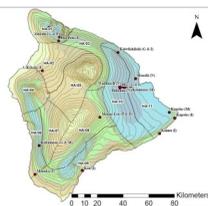


Building a Plant Conservation Network



Establish structure and leadership, so we can accomplish more together than operating alone. Laukahi is an all-inclusive, voluntary, and flexible network that draws upon the strengths and contributions of Hawai'i's conservation community.

Sharing Real-Time Data



Adapt and expand existing platforms to facilitate sharing of accurate biological and geospatial data. This will enable more efficient resource use and reporting on statewide progress. Sensitive data is access-restricted, or not used at all, and those plant locations are never reported.

Global Connections



Raise Hawai'i's profile among broader conservation efforts such as the Global Strategy for Plant Conservation and the IUCN Red List and WCC to attract new resources to advance our efforts.

Conservation Research Agenda



Encourage increased coordination by publishing an agenda with topics selected by local botanists that will most advance ongoing efforts and disseminating the agenda to the broader research community.

Species Curation Project



Assess the value of existing collections at all participating seed banks, nurseries, and botanical gardens by determining their provenance and how well they represent the remaining wild plants. Once identified, underrepresented species will be targeted for surveys and collections.

Securing Ex Situ Collections



Invest in companion efforts that increase collecting of plants in the wild and keep them safe by building infrastructure, facilities, knowledge, and resources. Priority projects include: Hawai'i Seed Bank Partnership, mid-elevation nursery on Moloka'i, disaster preparedness for seed banks and nurseries, and providing training for new staff.

How many plants have already been collected?

The greatest progress has been made with the rarest.

- 18 species are extinct in the wild but still held in ex situ collections
- 169 of 238 taxa with only 50 plants left are secured ex situ

Collecting from enough plants to adequately 'secure' SCI is needed.

- Only 9% of collections are large enough to adequately represent most ($\geq 85\%$) of the known plants, most are from a few individuals from only one area

The need for progress is great.

- 64% of our collections are too small, representing less than 10% of the known plants
- 27% of plants with collections are only found in one place, at a high risk for catastrophe

Gardenia brighamii is well represented by collections held on all islands at 13 different facilities and is thus a model of ex situ storage.



Mahalo to the Hau'oli Mau Loa Foundation for the continuing support for Laukahi and plant conservation in Hawai'i.

Photos by the Plant Extinction Prevention Program, Lyon Arboretum, Laukahi, and the Oahu Army Natural Resources Program.

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Laukahi: The Hawai'i Plant Conservation Network

Laukahi.org

Hawai'i's ecosystems are among the richest and most diverse on Earth. They are also some of the most endangered.

Laukahi, the Hawai'i Plant Conservation Network, is a self-directed, voluntary alliance of agencies, organizations and individuals aiming to protect Hawai'i's rare and threatened native plant species through coordinated conservation efforts. Laukahi was created as a response to the urgent and growing need to address the vulnerability of native plant populations so vital to our health, to Hawaiian culture, and to the balance of life on these islands.

Native plants, their histories and relationships with other organisms have much to teach us about how life has been and should be balanced in our islands. Flourishing habitats for native plants protect our watersheds, which provide us with safe drinking water, prevent runoff from polluting our oceans, minimize dangerous flooding, and buffer us against harmful effects of climate change. Native plants are the foundation for native ecosystems, home to countless other unique native animals, such as snails, bats, birds and insects. Loss of plant life degrades precious ecosystems that sustain all life, including humans. Native plants also have a fundamental role in Hawaiian culture. Conserving them supports traditional practices of Native Hawaiians and preserves spiritual connections between all people and our land. As the olelo noeau, or Hawaiian proverb states: I ola 'oe, i ola makou nei – My life is dependent on yours, and your life is dependent on mine.

A renewed focus is urgently needed to secure collections from Species of Conservation Importance. Laukahi is a statewide initiative underway to enhance ongoing programs, identify statewide conservation goals, measure progress, and create a formal partnership to coordinate collections. Creating a well maintained ex situ collection from each of Hawai'i's at-risk plants is essential and possible. Once secured, these collections will provide conservation botanists with the plants necessary for restoring healthy native plant communities.

The conservation of Hawai'i's flora is essential and challenging. Preserving our irreplaceable natural heritage is achievable with increased collaboration and resources.

Hawai'i's Native Plants: Rare and Vulnerable

- 1380 total plants native to Hawai'i
- 89% of native flowering plants are found only in Hawai'i (endemic)
- 74% of native ferns are found nowhere else in the world
- >30% of native plants are federally Endangered or Threatened
- >10% are already extinct
- 240 estimated number of plants with fewer than 50 wild plants
- >724 plants considered Species of Conservation Importance



Overview



In 2012, an inventory was conducted to assess the statewide capacity for conserving of the native Hawaiian flora in ex situ facilities such as: seed banks, nurseries, gardens, and micropropagation. During this process, local botanists identified Species of Conservation Importance (SCI), which include rare species found on state, federal or global lists of endangered species, as well as those important for wildlife habitat and cultural use. For the first time, a comprehensive inventory of facilities across the state combined individual inventories, determined the optimal ex situ method for each SCI, and identified the major limiting factors to increasing capacity to protect SCI in genetic safety nets.

SCI are not exclusively represented by rare plants. More common Hawaiian taxa, such as *Acacia koa*, play a significant ecological role in native habitats.



EFFICIENT EX SITU PRESERVATION Seed Banks

Seed banks store seeds in secure locations and ideal conditions, lengthening the time they remain alive and viable. Seed storage is the optimal ex situ method for most SCI in Hawai'i. Storing seeds is cheaper, captures more genetic variation in a single collection than other methods, and is minimally invasive to wild plants. As shown below, the most valuable collections in seed banks represent more wild plants of more species that other methods. Existing seed storage facilities are currently too small and too few to meet long-term conservation needs for Hawai'i. The Hawai'i Seed Bank Partnership has already begun to increase access to seed banking. Other methods should also be expanded to support both rare species conservation and watershed reforestation.

"When climate changes and human disturbances bring tremendous threats to vegetation and the environment, it is seeds that confer on us a great hope to maintain a bright future."

Dr. Xingguo Han, Chinese Academy of Sciences

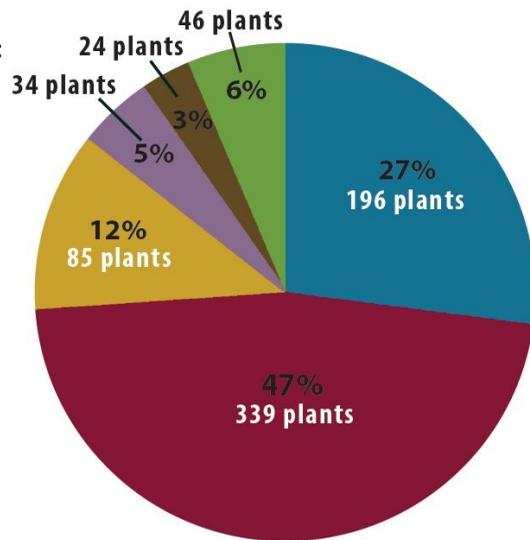


Plant Extinction Prevention Program staff (above) Hank Oppenheimer collects from plants on Maui and (below) Ane Bakutis transports plants back into a protected natural area on Molokai for outplanting.

Results

After interviewing botanists, 15 conservation agencies and 20 ex situ facilities, the assessment revealed the following figures:

- 724** Species of Conservation Importance (SCI)
- 528** Total SCI represented in ex situ collections (micropropagation, seed banks, nurseries and gardens) across the state
- 27%** Percentage of unsecured[†] SCI
- 64%** Percentage of secured[‡] taxa (339 plants) represented by collections from ≤10% of the remaining naturally occurring individuals—such small representation does not constitute an adequate “genetic safety net”



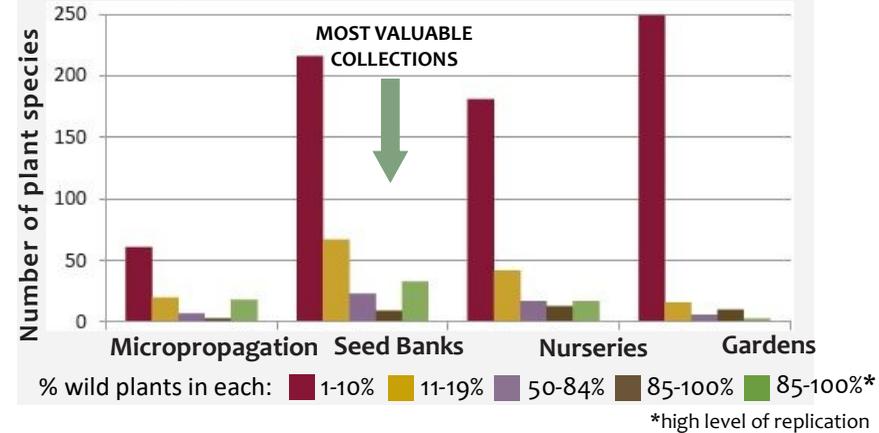
- unsecured taxa[†]
- 10% or less
- 11-49%
- 50-84%
- 85-100%, low replication of representation
- 85-100%, high replication of representation

[†]not currently represented in any ex situ facility
[‡]represented in at least one ex situ facility

With less than 10% of the remaining naturally occurring individuals represented in ex situ storage, *Lobelia niihauensis*, along with 722 other taxa, is not supported by an adequate genetic safety net and therefore at greater risk of extinction.



Graph showing the number and value of collections in each type of facility



Why network? Why now?

Government agencies, nonprofit organizations and community groups are all instrumental to plant conservation in Hawai'i. Their partnerships are already advancing conservation through collaboration. Laukahi: The Hawai'i Plant Conservation Network, formalizes this partnership and focusses efforts on meeting our shared goals in the Hawai'i Strategy for Plant Conservation. Coordinating our efforts is the best way to use existing resources and make a meaningful impact on conservation goals.



Joining a global movement

The Hawai'i Strategy for Plant Conservation is aligned with the Global Strategy for Plant Conservation (GSPC), adopted by world governments in 2002, and updated in 2010 as a response to the staggering loss of global biodiversity. The GSPC calls on regions and countries to build their own strategies, defining and prioritizing goals to reflect local needs. Hawai'i's strategy shares the main objectives of the GSPC and identifies the SCI in our region. By defining goals and measuring progress in a way that is aligned with global efforts, Hawai'i can raise awareness of how conserving our native plants contributes to stemming the loss of global biodiversity.