



Saving plants on the brink of extinction

More than half of Hawai'i's approximately 1,400 native plant species are at risk of extinction. Of those, 238 species have 50 or fewer wild individuals remaining.

The Plant Extinction Prevention Program (PEPP) at UH Mānoa's Pacific Cooperative Studies Unit is dedicated to preserving these rarest species by controlling their threats and collecting their fruit and seeds. PEPP's tireless work has resulted in the placement of almost 10,000 seedlings representing dozens of Hawai'i's rarest species back into the wild.

We interviewed Joan Yoshioka, PEPP's statewide manager, for a Q&A about the program.

What is PEPP?

PEPP is a program dedicated to preserving Hawai'i's rarest plants from extinction. Our 13 botanists, with field offices on Kaua'i, O'ahu, Maui, Moloka'i and Hawai'i Island, collect fruit, seeds, cuttings and spores of Hawai'i's rarest plants and place them in partner facilities like the UH Harold L. Lyon Arboretum Seed Conservation and Micropropagation Labs for safekeeping and nursery propagation. These collections ensure the preservation of the plants' genetic diversity in the hopes that when threats to the wild plants are addressed, nursery-grown plants can be placed back



Reid Loo, Hawai'i Island PEPP, hand pollinating a Mauna Kea silversword plant

into the wild. We also partner with landowners and management agencies to address threats (e.g., remove invasive plants and install fences around plants threatened by feral pigs, sheep or goats).

Why is it important to save endangered plants?

Biologically, no one knows the impact of the extinction of a member of the ecosystem. For example, there are rare species of the genus *Cyanea* that are pollinated solely by native Hawaiian honeycreeper birds that depend on the plant's nectar for food. The loss of the *Cyanea* species may mean the loss of the bird species as well.

Culturally, many endangered Hawaiian plants are part of a vibrant Hawaiian culture. An example is *kauila*, an endangered tree species that has wood that is used as *kapa* mallets, 'ō'ō (digging sticks), and *kahili* poles. The preservation of these species is key to maintaining important cultural practices.

Economically, with more than a quarter of all prescription medications containing plant or animal products, a loss of a species may result in the loss of a potentially life-saving treatment.

CTAHR alumna helps farmers in Africa

College of Tropical Agriculture and Human Resources (CTAHR) alumna Linda Burnham Larish, who received her MS in horticulture in 1990 and who has worked as a researcher with CTAHR faculty, traveled to Malawi in June as a volunteer of the USAID-supported Farmer-to-Farmer (FtF) program with Cultivating New Frontiers in Agriculture (CNFA).

Larish spent three weeks in Malawi teaching 41 members of the Ngolowindo Cooperative how to improve their technical knowledge of growing tomatoes. The cooperative works in the Salima area growing crops with furrow irrigation at this time of year, which is the dry season.

This was Larish's sixth assignment with the FtF program. She has worked as a volunteer with both Winrock and CNFA in Southern Africa and Bangladesh. Her first visit to Malawi as an FtF volunteer was in 2010, when she taught integrated pest management to the Lobi Horticultural Association. During her most recent two-week tenure, Larish fo-



Above: Linda Burnham Larish with Ngolowindo Cooperative members, who are holding up their certificates of course completion outside the cooperative's meeting and storage building. Below: members of the Ngolowindo Cooperative tend their crops.

cused on tomato cultivation and pest and disease management. It's expected that as a result of her work, the quality and production of the Cooperative's tomato crop will improve.

"As a former Peace Corps volunteer, it is natural for me to think of myself as a citizen of the world. I feel comfortable living in other cultures and I

enjoy experiencing life without shopping malls, highways and Starbucks. Being a Farmer-to-Farmer volunteer lets me live briefly in another culture, while feeling that I am contributing to the livelihood of other farmers in a constructive way," said Larish.



UH contributes to IUCN World Conservation Congress

By Matthew K. Lynch, UH Sustainability Coordinator

The International Union for Conservation of Nature (IUCN) World Conservation Congress (WCC) offered Hawai'i a unique opportunity to share lessons that we have learned from living in the world's most geographically remote islands, learn from other

communities facing similar conservation and sustainability challenges, and leverage international resources to support lasting local efforts in conservation.

University of Hawai'i scientists, researchers, scholars, faculty and students participated in a broad range of initiatives before, during and after the 10-day event.

Two UH programs are full voting members of the IUCN: the William S. Richardson School of Law Environmental Law Program and Lyon Arboretum. In addition to participating at the IUCN Member's Assembly, these programs play a major ongoing role in conservation efforts across the islands and the Pacific.

Highlights of UH initiatives during IUCN-WCC

- **Localizing the sustainable development goals: Engaging indigenous peoples and local communities** (Hawai'inuiākea School of Hawaiian Knowledge): This roundtable explored how global sustainable development goals can be implemented to address local realities, needs and people.
- **Living shorelines on tropical islands: Creating and maintaining healthy coastal systems and improving community resilience in the face of climate change** (School of Ocean and Earth Science and Technology): In this workshop participants learned how "living shorelines" integrate habitat restoration techniques, coastal engineering and conservation to mitigate coastal hazards and climate change through the incorporation of natural elements, using living shoreline models from tropical settings.
- **Knowledge cafe: Developing pilina with place through Kilo, environmental observations, and interpretation of Hawaiian place names, Wahi Pana** (UH Hilo): Participants learned to apply cultural practice in scientific research conducted in Hawai'i. They explored how bringing scientists and cultural practitioners together to exchange knowledge about their practices and relationship to natural resources can contribute to developing methodologies that implement both knowledge systems.
- **The role of agroecology and indigenous science in (re)developing a sustainable community food system for Hawai'i** (UH West O'ahu): This experiential workshop introduced participants to the scientific literature of the field of agroecology and showed how it is being integrated with traditional ecological knowledge in recreating more sustainable food and agriculture systems in Hawai'i.
- **World Commission on Environmental Law Programming** (UH Mānoa William S. Richardson School of Law): This event focused on the role of the judiciary around the world in the protecting the environment, in general, and the conservation of nature, in particular.



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What can people do to help protect endangered plants?

- Financially support or volunteer with local conservation programs.
- If you buy an endangered plant, make sure the plant has a red label that identifies the plant as being legally obtained. Plant only in gardens and not in the wild.
- Follow the Hawai'i Rare Plant Code of Conduct: keep your distance when viewing rare plants to prevent trampling on seedlings or compacting the ground creating trails for feral pigs to follow; respect state and federal laws; don't collect plant material, seeds or seedlings; don't share plant locations; and clean hiking gear before and after visiting natural areas to prevent the transport of invasive species.

Climate protection: UH commits to net-zero energy by 2035

The State of Hawai'i set a goal of achieving 100 percent renewable energy by 2045. Building upon this strong example, the University of Hawai'i is following suit.

Last year UH worked with the state legislature to enact Act 99, which established a collective goal for UH "to become net-zero with respect to energy use, producing as much (renewable) energy as the system consumes across all campuses by Jan. 1, 2035."

This year UH established the Office of Energy Management (OEM) to oversee the strategic implementation of this aggressive goal. As first steps, OEM is working closely with the Office of Sustainability and



Office of Planning to develop a \$100+ million Energy Savings Performance Contract that will implement energy conservation measures to reduce electricity consumption across the flagship

UH Mānoa campus. In addition, feasibility studies are underway for a solar photo-voltaic farm mauka of UH West O'ahu campus. UH will continue reducing its carbon footprint, one step at a time.