu palula; stomach full of sweet potato greens. Said of a person who can only grow the tops of sweet potatoes, or a poor farmer. Although knowledge of 'uala in Hawai'i is still poor, we are working together to better know what we grow.



# Honoring Lives & Legacies

Leina Wender | Bob Hobdy | Ernie Rezens | Paul Kastner

by Tamara Sherrill, Executive Director

**M**auui Nui Botanical Gardens lost some very important mentors and friends this summer. Elaine Wender passed away May 5th, Bob Hobdy passed away on June 4th, Ernie Rezens passed away on June 13th, and Paul Kastner passed away on June 19th. The Garden will be planting trees and installing new benches to honor them.

## Elaine “Leina” Wender

Elaine “Leina” Wender was an early founder and activist with the Protect Kaho’olawe ‘Ohana and a frequent presence at community meetings. She lived part time in Keanae and part time in town. I knew her only as a fiber artist. The lei of malo’ulu that adorned her hat at one of our events attracted my admiration, and she invited me to her studio in Wailuku to learn how to make it. That led to the lei being incorporated into our Lā ‘Ulu – Breadfruit Day event as an activity and adornment for participants. That simple act of sharing amplified quickly and was a small example of how Elaine’s actions over her lifetime had wide ranging effects on our community. A quote I found about her testimony before the State Commission on Water Resource Development gives a sense of her personality: “I ask you to imagine for a moment what East Maui would look like if the streams flowed free,” Wender said. “Then imagine a company coming in to try to build the system which now exists. I don’t believe that anyone in this room would allow it to happen.”

## Robert Wagner “Bob” Hobdy

Robert Wagner “Bob” Hobdy retired from the Department of Land and Natural Resources in 2002 after a 37 ½ year career as a forester. He was even busier in retirement than when working, working as an environmental consultant and serving as a volunteer on the boards of Maui County Arborist Advisory Committee, Hawaii Land Trust’s Advisory Board, the Federal Weed Risk Assessment advisory committee, Maui Invasive Species Committee, and Maui Nui Botanical Gardens. His botanical scholarship was unmatched. He worked with the Bishop Museum for decades by contributing to their herbarium, a global resource for researchers. Bob

discovered 12 new native plant species, described two in scientific publications, and had five native Hawaiian plants named after him. Bob had a comprehensive knowledge of maps and Hawaiian geography, could pinpoint the exact homes of all native plant species, and had beautiful insights into Hawaiian place names that he wrote about in past Garden newsletters. Bob assisted Ernie Rezens in developing the Maui County Planting Plan by creating planting zones based on rainfall and temperature. At Maui Nui Botanical Gardens, Bob was our *de facto* botanist in residence for more than 20 years and served on the board for 15 years. I have many memories of him sitting on the ground with the *Manual of Flowering Plants*, sleuthing out subspecies. He helped us sort out the living Loulu palm collection and answered hundreds of questions about plant identification. Once, upon his return from a trip to New Zealand with his dear wife Doreen, I sat with him to look over the photos of his trip. As we made our way through a sizable stack of prints (this was pre-smartphone), it began to dawn on me that there was not one photo of a person or a view. There was not even a photo of Doreen. Each photo was a single individual plant. By the time we had come to the bottom of the stack I felt as if we had made the rounds of a very complicated cocktail party where I had met all the New Zealand plant cousins. I felt glad I would not have to remember all their names any time soon, but Bob looked as if he had just made fifty new friends. Our board and staff feel the loss of Bob deeply and hope that the continued work at the Garden will be worthy of the botanical knowledge he nurtured in our entire team.

## Ernest “Ernie” Rezens

Ernest “Ernie” Rezens was a beloved scholar, horticulturalist and arborist. He started the horticulture program at UH Maui College in the 1970’s and taught math, science, and physics in Maui schools for many years before that. He taught the arborist certification program at the college and I was a student in his last class in 2004. After retirement from UHMC, he worked

as a consulting arborist and created the Maui County Planting Plan. In his own words, “The Maui County Planting Plan is a guide that can help anyone select a tree to fit their environment and needs, and learn how to plant, stake, prune, water and maintain plants... There are no invasive species in this guide and people can use this guide to find helpful information about installing parking lot trees, planting and pruning trees with illustrated pictures.” I have referred hundreds of people to this guide when they are trying to figure out which native Hawaiian tree will fit their site and grow without irrigation. Ernie was a true delight to talk to, with a ready laugh and enthusiasm for his subject that seemed to lift him straight into the air. Ernie has always been for me the quintessential teacher, the one you wish you had through all the grades.

## Paul Kastner

Paul Kastner has been an essential member of the weekly Weed and Pot Club squad at Maui Nui Botanical Gardens for the past 15 years, along with his loving wife Phyllis who helped with all our events. Paul brought amazing food to share, rarely the same thing twice. Paul racked up more hours than all other volunteers, year after year. He was noted for doing the heavy lifting others would or could not, and always showed up before, during, and after an event to help even if he was the only one. He characteristically showed up on May 5th to help plant 3 *Kanaloa kahoowawensis* into permanent planters that now inhabit two of the green concrete huts at the Garden. Kanaloa is a critically rare, precious native Hawaiian plant with only 20 individuals in existence, and we trusted Paul completely to help us handle them. When Paul received accolades in 2018 as a County of Maui Volunteer Hero, we recognized his innate leadership ability and his steadiness. That steadiness helped us slowly build and improve on the plant display here at the Garden and his work lives on with us in the health of the plant beds he helped to create. Our staff and volunteers miss Paul dearly each week.

Photos (from left): Elaine Wender; Bob Hobdy with Tamara Sherrill; Ernie Rezens; and Paul Kastner.

# Community Partnerships



## Moloka'i 'Ōhi'a Seed Collecting Trip: Sept. 29–Oct. 1 & Nov. 10–12, 2022

by Emmely Cabacungan,  
Nursery & Landscape Design Manager

Maui Nui Botanical Gardens staff and volunteer, Cathy Davenport, myself, and Jennifer Higashino traveled to Moloka'i in September and November 2022 to collect 'ōhi'a seeds for the ROD (Rapid 'Ōhi'a Death) Resistance Partnership Project through the US Forest Service. We partnered up with The Nature Conservancy (TNC) on our first trip and Moloka'i Land Trust (MLT) on our second trip. Moloka'i has only 5 of the 14 types of 'ōhi'a; (*Metrosideros polymorpha* var. *glaberrima*, *Metrosideros polymorpha* var. *incana*, *Metrosideros polymorpha* var. *polymorpha*, *Metrosideros polymorpha* var. *pumila* and *Metrosideros waialealae* var. *fauriei*).

This was my first time to Moloka'i, so of course I was super stoked for this trip! On our first day, we got our Jeep rental, did our grocery shopping at Kualapu'u Market and Misaki's, then had lunch at a food truck called "Taste of Moloka'i". We finally picked up Jennifer after a long day of flight delays and made the decision to chance it up mauka to Kamoku Preserve to make a couple 'ōhi'a collections. Before we started to walk, we met up with Wailana and Josh from TNC. We started our collections and then had dinner up on the mauna. As night fell, we drove down to town and waited for Kanemitsu Bakery to open up their back alley way for hot bread. I ordered a nice, toasty, cinnamon-flavored bread.

On our second day, we got an early start to drive up the mountain back to Kamakou. It was such a beautiful day with prime conditions. Our goal was to hike into Pēpē'ōpae Bog, do some collections there, and then to Pelekunu lookout. We did a couple of collections as we were driving up to the start of the boardwalk. Before we hiked in the forest, we scrubbed our boots and made our way on the boardwalk. I was so amazed by the array of biodiversity in the forest: 'ōhi'a, 'ōlapa, hoi kuahivi, pa'iniu, makole, mahinalua, hoe a Maui, *Cyannea*, wahine noho mauna, pilo, kōlea, kōpiko, 'ama'u, hapu'u, moa, 'ie'ie and so much more! We made our way to the lookout and, at that moment, I was in awe of the beauty of Moloka'i. We then had the best pupu dinner with one of Jennifer's colleagues; Butch Haase's house.

On our third day, we made our way down to Mo'omomi to do a coastal collection of hinahina (*Heliotropium anomalum*) and check out all the ua'u burrows. We

then went to the east side of the island to holoholo around, checked out Pu'u o Hoku Ranch, and made our way back to the Airport.

On our second trip, we worked with Moloka'i Land Trust and partnered up with William "Butch" Haase, Ali Lucas, and Patty Pali. We all carpooled together down to Mokia Preserve which is a 1,718-acre parcel that contains approximately 5 miles of rugged shoreline, remnant native coastal strand and dune ecosystems, seasonal wetland, and several ancient Hawaiian sites. We briefly met up with the other MLT field crew and KUPU members who were working on their new "predator proof" fence where no ungulates, feral cats, rats, and mongoose can go through in protection of the 'ua'u kani colony. We collected coastal seeds of; 'āweoweo papa (*Chenopodium oahuense* subsp. *ilioensis*), pā'ū o Hi'iaka (*Jacquemontia sandwicensis*), kākōnakona (*Panicum torridum*), and 'ōhai (*Sesbania tomentosa*).

On our second day, we went up mauka to TNC Kamoku Preserve to do collections of 'ōhi'a. Our main purpose was to collect in the bog at Pēpē'ōpae, but the weather was a little wishy washy where it was raining and sunny. When we got into the bog, it was blistering wind with the cloud mist swooping in. We were able to do some collections, but cut the trip short because the rains were starting to come. We went to another trail at a lower elevation and did more collections.

On our last day, it was raining all over Moloka'i so we made the call not to go up mauka because we didn't want to get stuck up there. We went to the east side to check out some 'ōhi'a on the side of the road and then holoholo to Pala'au State Park to check out Kaule o Nānāhoa and Kalaupapa Lookout. With all the adventuring around Moloka'i we said A Hui Hou, until our next collection trip.

Mahalo e TNC: Wailana Moses; MLT: Butch Haase, Ali Lucas and Patty Pali; MNBG: Cathy Deavenport and Jennifer Higashino.

Mahalo e Moloka'i!

This institution is an equal opportunity provider.



Photos from the top: Jennifer Higashino, Cathy Davenport, and Emmely Felipe; orange 'ōhi'a lehua; 'ōhi'a 'ano'ano (seeds); and Jennifer Higashino in Kamakou.

# MNBG + GoFarm Hawai'i: Workshop Collaboration

We started off the kauwela (summer) season offering three workshops in partnership with GoFarm Hawai'i: Foods from Koa Haole with Sunny Savage, Processing Hawaiian 'Awa with Ka'iana Runnels, and Large Batch Kūlolo with Namea Hoshino. Thanks to GoFarm Hawai'i, these workshops were able to be offered at a discounted rate of \$15 each. Mahalo GoFarm Hawai'i!



Foods from Koa Haole w/Sunny Savage



Processing Hawaiian 'Awa w/Ka'iana Runnels



Large Batch Kūlolo w/Namea Hoshino

## Senior Project Supports Native Plants

Maui High student Shayna-Mae Wakayama designed and sold two tote bags featuring native plants, donating the proceeds to MNBG. She shared the following about her project:

"For my senior project, I wanted to emphasize the importance of Hawai'i's native plant species by designing tote bags. I created two designs highlighting the 'ihi (*P. molokiniensis*, left) and the ko'oloa'ula (right) and donated the profits to the Maui Nui Botanical Gardens. Overall, this project was an inspirational experience as it was a good opportunity to give back to the community."

We mahalo Shayna-Mae for her generous donation. She raised \$1060 and her beautiful tote bags sold out!



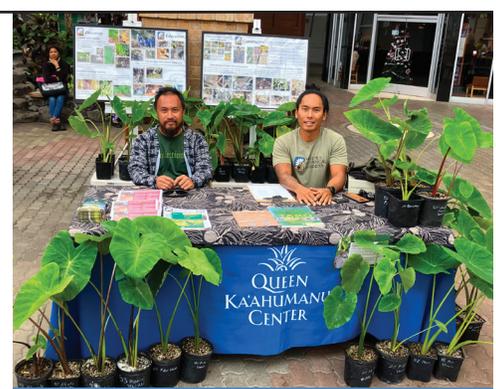
# Mahina 'Ōlelo Hawai'i

by Namea Hoshino, Hawaiian Cultivars Manager

Ma ka mahina 'o Pepeleuali 4th, 2023 i ka ho'olaule'a Mahina 'Ōlelo Hawai'i ua kapa i ka hanana 'o Ho'oulu Pilina ma Kuini Ka'ahumanu Kikowaena Kū'ai i Kahului. Ke 'alo o Maui Nui Botanical Gardens i ke kalo kū'ai aku a nui na kanaka Hawai'i haku me na mea i hana a ka 'a'a lole ana. He kupaianaha i ka hanana o ke kako'o mai nā kō'one'i a me na Hawai'i kaiāulu i ka ho'omau ana o ko kakou 'olelo makuahine. Nā 'ike a me nā hana like me ku'i kalo, ka hana 'upena, hana kapa, a me lā'au lapa'au i ke komo mai ana i ka hanana. Ua hihia na lehulehu lawelawe i ka hanana, pākela no ke kalo ho'āhu. Nunui ka nīnau a ka pane, akā ua ku'ai aku kela kahī no ko lakou home e ho'okanu 'ai. Ka hō'eu'eu o ka 'Ōlelo Hawai'i, nā 'ike a me nā hana, nā mo'olelo, a me ka mahi 'ana o ke kalo, kekahi no ka he'ahe'a i ka wa hala. Ke kumu no ke kalo a ka 'olelo i kō kākou nohona e nā hua'olelo mai kō kākou mau kūpuna ka mea i laua 'olelo aku; "I ka 'olelo nō ke ola, I ka 'olelo nō ka make" & "Ke kalo ha'ule hope, E ha'ule kākou!" Kēia mau hua

'olelo o ka 'Ōlelo No'eu e hā'awi aku i ka mana'o nui i mea pono e malama 'ana i ia manawa a ka mua. "E Ola Mau Ka 'Ōlelo Hawai'i a ke Kua'ana 'o Hāloa."

On February 4th, 2023, in celebration of Mahina 'Ōlelo Hawai'i, an event called Ho'oulu Pilina was held at Queen Ka'ahumanu Center in Kahului. The participation of Maui Nui Botanical Gardens included a Kalo Sale and there were many Hawaiian owners with products and clothing. It was a spectacular event of support from the local and Hawaiian community in continuation of our mother tongue. There were cultural demonstrations like ku'i kalo, net making, kapa making, and lā'au lapa'au (Hawaiian Medicine) for people to partake in the event. Many attendants engaged in the event, especially for the kalo collection. The questions and answers were a lot, but everyone purchased kalo for their home to plant. The revitalization of Hawaiian language, culture, history, and kalo farming is an imprint to the past. Kalo and language are crucial to our existence. In the words of our ances-



Hawaiian Cultivars Manager Namea Hoshino and Garden Maintenance Manager Aaron Guerrero at Ho'oulu Pilina.

tors: "I ka 'olelo nō ke ola, I ka 'olelo nō ka make" (Life is in speech; death is in speech) and, "Ke kalo ha'ule hope, e ha'ule kākou!" (The last kalo fall, we fall!) These words of Hawaiian proverbs and poetical saying gives meaning on what needs to be protected in this present and in the future. "E 'Ola Mau I Ka 'Ōlelo Hawai'i a ke kua'ana 'o Hāloa."



# Kō: A Spoon Full of Sugar

by Aaron Guerrero,  
Garden Maintenance Manager

The beloved canoe plants were held in high regard to the ancient people of Hawai'i and all over the Pacific islands. The essential uses that these plants provided helped ensure the survival of many as they voyaged the Pacific and settled on new land. The traditions of these plants are still present today as it is held in the hearts and minds of a few practitioners, but only one has had a global impact on our modern society.

Sugar that we know of today mostly comes from a cultivated species of grass known as *Saccharum officinarum* "noble canes." The genetics of sugar cane are believed to be highly complex and are attributed to the domestication and crossing of two wild species, one of which is said to be native to Papua New Guinea in Melanesia. The global dispersal of this crop goes unrivaled. It is the crop that gave birth to industrialized agriculture as it spread through Asia, Europe, Africa, South America, North America, and eventually to Hawai'i. Crystallized sugar was the product of this new age industry and fueled the push for maximizing profits. It is consumed in mass amounts everyday by people all over the world. Although sugar is a vital physiological compound for our bodies, excessive amounts may lead to a metabolic disorder known as diabetes. It is a condition where the body is not efficient at utilizing blood sugar for energy. About 130 million people live with diabetes or are prediabetic in the U.S.

The pairing of the sugar cane industry and Hawai'i are well known throughout our islands. Frankly, many aspects of our local culture would not be here if not for the sugar industry due to the importation of labor, but historically, these islands share another connection to this plant.

Sugar cane or kō first made its way to Hawai'i on canoes. Kō is one of the valued canoe plants introduced here more than a thousand years ago by the ancient people who settled these islands. Ancient Hawaiians were masters at their crafts, including agriculture. With time and observation, they were able to devel-

op practices that ensured the survival of many food crops by establishing a genuine harmony between nature, the farmer, and the ahupua'a. Kō was planted among other crops in an efficient manner and their intimate relationship with their crops helped create many different varieties. This can be found with other cultivated crops such as 'uala, kalo, mai'a, and 'awa.

The technique that was shared by ancient cultures around the Pacific to extract the sugar water was by simply chewing the stalk and disposing of the fibers. It proved to be an effective way to keep teeth clean and plaque free as well as helped strengthen muscles in the jaw. Although it served as a nice sweet refreshing treat for everyday life, old texts and mo'olelo show that the main purpose of kō was to sweeten bitter tasting medicines or served as part of the medicines as well. It was also used for ceremonial and religious offerings, as well as in hana aloha, love magic. It is well documented that certain varieties of kō were reserved for these specific uses.

Researchers are beginning to shed light on the health benefits of raw sugar cane water. There are now modern scientific data that support the notion that raw sugar cane water can be anti-inflammatory, relieves pain, lowers blood glucose levels, improves urination, and may protect the liver. There are also claims that it may be slightly better for exercise recovery in athletes when compared to sports drinks and plain water.

Maui Nui Botanical Gardens continues to work closely with a few select gardens and research centers around the state in helping to sort out and cultivate known Hawaiian heirloom varieties. Most of this research is led by Noa Kekuewa Lincoln, who released a book about his work in striving to map out the genetics of these varieties and giving kō farmers and practitioners a resource and database on identifying sugar cane varieties, including introduced and hybrids. It will always be an important value of our Garden to preserve and propagate Hawaiian cultivars because evidently, they are the product of many generations of ancient people's intimate relationship with their crops...*He Keiki Aloha Na Mea Kanu.*

## MNBG Partners with Maui Ocean Center

The Maui Ocean Center in Ma'alaea is sponsoring Maui Nui Botanical Gardens' work to preserve native coastal plants. Maui Nui Botanical Gardens has the best collection of native Hawaiian coastal plants in the state due to its location on a former dune site. MNBG has long wanted to incorporate wild collected coastal species into the seed storage program. The Maui Ocean Center signed an MOU with the Garden to help establish the seed stock to support shoreline restoration and replanting efforts on Maui for the purpose of creating natural safety buffer against the sea level rise. They donated \$10,000 and will be donating a further \$5 for every Indigenous Plant Tour that the Ocean Center hosts. The Garden will be surveying coastal sites and working with landowners to secure permission for seed collection of both common and rare species. The first collection trip was in July, with three sites surveyed and seeds of three coastal species collected with permission from the Hawaii Land Trust from a vacant lot very close to the Garden. Collecting small amounts from many individual plants is important for preserving genetic diversity and providing strong plants for coastal restoration efforts. Mahalo Maui Ocean Center for your wisdom and foresight in supporting our conservation program.



Photos: Pā'ū o Hi'iaka (*Jacquemontia sanwicensis*), KUPU Servicemember Kekoa Ebberson collecting pā'ū o Hi'iaka seeds.

# MNGB's Contributions to the Community

- Community Giveaways of 'ākulikuli, 'ala 'ala wai nui, 'ilie'e, 'uala, koa, 'a'ali'i, māmane, lā'i cuttings,
- Huli Distribution to Maui Community - 20 varieties
- Grow Some Good (kō)
- Hālau Hula Kauluokalā ('a'ali'i, ma'o, pā'ū o Hi'iaka)
- Makawao Elementary School (kō, 'uala)
- Pūnana Leo o Lahaina (palapalai, ko'oko'olau, pā'ū o Hi'iaka)
- Ke Kula Kaiapuni o Kekaulike (ipu)
- Ke Kula Kaiapuni o Lahainaluna (pā'ū o Hi'iaka)
- Ke Kula Kaiapuni o Pā'ia ('a'ali'i)
- Keālia Pond National Wildlife Refuge (ma'o, hao seeds, hō'awa seeds)
- Kahanu Gardens & Mahele Farms (kalo)
- Saint Anthony High School ('a'ali'i, ko'oko'olau, nānū, 'ōhi'a lehua, 'ilima, kupukupu)
- Pukalani Elementary School (kō, 'uala.)
- Maui Nui Seabird Recovery Project (mau'u 'aki'aki)
- Royal Order of Kamehameha ('ulu tree)
- Kauahea, Inc.: Four \$25 Gift Certificates
- Pacific Whale Foundation: ti leaves

# Mahalo to Our Volunteers

- Alia Lum Ho
- Angela Tolosa
- Angelo Sijalbo
- Arc of Maui
- Bailey Wallace
- Chelsey Borge
- Chris d'Avella
- Cleo Dolde
- Easter Seals
- Frank Kane
- Jack Nagasaka
- Jennifer Twelvetees
- Jenny Batangan
- Jill Painter
- Kaehukai Molitau
- Kamana Eugenio
- KUPU Servicemembers - Keālia Pond NWR
- Leila Nagasaka
- Marc Lortz
- Michelle Siores
- Native Hawaiian Plant Society
- Peyton Dix
- Phyllis Sato

- Seabury Hall Environmental Club
- Sonny Ago
- Uma Chaluvadi
- Wailua Kaho'ohanohano

# With Gratitude from Our Garden

- Maggie Sniffen for potluck supplies
- Melia Hamilton for canned drinks
- Diane Carr for clippers and sickles
- Janet Allan for paper goods
- Jeff Gray for mulch
- Maui Arborscapes for mulch
- Wailea Trees & Landscape Professional for mulch
- Maui County Dept. of Parks and Recreation for assistance with water conservation.
- Nick Dudley/HI Ag. Research Center for nursery supplies
- Carl Martin for 'ulu trees

# Wish List

MNGB is currently in search of the following items to help support our conservation goals. Please call us at (808) 249-2798 or email us at [info@mnbg.org](mailto:info@mnbg.org) if you are willing to donate any of the following items.

- Chest freezer (contact us first)
- Garden gloves (all sizes)
- Hand pruners (clippers)
- Handicapable and/or extended reach garden tools
- HawaiianMiles (for interisland travel for staff training)
- Medium sized picks
- Outdoor tables & chairs
- Rakes (leaf or landscaping)
- Shovels
- Sickles

Check out MNGB's Amazon Wish List: <http://a.co/eWBZKw3>

**Note:** We do not accept drop offs of used plastic pots. If you have new or used cement or ceramic pots to donate, please give us a call and we will be happy to arrange a pick up.



# Mahalo Weed & Pot Club for all you do!

- |                     |                     |                         |
|---------------------|---------------------|-------------------------|
| • Gloria Adlawan    | • Joaquin 'Ohana    | • Vilma Seiler          |
| • Janet Allan       | • Paul Kastner      | • Glenn Shiotani        |
| • ARC of Maui       | • Becky Lau         | • Anna Mae Shishido     |
| • River Barros      | • Irene Newhouse    | • Maggie Sniffen        |
| • Diane Carr        | • Michelle Peacock  | • Susan Stewart         |
| • Kimo Conant Eagle | • Benjamin Rachunas | • Mālie Unabia-Verkerke |
| • Easter Seals      | • Winston Reeves    | • Sandy Viloria         |
| • Gabriel Griffis   | • Jennifer Rose     | • Diana Woods           |

## Officers

### President

Chris (Ikaika) Nakahashi

### Vice President

Kathy Baldwin

### Treasurer

Dorothy Pyle

### Secretary

Ellen Osborne

### Directors

Janet Allan

Diane Carr

Jennifer Higashino

Robert Hobdy

Jill Painter

## MNBG Staff

### Executive Director

Tamara Sherrill

### Program Manager

Alexa Helge

### Hawaiian Cultivars Manager

Nameahea Hoshino

### Seed Storage Technician

Cathy Davenport

### Nursery & Landscape Design Manager

Emmely Cabacungan

### Garden Maintenance Manager

Aaron Guerrero

### Grounds & Maintenance

Karen Pollard

Michael Stevens

### KUPU Member

Kekoa Ebberson

## Current Grantors

- AHS Foundation
- Anonymous
- Bank of Hawai'i Foundation
- Botanic Gardens Conservation International
- County of Maui Office of Economic Development & Department of Parks and Recreation
- E Kūpaku ka 'Āina
- Florence Foundation
- Fred Baldwin Memorial Foundation
- Hawai'i Community Foundation
- CHANGE Grants Program
- Kaulunani Program of the DLNR Division of Forestry and Wildlife
- Maui Ocean Center
- O.L. Moore Foundation
- USDA Forest Service Region 5 Urban and Community Forestry Program
- Virginia & Colin Lennox Botanical Research Trust
- Zadoc W. and Lawrence N. Brown Foundation

## Mahalo to our Major Donors

### HONORARY LIFETIME

Anne Carter

Maui EKO Systems

Jim Moriyasu

Kiope Raymond & Lisa Schattenburg-Raymond

### Ka Palupalu o Kanaloa (\$5,000+)

Anonymous

Misao Nakagawa & Francine Paxson

Sunny Savage

### Ma'o Hau Hele (\$1,000-\$4,999)

George & Janet Allan

Edward & Jennifer Baldwin

Katherine Florence

Rose Marie Gooding

Robert & Doreen Hobdy

Makena Management Services Corp

John & Diane Norman

David Reid

Fern Duvall & Mary Santa Maria

Shayna-Mae Wakayama

Morlee Walters

Melanie Ito & Charles Wilkinson

### 'Iliahi (\$500-\$999)

Cynthia & Terry Quisenberry

Bret & Tamara Hillman

Carolyn Gressitt & John Freyermuth

Ellen & Tapani Vuori

Lawrence & Mary Ann Lambert

Leslie Resnick

Lisa Fitkin & Andrew Wright

Mark Seki

Michael Williams

Paul Kastner & Phyllis Sato

Rick Soehren

Sandy Vilorio

Stephanie & Greg Czar

Susan O'Shaughnessy

William & Dorothy Pyle



### Location

150 Kanaloa Ave., Keōpūolani Park, Kahului  
Across from the War Memorial Sports Complex

### Hours of Operation

Tuesday–Saturday, 8am–4pm\*

Closed Sunday, Monday, and Major Holidays

\*Weather permitting

### Group Reservations

Reservations are required for group activities.

### Contact Information

Mailing: P.O. Box 6040, Kahului, HI 96733

(808) 249-2798 | [info@mnbg.org](mailto:info@mnbg.org) | [www.mnbg.org](http://www.mnbg.org)

### Mission Statement

The mission of the Maui Nui Botanical Gardens is to foster appreciation and understanding of Maui Nui's plants and their role in Hawaiian cultural expression by providing a gathering place for discovery, education, and conservation.

### Save a Tree!

If you would like to receive your newsletters via email, please email us at [info@mnbg.org](mailto:info@mnbg.org). You may also view them online at [mnbg.org](http://mnbg.org).

We make every effort to assure an accurate membership list; however, if your name was omitted or misspelled, please contact us at [info@mnbg.org](mailto:info@mnbg.org) and we will be happy to update our records.



Photo courtesy of Hawaiian Airlines

### Follow @mauinuibg





**Maui Nui Botanical Gardens**

P.O. Box 6040

Kahului, HI 96733

## Become a part of Maui Nui Botanical Gardens

Join us in our mission to foster appreciation and understanding of Maui Nui's plants and their role in Hawaiian cultural expression by providing a gathering place for discovery, education, and conservation.

### **Volunteer**

Join the Weed & Pot Club every Wednesday from 8:30am to 10:30am. The group spends an hour weeding and an hour potting plants in our nursery. Wear covered shoes and clothes you can get dirty.

### **Membership**

Yearly memberships help to fund important botanical and educational programs, research and conservation efforts. Fill out the enclosed donation envelope or call 808-249-2798 to become a member.

### **Leave a Legacy**

Play a lasting part in protecting Hawai'i's native plants through planned giving. Consider making a bequest to the Maui Nui Botanical Gardens in your will or trust. We are now able to accept donations of stocks.

### **Learn More**

Our work conserving Native Hawaiian plants through seed storage and crop cultivar collections is highlighted in a short video created during our closure. Visit [mnbg.org](http://mnbg.org) to see the people and projects that need your support.

*Maui Hui Malama participants learning about seed collection.*

(808) 249-2798 | [info@mnbg.org](mailto:info@mnbg.org) | [www.mnbg.org](http://www.mnbg.org)

