

The Leaflet  
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FRONT PAGE

## *Hua Ka Hua*—Restore Our Seed A Public Seed Symposium

**Photo:** Beautiful fava beans. Photo by Nancy Redfeather.

Open-pollinated seed is being lost at a rapid rate. In the United States, 95% of seed varieties that were grown in 1900 are no longer available. These varieties were the backbone of the home garden and the market farm for centuries. The Kohala Center has received a grant through the USDA/OREI (Organic Research and Education Initiative) to hold a public Seed Symposium on April 17 and 18 at the Outrigger Keauhou Beach Resort in Kona. Farmers and gardeners from around the state will be sharing ways to grow, select, and save high quality seeds, as well as planning for a future public seed initiative to support research and an open-pollinated organic seed industry in the state.



The symposium features presentations by statewide and national seed experts, including:



- Dr. Hector R. Valenzuela, Ph.D., Crop Extension Specialist, College of Tropical Agriculture and Human Resources (CTAHR), University of Hawai‘i (UH) at Mānoa;
- Dr. Theodore J.K. Radovich, Ph.D., Sustainable Farming Systems Laboratory, Department of Plant and Soil Sciences, UH Mānoa;
- Alvin Yoshinaga, Restoration Ecologist, Center for Conservation Research and Training, UH Mānoa;
- Matthew Dillon, Founder and Director of Advocacy, Organic Seed Alliance (OSA);
- Micaela Colley, Director of Research and Education, OSA;
- Frank Morton, Wild Garden Seeds in Philomath, Oregon;
- Jerry Konanui, expert in Hawaiian food plant varieties, their propagation, cultivation, harvesting, processing, and use throughout the islands.

**Photo:** Jerry Konanui says, "Maui lehua Kalo....so ono!" Photo by Gladys Konanui.

A free public lecture will precede the symposium from 5:30–7 p.m. Friday, April 16, at the resort. “The Story of Seed: Wild, Domesticated, Bred, and Engineered—Where Did We Begin and Where Might We Go?” will be presented by Dillon and Morton.

*We feel that it will be of great "benefit" for university researchers AND farmers/gardeners to be 'together' in the same room, something which seldom occurs. We hope that both groups will be illuminated by hearing each others mana 'o (wisdom). It is our greatest hope that statewide and island-wide seed working groups will emerge from this Symposium, as well as further workshops to gather knowledge, conduct variety trials, and coordinate field days to share seed and information on-farm, leading to production of high quality seed for both the home and market.* –Nancy Redfeather, Coordinator of Hua ka Hua Seed Symposium and the Hawai'i Island Seed Exchange

Learn more and register for the Symposium at <http://www.kohalacenter.org/seedsymposium/about.html>.

Take the Hua Ka Hua Hawai'i Seed Initiative Survey at <http://www.surveymonkey.com/s/Z3FVSTP>. This Seed Assessment is intended for potential participants, to gather basic information about their interest in and knowledge of seed growing and saving. Information from the surveys will be used to assist us in planning a meaningful program for the Symposium.

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## A Day of Service

**Photo:** Makakapu Ioane, a third grader at Ka 'Umeke Ka'eo Public Charter School, planting ti in the school garden.

On January 18, in honor of Martin Luther King (MLK), Jr., and his commitment to community service, doctors and staff from Kaiser Permanente joined hands with students, teachers, and volunteers to work in three school gardens around Hawai'i Island. “This is our way of giving back to our community,” explained Dr. Jeffrey Tolan, Family Practice Physician at Kaiser Permanente's Waimea Clinic. Kaiser doctors, staff, and families across the state participated in the MLK Day volunteer effort—weeding, pruning, and planting crops in school gardens.

*Kaiser's health care professionals are seeing that the future will be changed through 'education.' They came out to share their mana'o on health through proper nutrition and exercise, and they came to support the work happening in our school gardens. The Kaiser doctors understand that school gardens are meaningful community education*

*projects that are reconnecting our keiki (children) and youth with their food and helping to change nutritional and lifestyle choices for students and their families.* –Nancy Redfeather, Director, Hawai'i Island School Garden Network



**Photo:** Kaiser Permanente's community service day at the Kahakai Elementary School garden.

About 150 volunteers turned out, including plenty of keiki, at Ka 'Umeke Ka'eo Public Charter School in Hilo, where they planted ti, tended the school garden, and removed rubbish from the school grounds. “So much work got done with smiles and laughter,” says Pua Mendonca, Garden Teacher at Ka 'Umeke, “and all ages worked

together with lots of aloha.” More than 50 volunteers of all ages pitched in at Kaiser Permanente’s community service day at the Kahakai Elementary School garden, and 35 volunteers turned out at Mala’ai: The Culinary Garden of Waimea Middle School. Working together, volunteers helped school garden teachers to rake grass clippings to use as mulch, to tend garden beds, to lay new weed mat, to plant seedlings, and to harvest produce.

The Kohala Center humbly thanks all of the Kaiser staff members and community volunteers who joined hands on MLK Day to help us realize a shared vision of health and wellness for island children and their families. Read more about the Waimea work day in “1000 Pairs of Hands” on the Back Page and about the Kahakai work day at <http://www.westhawaiiitoday.com/articles/2010/01/19/local/local02.txt>.

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## Putting Their Energy into the Earth



**Photo:** The 2010 Cornell EES cohort hiking on Pu’u Huluhulu. **Standing, from left to right:** Nicki Button, Professor Alex Moore, Kirsten Sauer, Blake Adams, Lucas Waye, Emily Stephan, Alex Geilich, Catherine Kim. **Seated, from left to right:** Mary Rutz, Sonja Gabrielsen.

In 2010, the Cornell Earth and Environmental Systems (EES) Field Program welcomes nine students to experience life and learning on Hawai‘i Island. The EES Field Program enrolls undergraduate students with an interest in environmental science from any college or university: this year’s students were recruited from Cornell and from Rensselaer Polytechnic Institute. Students engage in a semester of hands-on study of the environment, based in the amazing natural “classrooms” that the island provides. The Cornell program is hosted by The Kohala Center with the collaborative mission to inspire stewardship of the Earth through first-hand experience with the power—and fragility—of Earth’s interconnected systems. Faculty from the U.S. Mainland and Hawai‘i Island work with students to explore terrestrial and marine ecosystems and their conservation. The program also explores the intersection of indigenous and western scientific traditions, as faculty engage the students in an ongoing discussion of Hawaiian history, culture, and world views.

In the face of global climate change, EES participants are committed to creating a carbon-neutral program. (See <http://www.geo.cornell.edu/hawaii/footprint.html>.) This was accomplished for the first time in 2009. Students tallied all of the primary emissions from program activities, including all air travel, ground travel, domestic gas and electricity use, food, and waste. “While reducing emissions is the best means of achieving carbon-neutrality, those emissions that cannot be eliminated are offset by planting trees,” explains Dr. Alexandra Moore, director of the EES Program. Working with two partners, the Dryland Forest Working Group at Ka‘ūpūlehu and the Kohala Watershed Partnership, 2009 EES faculty and students outplanted 250 native trees. Tree planting restores degraded dryland forest ecosystems and sequesters fossil-fuel-derived carbon for hundreds to thousands of years. The 250 trees are calculated to absorb 250 tons of carbon, more than enough to offset the 69 tons of carbon emitted by the EES group during their stay on the island.

*It is important for everyone to have a basic idea of the size of his or her carbon footprint and the components that contribute to it. Beyond that, we discovered that living carbon-neutral is easy and fun. We meet great people, work in unique ecosystems, and we get to help restore native forests locally, while preserving the environment globally. Putting our energy into the Earth instead of taking it out is a win-win situation for all.*

–Dr. Alexandra Moore, Director of the Cornell EES Field Program

Nine of last year's students submitted a paper describing their carbon-neutral semester, "What Does It Take to Be Carbon-Neutral," to the Geological Society of America Annual Meeting in October 2009 in Portland, Oregon. Read their abstract at [http://gsa.confex.com/gsa/2009AM/finalprogram/abstract\\_161935.htm](http://gsa.confex.com/gsa/2009AM/finalprogram/abstract_161935.htm).

This year the EES group will continue to tabulate their emissions and outplant native tree species, as well as monitor the areas reforested in 2009 in order to assess the rate of tree growth and actual carbon storage capacity of Hawaiian forest ecosystems.

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## Whalewatch Village Design



**Photo:** This "Hawai'i Hygiene Hut," or "H3," structure could potentially satisfy Department of Health requirements at a much lower cost than a traditional cesspool or septic system.

How do we encourage farmers to live on the land? Professor Jan Wampler and a group of Massachusetts Institute of Technology (MIT) architecture students have spent the last few months designing a small farm dwelling to be part of a clustered agricultural community in North Kohala, tentatively named by the landowner "Whalewatch Village." The MIT group spent time on the island in October becoming oriented to local planning issues, meeting with key community members and government officials, and collecting information about community planning concerns and desired planning parameters. Back at MIT, they designed the housing, village, overall plan, and a small structure called "H3."

The MIT students were tasked with exploring the feasibility of using local materials and resources in their building design. "All of us, everywhere, must start doing this, explains Professor Wampler. For too long we have been dependent on outside resources—literally, the whole world—for our materials and food. This must stop, and this was our big challenge, but also an exciting new future," Wampler says.

Wampler and the students designed a cluster of ten dwellings plus a community building, which they hope can be constructed with locally sourced bamboo. They also designed the "H3" structure to house an approved composting toilet, a shower, and a sink. MIT planning students are now working to calculate the costs of building the proposed structures, presuming that construction would be locally based, utilizing local bamboo. MIT students are also reviewing Hawai'i County's current building and zoning codes to assess changes that might need to be made to these codes to permit such structures to be built on the island. One product of the students' work will be to outline proposed amendments to current codes to expedite construction of affordable farm dwellings on the island.

*Hawai'i Island has the will to work for a better life. This island has the opportunity to show many places in the world how to create a new future. My students and I would like to continue working on the island.* –Professor Jan Wampler

The Kohala Center hosted a public presentation of MIT designs for interested community members on Friday, January 8, in North Kohala. Over sixty people attended this presentation by Professor Wampler and his team, and the presentation was well received by the audience. View the PowerPoint for Whalewatch Village design at <http://kohalacenter.org/pdf/mitpresentation.pdf>.

Read “The Next Generation of Architects” and “Designing Affordable Farm Dwellings” in the November/December issue of The Leaflet.

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## Very Beneficial Scholarship Opportunities

**Photo:** Alyxandra Hopkins proudly presents the pure plasmid DNA that her group isolated in microcentrifuges at last summer’s CATALYST Academy. To get this final product, they had to meticulously spin, lyse, bind, wash, and elute pelleted bacteria.



The Kohala Center invites high school students to apply for scholarships to summer engineering and environmental science programs at Cornell and Brown universities. Applications are due **February 26** for the Cornell CATALYST and CURIE academies’ one-week residential engineering programs and for the Brown University Environmental Leadership Lab (BELL) this summer.

*The CATALYST Engineering Program was an extraordinary experience that I shall always fondly remember. I had not been particularly interested in pursuing engineering, but this program was very beneficial to me. I learned that engineering encompasses almost every aspect of life and can be applied in every field. I was privileged to work in state of the art laboratories to produce fluorescent proteins and network with other motivated peers from around the nation and the world.* –Alyxandra Hopkins, senior at Saint Josephs High School and 2009 CATALYST Academy scholarship recipient

*BELL brings together students with open minds and big hearts. One of the best aspects of the program is purely the pure passion you feel from each and every fellow student at BELL. This place makes you question everything. Being pushed academically and emotionally as well as physically changes you as person and I believe it is for the better.* –Grace Franchini, junior at Hilo High School and 2009 BELL scholarship recipient

Learn more about these extraordinary learning opportunities in “Once in a Lifetime Experiences” on the Back Page.

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## Managing Human Impacts



**Photo:** Sam Gon under a large *kauila* tree in the dry forest at Kapu‘a, South Kona. *Kauila (Colubrina oppositifolia)* was one of the hardest and most desired woods for tools and weapons in ancient Hawai‘i. “It is so hard to find a large *kauila* tree under which to stand these days,” says Gon.

Hawai‘i’s dry forests are home to many of the rarest plants in the world. Only remnant patches of dry forest habitat remain, though dry forests once dominated the landscape of West Hawai‘i.

The 2010 Nāhelehele Dry Forest Symposium (see <http://www.kohalacenter.org/nahele10.html>) on Friday, February 26, will address dry land forest ecology and restoration efforts in Hawai‘i. Sam Gon, senior scientist and cultural adviser with The Nature Conservancy, will share scientific and cultural perspectives on dry forest plants and

ecosystems. Dry forest systems have the highest tree diversity of any Hawaiian forested ecosystem, and dry forests once provided the vast majority of hardwoods, as well as important seasonal foods. Hawai‘i has now lost roughly 90% of its dry forests and 90% of their constituent species.

*When a Hawaiian thinks about dry land forest, he might think about the rich array of woods that provided shelter, tools, weapons, transportation, recreation, fire, etc. When you come across place names such as ‘Aihualama (to eat the fruit of lama trees), you know how important the lama dry forests were at that place to provide seasonal food. It is a sorry situation indeed to think about the nearly total loss of such a culturally important ecosystem that once surrounded Hawaiians and strongly influenced their material and intellectual culture. –Sam Gon, The Nature Conservancy*

The Nāhelehele Symposium brings together researchers and conservationists to discuss strategies for keeping the remaining dry forests healthy and for restoring these habitats where possible. The primary audience for the symposium is conservation professionals and volunteers, but many of the presentations and discussions will be of interest to the general public as well. This year’s conference will emphasize managing human impacts on Hawaiian dry forests.

Read more about the “Nāhelehele Dry Forest Symposium” on the Back Page.

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## Chocolate!

**Photo:** Cacao pods ripening on the tree at Kuaiwi Farm. Photo courtesy of <http://www.kuaiwifarm.com>.

*Growing cacao and making chocolate candy is a challenging experience, but the end product is worth the work! Participants, even the chocoholics, will definitely get their fill of chocolate. And they will take home a sample bag of goodies. –Una Greenaway, Kuaiwi Farm*



Friends of The Kohala Center are invited to experience Chocolate Growing and Candy Processing on Kuaiwi Farm on Saturday, February 13, from 9 a.m.–1 p.m. This is the second in a series of four learning events sponsored by The Kohala Center in 2010, focusing on “The Birds and the Bees and a Little Bit of Chocolate.”

Hosts Una Greenaway and Leon Rosner will lead participants on a tour of their five-acre organic farm in Kealahou. Several crops are grown and processed right on site, including coffee, macadamia nuts, and chocolate. Participants will learn the steps involved in making chocolate candy, from harvest to the final product. And everyone will be invited to sample the farm’s homemade chocolate. Mmmm!

A picnic lunch is included. For information about this and other Learning Events, contact The Kohala Center at [info@kohalacenter.org](mailto:info@kohalacenter.org) or 808-887-6411. Cost is \$25 per event for current Friends of The Kohala Center; \$75 for new Friends, which includes an event. To learn more about the Circle of Friends, visit <http://www.kohalacenter.org/join.html>.

The Kohala Center’s learning events encourage participants to connect with one another, with cultural and scientific experts, and with Hawai‘i Island’s natural, cultural, and spiritual landscapes. Other trips planned this year are Beekeeping and Volcano Island Honey with Richard Spiegel on March 20, and the Keauhou Bird Conservation Center and Kipuka Puauulu with Jack Jeffrey on May 15.

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## 1,000 Pairs of Hands

Story and Photos by Patti Cook



**Photo:** Energetic volunteers pose for a group photo before rolling up their sleeves and getting to work.

Just five years ago, Mala‘ai school garden was covered with kikuyu grass, with no irrigation, no shelter, and nothing good to eat. Today, the work of over 1,000 people contributing thousands of hours of hard work have transformed Mala‘ai into a productive and beautiful sanctuary on the campus of Waimea Middle School (WMS). Our partnership with the garden, which is an independent nonprofit organization, has transformed our school. Imagine this: middle school adolescents (especially boys) ASKING for salads for lunch!

In fall 2009, we harvested more than 2,800 pounds of Kabocha pumpkins and more than 300 pounds of other produce, including *kalo* (taro), mint, lemongrass, basil, artichokes, radishes, cassava, *‘uala* (sweet potatoes), green beans, green onions, perennial cabbage greens, kale, sorrel, arrugula, lettuce, sweet and chili peppers, yacon, sun chokes, cucumber, tomato, guava, tangerine, turmeric, sage, lemon verbena, New Zealand spinach, parsley, cilantro, mulberries, and pineapple. We also have grown many beautiful flowers and have given a number of plants and seeds including mulberry trees, *kalo huli*, Kabocha seeds, beans, and cassava starts to students and community friends for planting in their home gardens. Under the direction of Amanda Rieux, our Garden Leader, and with the assistance of teachers and community volunteers, we provide classes to more than 300 WMS students each school semester.

**Photo:** Amanda provides the group with a brief history of the garden prior to laying out the day’s work.

The Kaiser Permanente work day on MLK Day was a great success. A slight mist hid Mauna Kea and our *pu‘u* (hills) from view most of the morning, but the cool weather didn't discourage anyone. We counted nearly three dozen participants in all. The work accomplished was impressive—it's amazing to see what 35 pairs of hands working together for almost 3 hours can do! We were especially pleased that a couple of our students came with family members, and they seemed to thoroughly enjoy themselves and asked to take home seeds for their home gardens.



**Photo:** Volunteers gather grass clippings to use as mulch.

We trust that the Waimea Kaiser doctors and clinic staff and their families discovered the pleasure and rewards of gardening and how it connects to health and wellness, for both students and families, as well as for the entire community. Dr. Lois Gregg and Dr. Jeffrey Tolan, family practitioners at the Kaiser Permanente Waimea Clinic, really got into the spirit of the day, getting down on their hands and knees to help weed. We are hopeful they'll be back—especially since

our 3/4-acre organic garden is located just footsteps away from Kaiser's Waimea clinic. Mahalo to everyone from Kaiser, who brought T-shirts for everyone, as well as sunscreen, lip balm, hand sanitizer, and sun hats.

**Photo:** Kaiser Permanente physician Dr. Jeffrey Tolan weeds around the edges of the Mala'ai garden windbreak.

The fresh fruit morning snack and Merriman's lunches were wonderful—everyone thoroughly enjoyed them! We all worked up a good appetite after nearly three solid hours of gardening. Merriman's served two different wraps: a stir-fried fresh vegetable wrap including snap peas, broccoli, mushrooms, onions, carrots, beans, and much more with a green salad and a garnish of fresh corn relish, and a fresh island fish wrap, grilled and wrapped with greens. They were absolutely delicious and all locally grown. We also enjoyed lemongrass tea and lilikoi-mint tea—both made from ingredients grown in the garden.



At the end of the day, Amanda Rieux, Mala'ai Garden Leader, invited each volunteer to make a wish for the garden by writing it on a flag which will be unfurled at our 5th anniversary celebration for the garden on March 3, 2010. Everyone's flags will be raised up on bamboo poles in the garden to send their wishes flying off into the universe. When the words fade away, they say the wishes will have been received and accepted!



**Photo:** Amanda invites volunteers to make a Malama 'Āina wish flag for Mala'ai school garden.

Of course, we owe a big mahalo to Nancy Redfeather and The Kohala Center for helping to make this event possible. Mala'ai is part of the Hawai'i Island School Garden Network (HISGN), the umbrella organization that made the initial arrangements for this garden work day with Kaiser. We are very grateful for the help and support we receive virtually every single day from Nancy Redfeather

on behalf of HISGN and The Kohala Center. It's a most valued partnership!

We also thank Vivienne Aronowitz, who is both a Kaiser Permanente nutritionist and a Mala'ai school garden board member, for encouraging this new partnership. Last, but not least, we thank the students and their families and also the many community volunteers who came out to support Mala'ai: The Culinary Garden of Waimea Middle School. We cannot imagine a better way to celebrate *'Ike 'Āina* (knowledge of the land) and to honor Martin Luther King's vision that, by serving others, we all benefit.

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## Once in a Lifetime Experiences

**Photo:** A group photo of all participants in the 2009 CATALYST Academy. These students came to Cornell from places across the U.S. and around the world.

The CATALYST Academy is a one-week residential engineering program for high school freshman, sophomore, and junior boys and girls who share a strong interest in engineering and its related disciplines. From July 18–24, they will engage in classes, lab sessions, and research projects led by the university's faculty and





graduate students on the Cornell campus in Ithaca, New York. Additional social events, panel discussions, and field activities provide student participants with opportunities to network with Cornell faculty, staff, and university students.

Scholarship applicants for CATALYST Academy must be current freshman, sophomores, and juniors with a minimum cumulative GPA of 3.0 on a 4.0 scale.

*The Kohala Center made it possible for me to attend a summer program at Cornell University where a variety of engineering fields were unfolded before me. I met other people my age with similar ambitions as myself whom I still have strong relationships with. I am finding that the things that I learned there are being taught to me back at my school. Not even my biology teacher can say that she has done gel electrophoresis or applied the polymerase chain reaction to actual genetic engineering. From this program, I gained once in a lifetime experiences which I will remember forever.* –Noa Flaherty, current junior at Hilo High and 2009 CATALYST Academy scholarship recipient



**Photo:** A group shot of Noa Flaherty (standing, 3<sup>rd</sup> from right) with new friends at last summer's CATALYST Academy.

The CURIE Academy, July 18–24, is a one-week residential engineering program for high school girls who excel in math and science. The program is geared to sophomores and juniors who may not have had prior opportunities to explore engineering, but who want to learn more about the field. Cornell University's world-renowned faculty and graduate students will lead CURIE participants in classes, lab sessions, and project research. Social events, panel discussions, and other out-of-classroom activities will provide participants with opportunities to network informally with Cornell faculty, staff, and students.

Current sophomore and junior girls with a minimum cumulative GPA of 3.0 on a 4.0 scale and advancement through least Algebra II and three science courses by the end of the current academic year are eligible to apply to the CURIE Academy.

The Kohala Center is offering two partial tuition and travel scholarships to either the CATALYST or the CURIE Academy. Applicants may apply for one or both of the programs. The application deadline is 5 p.m. Friday, February 26. For application details and to download forms, visit <http://www.kohalacenter.org/cornellsummer.html>. For additional information, contact Samantha Birch at [sbirch@kohalacenter.org](mailto:sbirch@kohalacenter.org) or 808-443-2755.

**Photo:** Grace Franchini's tent mates at the 2009 BELL program. **From left to right:** Jessica Barzilay, Kathryn Neuser, Jenny Tree, Kai Bantis, Grace Franchini, Liana Ramos, Katrina Bantis, and Mckenzie Norman hanging out in their sleeping tent called "backwoods."

Scholarships to the Brown University Environmental Leadership Lab (BELL) in Rhode Island are also available for high school students who are interested in biology, geology, and environmental science and policy.

BELL is a unique outdoor learning laboratory. Students from across the country engage in intensive leadership development activities and learn about sustainable development and field ecology through



the academic fields of biology, geology, and environmental science and policy. For two-week sessions, students will live at the university's Haffenreffer estate, a 372-acre historic farm adjacent to Narragansett Bay, which is among the most diverse and biologically productive ecosystems on Earth.

BELL consists of three separate sessions:

- BELL Sustainable Development, June 28–July 9
- BELL Sustainable Development, July 12–July 23
- BELL Field Ecology, July 26–August 6



**Photo:** Jessica Bazilay, Katrina Bantis, Maxime Rappaport, Annie Bennet, and Rachel Meyer display their Action Plan posters at the end of the 2009 BELL session. Photo by Grace Franchini.

In the Sustainable Development program, students learn how human demands on the environment can compromise the long-term health of ecosystems that exist to sustain us. Students develop the leadership necessary for tackling environmental problems within their home communities. They also learn about policies, practices, and emerging technologies that help to reduce human ecological impact.

Students participating in the Field Ecology program examine the science behind current environmental issues and learn about current environmental science research. They also participate in an ongoing research project and practice designing an experiment and analyzing and reporting scientific data.

The BELL application deadline is 5 p.m. Friday, February 26. For details and to download application forms, visit <http://www.kohalacenter.org/bellRI.html>. For more information, contact Samantha Birch at [sbirch@kohalacenter.org](mailto:sbirch@kohalacenter.org) or 808-443-2755.

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## Nāhelehele Dry Forest Symposium

The Nāhelehele Dry Forest Symposium is a project of Ka‘ahahui ‘O ka Nāhelehele, a nonprofit organization dedicated to revitalizing dryland native plant communities in Hawai‘i. Partners in sponsoring this conference are Bishop Museum’s Amy B.H. Greenwell Ethnobotanical Garden, Hawai‘i Wildfire Management Organization, Kamehameha Schools-Land Assets Division, The Kohala Center, Leonard Bisel Associates, National Tropical Botanical Garden, and the Outrigger Keauhou Beach Hotel.

**Photo:** Sam Gon (left) and Art Medeiros in the dry forest of Auwahi on leeward Haleakalā. Art is a champion of dry forest restoration on Maui. They are standing under a large ‘*ohe makai* (*Reynoldsia sandwicensis*), a tree adapted for very arid summers which drops its leaves during the hottest time of year (summer deciduous). The wood is light and strong and was used for making stilts (*kūkulu* ‘*ae*‘*o*), so another name for the tree is ‘*ohe kūkulu* ‘*ae*‘*o*.

Climate change and its effects on Hawaiian dry forest will be the subject of a morning talk by David Burney, director of conservation at the National Tropical Botanical Garden. Climate models suggest that greenhouse gas-driven change will result in warming of mid-



Pacific islands, sea-level rise, falling water tables and probably increased dryness in the lowlands and a decreased area of high rainfall on mountains. Successful plant reintroduction strategies are needed to buffer against climate uncertainty through use of micro-irrigation, creation of new populations in suitable habitat, and possibly assisted migration strategies. Burney will discuss flexible and affordable ideas about saving as many species and ecological functions as possible.

Not all seedlings are equal, and Anthony Davis from the Center for Forest Nursery and Seedling Research at the University of Idaho will talk about growing the right plant for the site to improve outplanting success. To maximize plant establishment success, a seedling should be grown with the conditions at the outplanting site in mind. However, even with better methods, it isn't realistic to think that every field recovery effort for the nearly 300 endangered plants in Hawai'i will be successful. Bruce Keobele of Ka'ala Farm will propose backyard preservation as insurance for endangered plant recovery. Although backyard preservation is not as desirable as preservation in the wild, it can serve an important role in preservation efforts. Since 1998, when it became legal in Hawai'i for the public to possess endangered plants, only 20% of these species has been commercially sold. Keobele will explore the reasons for this, including rarity of source material, misconceptions about commercial nursery and public interests and abilities, and endangered plant tag issuance.

The symposium's afternoon session will include a variety of talks about threats to Hawai'i's native plants. CTAHR invasive weed specialist Jim Leary will discuss invasive weed management. Lisa Ellsworth from the University of Hawai'i at Mānoa will talk about the interaction of non-native grasslands, fire, and native plants. Hawai'i Department of Agriculture insect specialist Pat Conant will discuss insect threats to native plants, including a timely update on the *naio thrip*, a new pest introduced to Hawai'i Island in spring 2009.

The challenges of large-scale restoration projects will be explored by Grant Gerrish of UH Hilo, and Melora Purell, the coordinator for the Kohala Watershed Partnership. Gerrish will talk about endangered plant preserves at the Villages of La'i'ōpua, a DHHL housing project on the dry, leeward slopes of Hualālai. Twenty-one species of native plants occur here, including the critically endangered *aupaka* shrub and *uhiuhi*. Purell's talk, titled "Watershed Restoration in a Moonscape: It's all about the Plants," will cover key considerations for large-scale dryland watershed restoration projects. These include choosing the plant pallet, finding seed and water sources, and creating a flexible and efficient planting design. The Pelekane Watershed Management Project includes restoration of 400 acres of native vegetation along 6 miles of stream corridors and installation of 100,000 native plants.

Three hands-on workshops will be held preceding the symposium on Thursday, February 25. Workshops will cover native plant propagation techniques, identifying and dealing with invasive weeds, and the role of fire mitigation in native plant conservation. The plant propagation workshop will be held at Amy Greenwell Ethnobotanical Garden, led by propagation specialists from around Hawai'i. Presenters will discuss successes and failures in propagation efforts and provide some hands-on experience with propagation techniques. A visit to the Waikoloa dryland forest project that is protecting a *wili wili* forest, as well as a third of the remaining endangered *uhiuhi* population will illustrate how the Waikoloa Outdoor Circle is mitigating significant wildfire threats to their restoration and preservation project. Hawai'i Wildfire Management Organization will share what they are learning about the vegetation succession that has been occurring since the 2007 wildfires burned over 10,000 acres of the Waikoloa plains. The invasive weed workshop will provide an opportunity to identify invasive weeds, discuss their effects on native plants, brainstorm about weed control, and more.

The symposium will take place on February 26 from 9 a.m. until 5 p.m. at the Outrigger Keauhou Beach Hotel. For registration and information, visit <http://www.kohalacenter.org/nahele10.html> or call The Kohala Center at 808-887-6411. Conference registration, including lunch, is \$50. After February 12, symposium registration increases to \$65. Workshops on February 25 are \$25 each. Workshop participation is limited and no registrations will be accepted after February 12.

